Remedial Investigation/ Alternatives Analysis Report (RI/AAR)

Phase III Business Park
Tecumseh Redevelopment Inc.
Lackawanna, New York

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Prepared For:

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Table of Contents

Table of Contents

Table of Contents

Table of Contents

LIST OF TABLES

Table of Contents

LIST OF FIGURES

APPENDICES

REMEDIAL INVESTIGATION/ALTERNATIVES ANALYSIS REPORT

Phase III Business Park Area

Certification

I, Thomas H. Forbes, certify that I am currently a NYS registered professional engineer as defined in 6 NYCRR Part 375 and that this RI/AA Report 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) and that all activities were performed in full accordance with the DER-approved work plan and any DER-approved modifications.

Signature of Environmental Professional

Seal

STATE OF NEW YORK
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1.0 INTRODUCTION

1.1 Background and History

Tecumseh Redevelopment Inc. (Tecumseh) owns approximately 1,100 acres of land located on the west side of New York State Route 5 (Hamburg Turnpike) in the City of Lackawanna, NY (see Figures 1 and 2). The majority of Tecumseh's property is located in the City of Lackawanna (the City), with portions of the property extending into the Town of Hamburg. Tecumseh's property is bordered by NY State Route 5 on the east; Lake Erie to the west and northwest; and other industrial properties to the south and the northeast.

The property was formerly used for the production of steel, coke, and related products by Bethlehem Steel Corporation (BSC). Steel production on the property was discontinued in 1983 and the coke ovens ceased activity in 2000. Tecumseh acquired its Lackawanna property from BSC's bankruptcy estate in 2003.

A Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) of all Solid Waste Management Units (SWMUs) located on the 1,100-acre property was initiated by BSC under an Administrative Order issued by the United States Environmental Protection Agency (USEPA) in 1990. Tecumseh completed the RFI in January 2005 (Ref. 1). USEPA subsequently determined that the site investigation requirements of the 1990 Administrative Order were satisfied, and Tecumseh's obligations under the 1990 Administrative Order were terminated. Tecumseh has entered into an Order on Consent with the New York State Department of Environmental Conservation (NYSDEC) to undertake corrective measures at certain solid waste management units (SWMUs) primarily on the western slag fill and coke manufacturing portion of the property. As indicated on Figure 2, the CMS area encompasses approximately 500 acres.

Outside of the CMS Area Tecumseh designated five parcels for redevelopment under the New York State Brownfield Cleanup Program (BCP). These include: The Phase I, IA, II and III Business Park Areas, which are at various points of investigation and cleanup under the BCP and are slated for commercial/industrial redevelopment, and the Steel Winds Site, which was remediated under the BCP and redeveloped as a commercial wind farm.

The 149-acre Phase III Business Park Area, which is the subject of this Remedial Investigation and Alternatives Analysis Report (RI/AAR), formerly housed several facilities used in BSC's steel manufacturing processes. As more fully described in Section 2.0, these included a basic oxygen furnace (BOF) plant; an open hearth and furnace building; a sinter plant; finishing mills; mould warming; rail servicing; and electrical substations.

Fifteen historic SWMUs (i.e., P-17, and P-19 through P-32) are present on the Phase III Business Park Site (see Figure 3). BSC performed assessments for these SWMUs during the RCRA Facility Assessment (RFA; Ref. 2) and subsequent RFI. Based on the findings, USEPA Region II issued "No Further Action" determination for the identified SWMUs within the Business Park III area (Ref. 1).

Remedial Investigation activities on the eastern portion of the Phase III Business Park Area (BPA) were initiated in August 2008. At that time the western side of the Phase III parcel was slated to be carved out under a separate BCP application and redeveloped as a latter phase of the Steel Winds project. However, the planned developer was unable to fulfill its responsibilities under the Brownfield Cleanup Agreement (BCA) and Tecumseh elected to resume obligations for this portion of the Site under the original Phase III Business Park Area BCA. Supplemental RI activities addressing the western portion of the Site were therefore undertaken in late 2009 through early 2010.

1.2 Purpose and Scope

This RI/AAR has been prepared on behalf of Tecumseh to present RI findings, describe environmental conditions within the Site, and evaluate and recommend a remedial approach. This Report contains the following sections.

- Section 2.0 presents a description of the Site and summarizes prior assessments.
- Section 3.0 presents a discussion of the RI sampling and methodology.
- Section 4.0 presents the nature and extent of impact in Site media.
- Section 5.0 discusses RI findings and describes potential chemical constituent migration pathways.
- Section 6.0 provides a human health exposure assessment and fish and wildlife resources impact assessment.
- Section 7.0 presents RI summary and conclusions
- Sections 8.0 through 10.0 present the development and evaluation of remedial alternatives
- Section 11.0 identifies post-remedial requirements that will be followed to assure the efficacy of the remedy
- Section 12.0 presents cited references.

2.0 SITE DESCRIPTION

The Phase III BPA is located west of the Phase II BPA, east of other Tecumseh property, north of lands owned by South Buffalo Railroad Company, and south of the Gateway Metroport Ship Canal and land currently owned by Gateway Trade Center (see Figures 1 and 2). The Site is transected by Smokes Creek, which is subject to further assessment in the RCRA CMS and is specifically excluded from the BCP Site. West of Smokes Creek, the Site is segregated from the Phase II BPA by the South Return Water Trench (SRWT), a man-made surface water discharge channel.

The Phase III Business Park Site formerly housed a portion of BSC's steelmaking operations. Buildings and operations historically located on the Site are shown on Figure 3. As indicated, prior facilities within the Phase III Business Park boundaries included:

- A 45"-90" Universal Slabbing Mill and Slabbing Mill Return Water Trench. This facility encompassed oil and grease houses, electrical equipment (including transformers), and a "soaking pit building" that was used for reheating steel ingots prior to milling. SWMUs P-28 through P-32 (including scale and scarfer pits, settling tank and sand filters, all of which received 'No Further Assessment" designation by the USEPA) are associated with the former Slabbing Mill. A portion of the former Soaking Pit Building foundation allegedly received fill with asbestos-containing materials (ACM).
- An electrical materials storage building (Electrical Dept. Building, aka "Electrical Stores" and yard).
- A Basic Oxygen Furnace (BOF) Plant. This facility included fuel oil above-ground storage tanks (ASTs), electrical equipment (including transformers), dust collectors, and an oil house.
- Water Quality Control Station (WQCS) #3. This facility included the scalping tanks, primary thickener, north thickener, south thickener, and final thickeners; multiple USTs, and electrical equipment (including transformers). As indicated on Figure 3, WQCS #3 was comprised of two nearby areas, with several of the northern WQCS #3 buildings and thickeners still standing. SWMUs P-17, P-19, and P-21 through P-27, all of which received "No Further Assessment" designation by the USEPA, are associated with the former WQCS #3.
- Open Hearth No.3, which contained among other features: 11 brick-lined furnaces; electrical equipment (including transformers); a tar pump house; stripper building; multiple ASTs and USTs; a stockyard; and precipitators.

- The Sintering Building, which contained two 105-foot chimneys; a scrubber (SWMU P-20); electrical equipment (transformers); and miscellaneous ASTs and underground storage tanks (USTs).
- Miscellaneous office production support buildings, and Welfare buildings.

2.1 Site Topography and Drainage

The Phase III BPA Site is generally characterized as a flat area covered by early succession trees, brush, grasses, and other low lying vegetation. Due to the nature of the slag/soil fill there is very little ponded storm water or surface runoff as most of the precipitation seeps into the highly permeable slag/soil fill.

2.2 Remaining Site Structures

The Site contains few structural remnants and other features associated with historic integrated steel-making facilities. These include remaining buildings of the former WQCS No. 3, the Electrical Department building, remnants of former overhead coke gas and active natural gas conveyance lines on the northern side of the property, access roads, electrical power lines, and railroad tracks. As indicated above, immediately east of the Site boundary is a man-made drainage channel designated as the South Return Water Trench that begins near WQCS No. 3 and flows south to Smokes Creek (see Figure 3). Historically and currently, the trench collects and discharges groundwater and storm water to Smokes Creek under active SPDES Permit No. NY-0269310. There are no active outfalls into the South Return Water Trench (SRWT) from the Site.

2.2.1 Electrical Department

Figure 2 shows the location of the Electrical Department building, which is an unoccupied, slab-on-grade steel building formerly used to store electrical supplies, primarily wire, insulators, and spare motors. The Electrical Department building is currently used for cold storage of some remaining equipment and supplies, but is otherwise vacant. It is serviced by electric power; no other utilities are active. Based on TurnKey's observations, the building is well ventilated and the building floor is competent with no indication of significant staining, etching, or other signs of release. The five aboveground storage tanks noted on Figures 3, 4, and 5 were empty and temporarily staged in the building parking area while awaiting re-use or decommissioning.

2.2.2 WQCS#3A

WQCS#3A was historically used to neutralize acidic wastewaters and precipitate metals from the Sinter Plant[1] Scrubber, which was operated from 1950 to 1983. Remaining WQS#3A structures on the Phase III Business Park Area include the garage and lab buildings, as well as a former tank, clarifiers and sludge thickener. According to the 1989 SWMU Assessment Report for WQCS #3A (Ref. 6), the thickener (sludge) tank was taken out of service in August 1983 due to plant shutdown. On January 21, 1983, an analysis for EP toxicity metals was performed on the Sinter Plant Scrubber Thickener Sludge and found to be below regulatory action levels (i.e., toxicity characteristic). At the time of the shutdown, the tank was reportedly pumped out and the remaining sludge was removed from the tank. According to the Final RCRA Facility Investigation Report Part V (October 2004), the Assessment Report for WQCS#3A was approved by the agencies on December 7, 1990. The Solid Waste Management Units (SWMUs) associated with WQCS#3A, P-19 (thickener) and P-20 (scrubber sump), also received "No Further Assessment" designation by the USEPA.

Although at the time of the RI the thickener remained placarded with "hazardous waste" signs due to its historic use in storing/processing precipitated metal hydroxide sludge, no sludge remains in this vessel or the other remaining WQS vessels (arrangements have been made to remove hazardous waste signage). Precipitation has accumulated in the open-top thickener and clarifiers; however no evidence of sheen or product was identified in these vessels during the RI. In addition, RI test pits excavated in the vicinity of WQS#3A were consistent with those excavated elsewhere on the Site and did not yield specific indications of hazardous materials disposal/release.

The WQS#3A laboratory building and garage have been cleaned out of any remaining water treatment chemicals. The laboratory building, which is a concrete block building with a competent slab-on-grade foundation, is not occupied or used. Utilities (electric, sewer, water, and gas) are available but are shut off. The WQS#3A garage is a metal building with a competent slab-on grade foundation. The garage primarily used for storage

[1] Sintering is a process where iron-rich fine materials wasted from other plant processes, such as mill scale, are fused into clinkers that are used as an iron source, together with ore, in blast furnaces. The process includes mixing the raw materials, ignition, and combustion on a traveling grate in the sinter machine, agglomeration of the sinter, cooling, and screening.

of construction equipment, and is only occupied periodically. It is serviced by electric power, no other utilities are active.

2.3 Site Geology and Hydrogeology

The United States Department of Agriculture Soil Survey of Erie County, New York indicates that the Site is covered by surface soil classified as Urban Land; soil consisting of paved, foreign, or disturbed soils. Drilling logs from monitoring wells constructed on or near the Site indicate that the upper two feet (east side) to eight feet (west side) is typically composed of steel and iron-making slag and/or other fill material. The fill is underlain by lacustrine clays and silts that are, in turn, underlain by shale or limestone bedrock. Bedrock is about 60 feet below ground surface (fbgs) near the eastern perimeter of the Site.

Historically, due to the proximity of Lake Erie and municipal supplied water, groundwater in the area has not been developed for industrial, agricultural, or public supply purposes. There is a deed restriction that prohibits the use of groundwater on the property. Consequently, no groundwater supply wells are present on the 1,100-acre Tecumseh property. Measurements taken in several monitoring wells on or near the Site indicate that the water table is 5 to 6 fbgs within the soil/fill unit.

Groundwater elevation contour maps completed during investigation of the 1,100-acre former BSC property indicate that shallow groundwater flows radially west/southwest across the Site towards the Gateway Metroport Ship Canal and Lake Erie as well as northwest toward the Buffalo Outer Harbor.

2.4 Utilities

The following utilities are present on or near the Site:

- <u>Electric Utility:</u> Overhead electric power lines on wooden utility poles, owned by Niagara Mohawk Power Corporation (NMPC), run east and west along the northern portion of the Site. In addition, buried electrical transmission lines from the Steel Winds turbines run underground in the northern portion of the site.
- <u>Natural Gas:</u> Natural Gas (National Fuel) lines run overhead in an east-west direction along the northern boundary of the site.
- <u>Railroad Tracks:</u> Active railroad tracks, owned and operated by South Buffalo Railway, are located on the south side of the Site and the western site boundary. These tracks are primarily used to service tenants within the larger Tecumseh property.

- Water: Erie County currently supplies potable water to the site. Groundwater is not used for any purpose.
- Sanitary Sewers: Active sewer lines are located along the northeast boundary of the property near the former WQCS#3A and along Highway 2.

2.5 Wetlands and Floodplains

The land surrounding Smokes Creek is listed on the National Wetlands Inventory and as a FEMA floodplain. No NYSDEC wetlands exist on the Site.

3.0 REMEDIAL INVESTIGATION APPROACH & RATIONALE

The RI was designed to provide defensible data to identify areas of the Site potentially requiring remediation, define chemical constituent migration pathways, and qualitatively assess human health and ecological risks to allow for performance of a remedial alternatives evaluation. This section of the RI report presents a discussion of the rationale for the data collection program of the RI, including the methods employed to collect samples and make field measurements and observations, and the methods used to chemically analyze the environmental samples.

3.1 General

The RI included the following field activities to delineate and characterize on-site soil/fill and assess groundwater quality at the Site:

- Visual, olfactory, and PID characterization of surface and subsurface soil/fill through test pit excavation.
- Collection of surface and subsurface soil/fill samples.
- Advancement of on-site borings completed as groundwater monitoring wells.
- Collection and analysis of groundwater samples from existing and newly installed monitoring wells at the site.
- Completion of a soil boring and test pit investigation of the Soaking Pit Building foundation to check for the presence of asbestos-containing materials (ACM).

RI field activities were conducted by TurnKey Environmental Restoration, LLC (TurnKey) in accordance with the approved Work Plans (Refs. 3 and 4); herein referred to as the RI Work Plan. Environmental sample collection was performed in accordance with TurnKey's Field Operating Procedures (FOPs). USEPA- and NYSDEC-approved sample collection and handling techniques were used. Samples for chemical analysis were analyzed in accordance with USEPA SW-846 methodology to meet the definitive-level data requirements. Analytical results were evaluated by a third-party data validation expert in accordance with provisions described in the RI Work Plan. The majority of field activities were conducted under NYSDEC oversight. Each sampling location was surveyed via GPS and plotted on the site base map shown on Figure 3.

3.2 Constituents of Potential Concern

Constituents of potential concern (COPCs) were identified in the RI Work Plan based on Site operational history (see Table 1). The primary COPCs included base-neutral Target Compound List (TCL) semi-volatile organic compounds (SVOCs) associated with petroleum bulk storage and fossil fuels, and select inorganic compounds (arsenic, cadmium, chromium, lead, mercury, and cyanide) typically associated with steel manufacturing. Other COPCs analyzed on a location-by-location basis included polychlorinated biphenyls (PCBs), which were analyzed at select locations near former transformers and electrical equipment, and petroleum-based VOCs, analyzed in areas of former petroleum or fuel storage.

In addition to the COPCs, an expanded list of parameters was developed as part of the RI Work Plan (see Table 2). The "expanded" list was employed during the RI at an approximate frequency of 1 per 10 samples per matrix to check for the presence of both COPCs and other constituents less likely to be encountered. Also, photoionization detector (PID) headspace screening for VOCs was employed at all test pit locations, with expanded list VOCs typically added to samples exhibiting elevated PID readings.

3.3 Soil/Fill

Surface and subsurface soil/fill samples were initially collected from the eastern portion of the Phase III BPA in the Fall of 2008 in accordance with the NYSDEC-approved May 2008 RI/AAR Work Plan for the Phase III BPA. Subsequently, soil/fill samples were collected from the western portion of the Phase III BPA in late 2009 through early 2010 per the NYSDEC-approved RI/AAR Work Plan for the Steel Winds II Site (Ref. 4). As discussed in Section 1.0, this latter sampling work was performed on behalf of Tecumseh Redevelopment to supplement to the earlier 2008 Phase III BPA investigation, as the Steel Winds II development did not materialize. As such, the western portion of the parcel ultimately remained within the Phase III BPA.

The initial Phase III BPA soil/fill investigation involved excavation of 86 test pits; a total of 53 surface soil/fill samples (typically collected from 0-2 feet below grade), 8 subsurface soil samples, and 1 waste characterization sample were collected from those test pit locations during the RI. Test Pits BP3-TP-72 and BP3-TP-73 proposed in the RI Work Plan were not excavated. It had been assumed that the trench (referred to as the former Slabbing Mill Return Water Trench) to be investigated was filled, and the test pits were planned to characterize the backfill materials as well as examine underlying materials.

However, it was determined at the time of the RI field work that the trench remained open. With concurrence of the NYSDEC's Project Manager, three surface soil/sediment samples were collected from the bottom of the trench (i.e., samples East Trench, West Trench and Middle Trench) in lieu of test pits BP3-TP-72 and BP3-TP-72.

The subsequent investigation on the western portion of the Site (undertaken per the RI Work Plan for the "Steel Winds II" Site) involved excavation of 58 test pits, with a total of 28 surface soil/fill samples and 13 subsurface soil/fill samples collected from the western area. For clarification purposes and to avoid numbering overlap with the earlier test pits on the eastern side of the Phase III BPA parcel the western area of the site was internally designated as "Business Park 3A" and test pits were labeled as "BPA-3A-#."

Supplemental test pits not proposed in the RI Work Plan were excavated in the vicinity of test pits: BP3A-TP-8 (5), BP3A-TP-44 (16), BP3A-TP-53 (10), BP3-TP-54 (1), BP3-TP-55 (1), and BP3A-TP-58 (6) to further investigate areas with field evidence of impact. On September 21, 2011, TurnKey excavated an additional test pit (deemed BPA3-TP-62A) between test pits BPA3-TP-61 and BPA3-TP-62 at the request of NYSDEC because of the sheen observed on the groundwater table (7 fbgs) and the proximity to Smokes Creek.

Tables 3a and 3b identify the test pit numbers, the sampling rationale, and laboratory analyses performed. Figure 3 shows the test pit locations discussed in this section. Appendix A includes the test pit logs and field notes. Appendix A-1 includes photographs electronically for all test pits excavated at the Site.

3.3.1 Soil/Fill Sampling Methodology

Following test pit excavation, surface soil/fill samples were collected using a dedicated stainless steel spoon to scrape a representative sample from the test pit sidewall to a maximum depth of 2 fbgs. Subsurface samples were retrieved by scraping the excavator bucket across the depth from 2 fbgs to the bottom of the test pit and were collected from the center of the excavator bucket using a dedicated stainless steel spoon. Samples were transferred to laboratory-supplied, pre-cleaned sample containers for analysis of the parameters listed in Tables 1 and 2 using USEPA SW-846 methodology.

In accordance with the RI Work Plan, a representative aliquot was also collected from the sample interval and transferred to a sealable plastic bag for discrete headspace determination. PID headspace readings are shown on the individual test pit excavation logs included as Appendix A. Per the Work Plan, PID scan values greater than 20 parts per million (ppm) required the collection of an additional sample for TCL VOC analysis using USEPA SW-846 methodology. Each VOC subsurface soil/fill sample collected was transferred directly into a laboratory supplied, pre-cleaned sample container for analysis of TCL VOCs.

3.3.2 Methods of Chemical Analysis

Surface and subsurface soil/fill samples were couriered under chain-of-custody command to TestAmerica, Inc., located at 10 Hazelwood Drive, Amherst, New York 14228 for chemical analysis as identified in Tables 1 and 2. TestAmerica is an independent, NY State Department of Health (NYSDOH) Environmental Laboratory Approval Program (ELAP)-certified facility approved to perform the analyses prescribed for this RI. TestAmerica also has NYSDOH Contract Laboratory Program (CLP) certification while maintaining ASP accreditation. TestAmerica employed analytical testing methods described in USEPA Test Methods for Evaluating Solid Wastes contained in SW-846 (revised 1991).

3.4 Groundwater

A groundwater monitoring program was conducted at the Site to assess groundwater quality and potential groundwater contaminant migration pathways. The following sections describe the groundwater investigation and sampling methodology. Figure 3 shows the monitoring well locations discussed in this section. Appendix B includes the boring and monitoring well construction logs for all wells at the Site.

3.4.1 Monitoring Well Installation

Following completion of the soil/fill portion of the investigation 12 new monitoring wells were installed to better determine groundwater flow direction and upgradient/ downgradient groundwater quality on the Phase III BPA. Figure 3 identifies the groundwater monitoring points sampled during the RI, including: existing monitoring wells MWS-04, MWN-10, MWN-19A/19B, and MWN 30A; and newly installed monitoring wells MWS-30A, MWS-31A, MWS-33A, MWS-34A, MWS-35A, MWN 56A through 61A, and MWN-62D.

Monitoring wells were generally installed at the proposed (RI Work Plan) locations, with some minor adjustments made in the field as necessary to avoid underground utilities.

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In addition, some well locations were renamed from the planned RI Work Plan designations to avoid overlap with well numbers designated on other Tecumseh parcels.

3.4.2 Monitoring Well Installation Methodology

Monitoring well installation methodology followed the RI Work Plan requirements. All new wells were constructed of 2-inch schedule 40 PVC with a lockable J-plug and protected by a vented, 4-inch diameter protective steel casing. Table 4 presents monitoring well construction details; the logs are included in Appendix B. Protective steel casings were installed to a depth of approximately 2 fbgs and anchored in a 2-foot by 2-foot concrete surface pad.

3.4.3 Monitoring Well Development

Both the newly installed and existing wells were developed prior to sampling using a dedicated disposable polyethylene bailer for surging and a peristaltic pump for purging in accordance with NYSDEC and TurnKey protocols. A slight kink in the casing at MWN-30A prevented lowering of a bailer or pump at this location, therefore purging and sampling was performed using dedicated ½" HDPE tubing and a foot valve. Non-aqueous phase liquid (NAPL) was not identified in any on-site monitoring wells during this investigation; however slight sheen and odor were identified in groundwater at MWN-30A.

3.4.4 Groundwater Elevation Measurements

Static depth to groundwater measurements from existing and newly installed wells/piezometers were performed on January 29, 2010 and repeated on December 2, 2011 and are summarized in Table 5. An isopotential map, prepared from the January 29, 2010 groundwater elevations, is included as Figure 4. Examination of the isopotential map indicates that shallow groundwater generally flows toward the minor water bodies of the Tecumseh Site (e.g., Smokes Creek and the SRWT) in conjunction with a westerly component (northwest portion of the Phase III BPA Site) toward major water body Lake Erie. The SRWT is in hydraulic connection with the shallow groundwater at the Site and flows south into Smokes Creek, which then flows westerly ultimately discharging into Lake Erie. In addition, a small groundwater divide is present at the northwest corner of the Site, which has been substantiated by the RFI as well as the off-site Benzol Plant Interim Corrective Measures (ICM) work. This divide has created a southerly groundwater flow component from the Benzol Plant area onto the Site, which is substantiated by groundwater concentrations of Benzol Plant constituents within wells MWN-19A and MWN-30A as discussed later in this report.

3.4.5 Monitoring Well Sampling

With the exception of well MWN-30A, all groundwater monitoring wells were sampled using low-flow sampling methodology per the RI Work Plan. As indicated above, the slightly kinked casing in well MWN-30A required sampling via dedicated poly tubing and a foot valve in lieu of a submersible pump. Appendix A includes the well sampling logs.

3.4.6 Methods of Chemical Analysis

Groundwater samples were couriered under chain-of-custody command to TestAmerica for analysis of the parameters identified on Tables 3a and 3b. TestAmerica employed analytical testing methods described in USEPA Test Methods for Evaluating Solid Wastes contained in SW-846, revised 1991.

3.5 Former Soaking Pit Building Foundation Investigation

At the NYSDEC's request, two borings were completed through the former Soaking Pit Building foundation to check for the presence of buried asbestos materials, which were allegedly disposed beneath the Soaking Pit Building foundation. The borings were located in the vicinity of demarcation signs posted along the former building foundation. The borings were completed using the drill rig hollow stem auger to grind through the concrete foundation slab and access underlying material. At boring ALF-01, concrete was encountered at 1.5 fbgs. No evidence field of ACM was recorded. Figure 3 shows the locations of the borings; the logs are included in Appendix B.

At boring ALF-02, refusal was encountered at approximately 1 fbgs. Augering continued to 1.5 fbgs where steel grating was encountered. A 3-inch spoon was advanced through the grating to a depth of approximately 4.5 fbgs, where refusal was again encountered. A sample was collected between 1.5-4.0 fbgs and transmitted to EMSL Laboratories in Depew, NY for ACM analysis.

Subsequently at the request of the NYSDEC, a limited test pit investigation was performed to confirm the presence of the concrete slab and the absence of near surface debris indicative of ACM. The investigation was performed on June 13, 2011 with over-site by NYSDEC personnel.

A mini tracked excavator was used to excavate several test pits along and over the building foundation. Attempts to excavate within the building foot print indicated an impenetrable concrete slab. As directed by NYSDEC personnel, test pits were excavated along the north side of the building foundation. The test pits indicated vaulted openings below the foundation concrete slab. The vaulted area contained groundwater and various electrical conduits. No suspect ACM were observed during the investigation.

3.6 Supplemental Test Pit Investigations

During the installation of power poles in October 2011 as part of the Steel Winds II Project, petroleum-impacted soils were encountered at a depth of approximately 6.5 fbgs. Subsequent discussions with the NYSDEC resulted in a supplemental test pit investigation to delineate the extent of petroleum impacts within the right-of-way of the Steel Winds II transmission lines and poles. The supplemental test pit investigation was performed from October 17 to 19, 2011. A mini-excavator was used to excavate 15 test pits identified as BP3-Supp-TP-1 through BP-3 Supp-TP-15. Figure 3 identifies the supplemental test pits located using GPS coordinates collected during the investigation. Appendix A includes the test pit excavation logs, and Appendix A-1 includes an electronic photo log.

On February 27 and 28, 2012, TurnKey sampling personnel revisited the Phase III BPA RI test pits that exceeded the hotspot cleanup criteria of 118 mg/kg for arsenic to determine the lateral and vertical extent of arsenic impact. The test pits further investigated include: BPA-3A-TP-6 (0-2); BPA-3-TP-28 (0-2); BPA-3A-TP-33 (0-2); and BPA-3A-TP-37 (0-2). The original test pit sample result and depth of impact was confirmed by collection and analysis of a sample adjacent to the original RI test pit sample (designated as "R"). Step-back tests pits were then excavated at distances of 10 and 20 feet in each compass direction from the original test pit sample location, with soil/fill samples collected at each step-back location using a dedicated stainless steel spoon to scrape a representative sample from the test pit sidewall to a maximum depth of 2 fbgs. The 10-foot samples were analyzed immediately upon receipt by TestAmerica Laboratory and the 20-foot samples were placed on hold pending the results of the 10-foot samples.

3.7 Quality Assurance/Quality Control

Field investigation data were collected and processed using the procedures outlined in the RI Work Plan to ensure representative sample collection and to achieve the data quality objectives of the Remedial Investigation. The field activities were recorded in bound project field books supplemented with TurnKey field forms as necessary. No Variance Logs were completed during the Remedial Investigation as deviations from the RI Work Plan were not substantial and limited to minor test pit location changes and increase in analytical parameters for collected soil/fill samples.

TurnKey collected blind duplicates and matrix spike/matrix spike duplicates (MS/MSD) at a frequency of 1 per 20 samples for each environmental media (i.e., soil/fill and groundwater). A trip blank, analyzed for the most comprehensive VOC list accompanied each cooler of aqueous media to be analyzed for VOCs. Tables 3a and 3b summarize the QA/QC sample locations.

3.8 Data Usability Summary

In accordance with the RI Work Plan, the laboratory analytical data from this investigation was independently assessed and, as required, submitted for independent review. Vali-Data of Western New York, LLC performed the data usability summary assessment for the soil/fill and groundwater samples collected from the eastern portion of the Site in 2008; Judy Harry of Data Validation Services located in North Creek, New York performed the data usability summary assessment for the remaining soil/fill and groundwater samples. The validation involved a review of the summary form information and sample raw data, and a limited review of associated QC raw data. Specifically, the following items were reviewed:

- Laboratory Narrative Discussion
- Custody Documentation
- Holding Times
- Surrogate and Internal Standard Recoveries
- Matrix Spike Recoveries/Duplicate Recoveries
- Field Duplicate Correlation
- Preparation/Calibration Blanks
- Control Spike/Laboratory Control Samples
- Instrumental IDLs
- Calibration/CRI/CRA Standards
- ICP Interference Check Standards

- ICP Serial Dilution Correlations
- Sample Results Verification

The data usability evaluations were conducted using guidance from the USEPA Region 2 validation Standard Operating Procedures, the USEPA National Functional Guidelines for Data Review, as well as professional judgment. Appendix C includes the Data Usability Summary Reports (DUSRs), which were prepared in accordance with Appendix 2B of NYSDEC's draft DER-10 guidance. Those items listed above that demonstrated deficiencies are discussed in detail in the DUSRs. Analytical results that were edited or qualified per the DUSR have been modified appropriately on Tables 6 through 8. Appendix D includes the analytical data packages.

4.0 RI FINDINGS

This section describes pertinent field observations and chemical analytical results in surface soil/fill, subsurface soil/fill, and groundwater.

4.1 Field Observations

The surface of the Phase III BPA is sparsely vegetated with voluntary indigenous shrubs, grasses, weeds, and emergent trees (mostly poplars). Due to the nature of the slag/soil fill there is very little ponded storm water or surface runoff as most of the precipitation seeps into the highly permeable slag/soil fill. Subsurface lithology generally consisted of a soil/fill unit comprised of non-cohesive coal and coke fines; slag; cindery ash and brick; concrete; gravel; silt; reddish silt (precipitator dust); and sand, all of which are ubiquitous at the Site. Below the soil/fill unit is a native silty clay or clayey silt layer; a peat layer was noted at some test pits immediately below the soil/fill unit. Groundwater was generally encountered within the soil/fill unit approximately 5 to 6 fbgs.

Field evidence of potential significant soil/fill impacts, characterized by moderate to strong odors, unusual discoloration, or visible evidence of product layer, and/or PID readings in excess of 50 ppm was identified at certain test pit locations as presented below. In some instances supplemental test pits were excavated (noted below and shown on Figure 3) to determine whether the impact was isolated or suggested a potential source area needing further characterization for evaluation of remedial alternatives.

- **BPA-3-TP-2:** At approximately 2-4 fbgs, a PID reading slightly above 50 parts per million (ppm) was detected and a petroleum-like odor was noted.
- **BPA-3-TP-42:** At approximately 0.5-1.5 fbgs, a PID reading of 400 ppm was encountered and suspected red paint was observed. The test pit area was expanded with similar observations recorded across an area approximately 10’ x 10’ x 1’ deep.
- **BPA-3-TP-54:** Saturated soil within this test pit, which was encountered at a depth of approximately 8 fbgs, exhibited moderate odor and groundwater sheen. Saturated soil/fill exhibited a PID reading of approximately 102 ppm. An additional two test pits were excavated in this area to check for a possible contamination source; no visual or olfactory evidence of impact was observed. The sample collected from the original test pit indicated no concentrations above the commercial SOCs.

- **BPA-3-TP-56:** A trace of tar-like material was observed between 0.5 and 3 fbgs in the test pit excavated within the area of the former Linde Plant. The sample collected from the 0-2' interval indicated SVOC levels consistent with those found elsewhere on the Site and only benzo(a)pyrene was reported at a concentration slightly above the commercial SCO.
- **BPA-3A-TP-8:** At approximately 7 fbgs, blackish fill exhibiting a PID reading of 82 ppm was recorded. A slight sheen and moderate odor were encountered at the water table (approximately 8.5 fbgs). An additional five test pits were excavated; no visual or olfactory evidence of impact was observed and the maximum PID reading was 5 ppm.
- **BPA-3A-TP-25:** At approximately 7 feet below grade (i.e., groundwater interface) saturated soils exhibiting a PID reading of 72.5 and slight odor was recorded.
- **BPA-3A-TP-44:** Petroleum-impacted groundwater with visible sheen and oil/tar impact was identified at the water table (approximately 7 fbgs). An additional 16 test pits were excavated in this area; similar impact was observed within 8 of the 16 supplemental test pits.
- **BPA-3A-TP-47:** Blue-stained soils were identified at 0-3 fbgs at this location, which is in the vicinity of a former gas holder.
- **BPA-3A-TP-53:** At approximately 5 fbgs, a PID reading of 400 ppm was detected with moderate odor. This test pit was excavated adjacent to the historic off-site underground storage tank area which is part of SWMU P-11 (i.e., Benzol Yard) currently subject to interim corrective measures under the RCRA Corrective Action Program. Field evidence of groundwater impact (sheen, odor) was identified during development and sampling of existing well MWN-30A. An additional 10 test pits were excavated in this area. Observations within these supplemental test pits include: slight to moderate odors; light sheen on fill and water; and PID readings up to 130 ppm. Three of the 10 test pits had no field evidence of impact.
- **BPA-3A-TP-58:** Moderate odor and sheen were identified at the water table (approximately 7 fbgs); a PID reading of 72.5 ppm was recorded at this depth. This test pit was also excavated adjacent to the historic off-site underground storage tank area. An additional six test pits were excavated in this area. Observations within these supplemental test pits include: slight to moderate odors; light to heavy sheen on water (one area on fill); and PID readings up to 30 ppm. Three of the six test pits had no field evidence of impact.

In addition, minor field observations were noted during excavation of the following test pits:

- **BPA-3-TP-22:** A petroleum-like odor was noted below the water table at 6.5 fbgs. No field evidence of impact was observed. The corresponding sample collected from the 0-2' interval per the RI Work Plan contained concentrations of COCs similar to those identified elsewhere. No petroleum-like odors were noted in the surrounding test pits.
- **BPA-3-TP-61/-62:** Sheen was observed on the groundwater at 7 fbgs. At the request of NYSDEC, supplemental test pit BPA-3-TP-62A was excavated. No field evidence of sheen or migration to Smokes Creek was found. In addition, the 0-2' interval within test pit BPA-3-TP-62 was sampled per the RI Work Plan and found to contain concentrations of COCs similar to those identified elsewhere.
- **BPA-3A-TP-19:** A slight odor was noted during excavation of this test pit; however, no visual impacts were observed. A maximum PID reading of 8.2 ppm was noted at the water table (7 fbgs).
- **BPA-3A-TP-20:** A slight sheen was noted on the water at 5.5 fbgs; however, no odor was noted and the PID readings were 0.0 ppm.
- **BPA-3A-TP-21:** A slight sheen was noted on the water at 6 fbgs; however, no odor was noted and the maximum PID reading was 3.3 ppm
- **BPA-3A-TP-24:** A slight odor was noted during excavation of this test pit; however, no visual impacts were observed and all PID readings were 0.0 ppm.
- **BPA-3A-TP-51:** A slight odor was noted during excavation of this test pit; however, no visual impacts were observed and the maximum PID reading was 0.3 ppm.

4.2 Soil/Fill

Chemical data for soil/fill samples collected during the RI are discussed in the following sections and are summarized in Tables 6 and 7.

For the purpose of comparison, Tables 6a and 7a include "Unrestricted Use" Soil Cleanup Objectives (SCOs) as published in 6NYCRR Part 375-6 "Remedial Program Soil Cleanup Objectives." Unrestricted Use SCOs are deemed protective of human health and groundwater irrespective of end use of the property. Accordingly, the unrestricted use SCOs represent conservative soil/fill cleanup objectives that are often difficult to achieve on former industrial sites in urban areas. Tables 6b and 7b compare the data to restricted-commercial use SCOs per 6NYCRR Part 375-6. These values are deemed protective of human health, in the absence of other controls, for sites where end use will be limited to commercial or more restrictive (e.g., industrial) uses, which are considered the reasonably anticipated future uses for the Phase III BPA per the land use analysis presented in Section 8.4.

RI Sample locations where reported concentrations exceed respective SCOs are shaded on the data summary tables.

As indicated on Tables 6a and 7a, several exceedances of the unrestricted use SCOs were noted, particularly for carcinogenic polyaromatic hydrocarbons; metal COPCs; and, to a lesser extent, PCBs. Based on the widespread nature of the unrestricted use SCO exceedances, the discussions below are limited to soil/fill quality as indicated by the more meaningful comparison to restricted-commercial use SCOs. To the extent commercial use SCOs are exceeded, unrestricted use SCOs would be exceeded as well.

4.2.1 VOCs

The commercial SCOs for benzene, xylene, 1,2,4-trimethylbenzene, and 1,3,5-trimethylbenzene were exceeded at test pit sample BPA-3A-TP-53 collected from 5 to 7 fbgs (see Table 7b). As described in Section 4.1, field evidence of impact including a PID reading of 400 ppm was noted at this interval.

No other test pit locations/samples exhibited an exceedance of the commercial SCOs for VOCs.

4.2.2 SVOCs

Several locations exhibited exceedances of the commercial SCOs for one or more PAHs. Specifically, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, and indeno(1,2,3-cd)pyrene) were reported above commercial SCOs at several locations; however, the exceedances were generally within an order of magnitude of the SCO.

4.2.3 Inorganic Compounds

Arsenic was reported above the commercial SCO at the majority of the sample locations. Other inorganic compounds reported above commercial SCOs included cadmium (3 samples), copper (2 samples), lead (4 samples), manganese (4 samples), mercury (5 samples), and cyanide (4 samples). In all instances the reported exceedances were within an order of magnitude of the SCO with the exception of cyanide and mercury at sample location BPA-3A-SS-49 (i.e., a surface soil/fill sample collected at NYSDEC's request from blue-stained soil near the former gas holder) and mercury in test pit BPA-3A-TP-47.

4.2.4 PCBs

The result for PCB Aroclor 1260 slightly exceeded its commercial SCO at BPA-3A-TP-32 at 0-2 fbgs No other PCBs were not detected above restricted-commercial SCOs.

4.3 Groundwater

Groundwater quality data was collected during the RI from the shallow overburden or fill unit at the Site, with a deep (bedrock) sample collected from MWN-62D. Table 4 summarizes groundwater monitoring well construction details. Tables 8 and 9 summarize the analytical data, including field QC samples, along with Class GA Groundwater Quality Standards and Guidance Values (GWQS/GVs) per NYSDEC TOGS 1.1.1. The findings are discussed below.

4.3.1 VOCs

With limited exception, groundwater samples exhibited non-detectable or trace (estimated) concentrations of VOCs well below the GWQS/GVs. Only three locations (i.e., wells MWN-19A, MWN-30A, and MWN-61A) contained concentrations of VOCs above the GWQS/GVs for one or more parameters. Well MWN-61A exhibited toluene at an estimated concentration of 6 ug/L as compared to the GWQS/GV of 5 ug/L, remaining VOCs at MWN-61A were reported as non-detect or were below the standards. Wells MWN-30A and, to a lesser extent, MWN-19A exhibited exceedances for one or more parameters (see Table 9). Both of these latter monitoring wells are located within the area of visually observed soil/fill impact in BPA-3A-TP-53, as described above, and contain similar parameters.

4.3.2 SVOCs

The majority of the sampled locations exhibited SVOCs at non-detectable concentrations or at low concentration levels below GWQS/GVs As indicated on Tables 8 and 9, wells exhibiting one or more SVOCs above the GWQS/GV include MWS-35A, MWS-04, MWS-31A, MWN-61A, MWN-19A, MWN-19B, and MWN-30A. However, with the exception of MWN-30A, the total (cumulative) SVOC concentrations at each of these locations are less than 1 ppm, which is typically considered, along with other factors, to be the point at which groundwater impact is considered de-minimis or subject to no further remedial measures under NYSDEC's Petroleum Spills program. As discussed in Section 4.3.1, MWN-30A is located within the area of visually observed soil/fill impact in BPA-3A-TP-53.

4.3.3 Inorganic Compounds

Total metals were reported as non-detect or at concentrations well below GWQS/GVs for all of the COPC metals with the exception of well MWS-31A, which exhibited slight exceedance of the standard for total arsenic. However, the sample from MWS-31A yielded field turbidity measurements greater than TurnKey's threshold value of 50 nephelometric units (NTUs). Accordingly, a filtered metals sample was collected and from well MWS-31A and was analyzed for soluble COPC metals. The filtered sample data were reported as non-detect or below GWQS/GVs for all the analyzed inorganic compounds, including arsenic.

Similarly, non-COPC metals were detected below the GWQS/GVs at all locations with the exception of MWS-35A, which exhibited exceedance of the standard for total iron, and MWN-19A, which exceeded the GWQS/GVs for total iron, manganese, and sodium.

4.3.4 PCBs

All PCBs analyzed were reported as non-detect; therefore, PCBs were not reported on Tables 8 and 9.

4.4 Soaking Pit Building ACM Sample

Appendix E includes the sample results from ALF-02 as reported by EMSL. As indicated, no ACM were identified in the sample.

Following the RI, TurnKey located a site drawing (#180946) showing a concrete tunnel beneath what was formerly a narrow gauge track referred to as the "ingot buggy aisle" along the southern portion of the Soaking Pit Building foundation. It is likely that if ACM and miscellaneous debris from the demolition of site buildings was disposed within the Soaking Pit Building it would have occurred within a portion of this 15-ft by 16-ft tunnel. Appendix I includes a copy of Drawing #180946. Figure 6 shows the assumed E-W extent (based on demarcation signs) of the alleged asbestos disposal area within this 15-ft tunnel.

4.5 Supplemental Test Pit Investigations

Results of the supplemental test pit investigation performed October 17-19, 2011 in the right-of-way of the Steel Winds II Project indicate weathered petroleum impacts, evident by olfactory petroleum odors and PID readings >50 ppm within the shallow groundwater saturated zone at a depth of approximately 6.5 fbgs. An oily sheen was also observed within the saturated soils and shallow groundwater. The petroleum impacts were observed in test pits BP3-Supp-TP-1, TP-4, TP-5, TP-7, TP-10, TP-11, and TP-12. Figure 5 identifies the location of the test pits and the approximate extent of groundwater impact.

Table 10 summarizes the arsenic analytical results for the surface soil/fill samples collected from the supplemental test pits excavated February 27 and 28, 2012. The supplemental sampling indicates that arsenic falls below 118 mg/kg within 10 feet of each location except in the westerly direction at BPA-3-TP-28 and BPA-3A-TP-6. Accordingly, the 20-foot westerly sample was analyzed at these locations. At BPA-3-TP-28, the 20-foot arsenic sample result fell to 74.4 mg/kg; however the 20-foot sample at BPA-3A-TP-6 (0-2) remained above 118 mg/kg. This area will require further delineation to the west prior to or during hotspot excavation. Appendix D[2] includes the analytical data packages, and Appendix C includes the third party DUSR for this sampling.

[2] One of the analytical data packages in Appendix D includes samples collected from the Phase II BPA. These latter results are not summarized on Table 10 as they are not relevant to the Phase III BPA.

5.0 FATE AND TRANSPORT OF COPCS

Soil/fill sample results exceed SCOs for certain COPCs. In addition, isolated groundwater samples indicated exceedance of Class GA GWQS/GVs for certain parameters as well. Accordingly, the soil/fill data were incorporated with the physical characterization of the Site to evaluate the fate and transport of COPCs in Site media. The mechanisms by which the COPCs present above SCOs can migrate to other areas or media are briefly outlined below.

5.1 Airborne Pathways

Potential migration pathways involving airborne transport of soil/fill COPCs include erosion and transport of soil particles and sorbed chemical constituents in fugitive dust emissions, and volatilization from subsurface soil vapor.

5.1.1 Fugitive Dust

Chemicals present in soil/fill can be released to ambient air as a result of fugitive dust generation. Since the Site is presently unoccupied and is substantially vegetated with shrubs, grasses, and trees, and because most of the fill consists of large grained slag, suspension due to wind erosion or physical disturbance of surface soil/fill particles is unlikely under the current use scenario. Under the planned future commercial/ industrial land use, the majority of the Site would be covered by asphalt and structures with only small areas covered by grass and/or ornamental landscaping. Fugitive dust may be generated during excavation activities either during or following redevelopment. Therefore, this migration pathway is potentially relevant under the reasonably anticipated future land use scenario.

5.1.2 Volatilization

Volatile chemicals, when present in soil/fill at elevated levels, may be released to ambient air or future building indoor air through volatilization from or through the soil/fill pore space. Volatile chemicals typically have a low organic-carbon partition coefficient (Koc), low molecular weight, and a high Henry's Law constant. VOCs were not detected in Site soil/fill at concentrations above restricted commercial SCOs with the exception of the sample collected from test pit BPA-3A-TP-53 collected from 5 to 7 fbgs. Similarly, groundwater samples generally yielded not-detectable or trace levels of VOCs at or near Class GA GWQS/GVs with the exception of samples from overburden wells MWN-19A and MWN-30A. Therefore, the soil and groundwater-to-air pathways may be relevant near the northwest portion of the Site where these samples were collected.

5.2 Waterborne Pathways

5.2.1 Surface Water Runoff

Under the current use scenario, the potential for soil particle transport with surface water runoff is low, as the Site is mostly flat lying and contains a significant amount of vegetative growth. In addition the well-drained slag/fill matrix precludes surface water ponding. Uncontrolled off-site transport is further limited because the Site is outside the 100-year floodplain. Under the reasonably anticipated future use scenario, the Site will be substantially covered by asphalt, buildings and landscaping, mitigating transport of subsurface (i.e., covered) soil/fill via storm water runoff. Although stormwater runoff during excavation activities is possible during the future use scenario, erosion controls are typical construction practice and would be implemented as a component of the Site Management Plan required for BCP Sites that do not achieve unrestricted use conditions.

Based on the RI data, there are no migration pathways from the Phase III BPA that would promote surface water or sediment quality issues in Smokes Creek or the SRWT, with the possible exception of the former Slabbing Mill Return Water Trench, located to the south of the Electrical Department and Welfare buildings, which discharges to Smokes Creek. As outlined in the December 2011 CMS Report (Ref. 8), no remedial action is proposed for the SRWT. Information gathered under the Corrective Measures Study (CMS) on the surface water may determine that upland sources exist. If evidence is noted that a historical point source has contributed to impacts in the SRWT, then remedial actions will be required through the 25 foot setback into the Business Park III area as necessary.

The Interim Corrective Measure (ICM) dredging of the Lower Reach of Smokes Creek in combination with construction and consolidation of tar wastes into the ATP-ECM containment cell is expected to eliminate the need for additional dredging in this portion of Smokes Creek as all anticipated sources and impacted sediment have been mitigated. Therefore, no further work is warranted on Smokes Creek sediments by Tecumseh (other than maintenance dredging that involves biennial mechanical dredging of accumulated sediments at the Lake Erie outlet to maintain the navigability and flow characteristics of the Creek). No other specific remedial measures are planned beyond the remediation of solid waste management units (SWMUs) and areas of concern (AOCs) in the vicinity of these surface water bodies.

5.2.2 Leaching

Localized VOC impacts were identified in groundwater samples collected from MWN-30A and MWN-19A. The relatively insoluble nature of the majority of the COPCs identified at elevated concentration in soil/fill and the general absence of significant overburden groundwater impacts in other on-site groundwater monitoring wells indicates that the chemical migration via leaching pathway is limited to the northwest portion of the Site near MWN-19A and MWN-30A.

5.3 Exposure Pathways

Based on the analysis of chemical fate and transport provided above, the pathways through which Site COPCs could potentially migrate to other areas or media are fugitive dust emissions via physical disturbance of soil particles and, to a lesser extent, soil and groundwater vapor-to-air volatilization and soil leaching. However, given the absence of existing site occupancy; the distance between the Site and occupied structures; the existing deed restriction preventing groundwater use anywhere on the Tecumseh property; and NYSDEC/NYSDOH requirements for dust controls during excavation at remedial program construction sites, it is unlikely that site-related COPCs would reach off-site receptors at significant exposure point concentrations.

6.0 QUALITATIVE HUMAN HEALTH EXPOSURE AND WILDLIFE IMPACT ASSESSMENT

6.1 Human Health Exposure Assessment

A qualitative exposure assessment consists of characterizing the exposure setting (including the physical environment and potentially exposed human populations), identifying exposure pathways, and evaluating contaminant fate and transport.

An exposure pathway describes the means by which an individual may be exposed to contaminants originating from a site. An exposure pathway has five elements:

- A receptor population.
- A contaminant source
- A contaminant release and transport mechanism
- A point of exposure
- A route of exposure

The receptor population is the people who are or may be exposed to contaminants at a point of exposure. The source of contamination is defined as either the source of contaminant release to the environment (such as a waste disposal area or point of discharge), or the impacted environmental medium (soil, air, biota, water) at the point of exposure. Contaminant release and transport mechanisms carry contaminants from the source to points where people may be exposed. The point of exposure is a location where actual or potential human contact with a contaminated medium may occur. The route of exposure is the manner in which a contaminant actually enters or contacts the body (i.e., ingestion, inhalation, dermal absorption).

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 but could reasonably occur. An exposure pathway may be eliminated from further evaluation when any one of the five elements comprising an exposure pathway does not exist in the present and will not exist in the future.

6.1.1 Potential Receptors

The identification of potential human receptors is based on the characteristics of the Site, the surrounding land uses, and the probable future land uses. The Phase III BPA Site is presently unoccupied, with the exception of active rail lines. Under current Site use conditions, receptors would be limited to trespassers who may traverse the Site (although presently mitigated by fencing and security measures); and construction workers that may access the Site to service utilities, perform rail maintenance, or similar duties. Trespassers might be comprised of adolescents and adults, whereas construction workers would be limited to adults.

In terms of future use, the current Site owner (Tecumseh Redevelopment) has developed a Master Plan for commercial/industrial redevelopment of the Site consistent with surrounding property use and site zoning. Future site use is further discussed under Section 8.4, which indicates that the reasonably anticipated future use of the Site is for commercial/industrial purposes. Exposed receptors under the future use scenario may be comprised of indoor workers, outdoor workers (e.g., groundskeepers or maintenance staff), and construction workers who may be employed at or perform work on the property. Site visitors/customers may also be considered receptors; however, their exposure would be similar to that of the indoor worker but at a lesser frequency and duration. Therefore, consideration of the indoor worker is conservatively protective of the site visitor.

6.1.2 Contaminant Sources

Section 4.0 discusses the COPCs present in unremediated Site media at elevated concentrations. In general, these are limited to SVOCs and select inorganic COPCs in surface soil/fill and, to a lesser extent, in subsurface soil/fill. Elevated VOCs and SVOCs were detected in the sample collected from 5 to 7 fbgs at test pit BPA-3A-TP-53. Groundwater contained elevated concentrations of VOCs but only at two locations within the same general petroleum-impacted soil/fill area.

6.1.3 Contaminant Release and Transport Mechanisms

Contaminant release and transport mechanisms are specific to the type of contaminant and site use. For the non-volatile COPCs present in site-wide soil/fill, contaminant release and transport mechanisms will generally be limited to fugitive dust migration and direct contact during intrusive work (e.g., during construction and grounds keeping activities), as the Site is currently covered by vegetation and will be substantially covered by roads, parking lots, buildings, and landscaping after redevelopment.

For VOCs present in the petroleum-impacted soil/fill and groundwater, the potential exists for exposure through pathways associated with soil gas migration. This would include both the outdoor pathway (primarily to construction workers involved in subsurface activities where VOCs are present at elevated concentration) as well as the indoor vapor intrusion pathway, also referred to as "soil vapor intrusion."

Concerning the indoor air pathway, the NYSDOH has issued a guidance document for assessing potential impacts to indoor air via soil vapor intrusion (Ref. 7). This document presently provides guidance criteria for seven chlorinated aliphatic VOCs, none of which were detected at elevated concentration in the soil/fill or groundwater samples collected during the Phase III Business Park RI. Rather, the VOCs detected above commercial SCOs are petroleum-based compounds and were limited to benzene, xylene, 1,2,4-trimethylbenzene, and 1,3,5-trimethylbenzene at test pit sample BPA-3A-TP-53. Several petroleum-based VOCs were also detected in overburden groundwater above the Class GA standards/guidance values in this same area of the Site.

As such, under the future (un-remediated) use scenario, the potential exists for soil vapor migration in the area of the Site proximate to BPA-3A-TP-53. For the current use scenario, soil vapor intrusion is not a concern for the existing buildings. Concerning the outdoor air pathway, the potential exists for exposure to VOCs under the current and future use scenarios for construction workers engaged in activities proximate to BPA-3A-TP-53.

In accordance with Section 3.6 of DER-10, the conditions under which a building is subject to soil vapor investigation include scenarios where: i) a source of volatile chemical contamination in subsurface soil or groundwater is identified in the vicinity of the buildings or future building site; or ii) based on known prior industrial, commercial, or other land uses, a source of volatile chemical contamination in subsurface soil or groundwater may be suspected.

No soil/fill exhibiting field evidence of gross impacts were identified in the vicinity of the Electrical Department building or WQS#3A buildings, nor were elevated concentrations of VOCs detected in soil or groundwater in these areas of the Site. Concerning contamination levels and sources of impact, there was no field or analytical evidence of grossly impacted soils, NAPL, or elevated VOC levels in the test pit atmosphere (PID readings were 0 ppm for downgradient test pit BP3A-TP-4) or groundwater in downgradient monitoring wells (MWS-31A or MWS-04) near the Electrical Department building. In fact, the adjacent groundwater monitoring well samples were compliant with Class GA standards, and the primary constituents of concern relative to soil vapor intrusion (i.e., chlorinated VOCs, which have low acceptable exposure limits and are subject to numeric guidance limits per the NYSDOH), were reported as non-detectable in wells MWS-31A and MWS-04. Benzene was also reported as non-detectable in the groundwater samples collected from shallow overburden groundwater at an approximate depth of 9-10 fbgs.

Concerning location, the Electrical Department building was historically used for storage of new and reusable electrical wire, insulators, cabinets, and related components. It is not in an area where processing of petroleum byproducts occurred (e.g., Benzol Yard) or where other sources of VOC impact are suspected. The tanks that were present outside this building were empty, aboveground storage tanks temporarily stages in the building parking area while awaiting re-use or decommissioning. Therefore it appears that the sub-slab vapor intrusion pathway does not pose a risk under the current or reasonably-anticipated future use scenario.

6.1.4 Point of Exposure

Based on the widespread exceedance of commercial SCOs for certain ubiquitous parameters (i.e., arsenic and PAHs), the point of exposure is defined as the overall BCP Site. For both the current and future use scenarios, groundwater is not considered to pose a relevant mechanism due to the absence of significant groundwater impacts, the availability of a local municipal potable water source, the depth to groundwater (greater than 4.5 feet; the standard depth of utilities and foundation footers), and the existence of a deed restriction that does not allow the use of Site groundwater.

6.1.5 Route of Exposure

Based on the types of receptors and points of exposure identified above, potential routes of exposure are listed below:

<u>Current Use Scenario</u>

- Construction Worker – skin contact, inhalation, and incidental ingestion

Future Use Scenario

- Indoor Worker – inhalation
- Construction and Outdoor Worker – skin contact, inhalation and incidental ingestion

6.1.6 Exposure Assessment Summary

Based on the above assessment, the potential exposure pathways for the un-remediated site condition are listed below.

Current Use Scenario

- Construction Worker – direct contact, incidental ingestion, and inhalation of non-volatile COPCs present in site-wide soil/fill, and inhalation of volatile COPCs present in petroleum-impacted soil/fill during intrusive activities.

Future Use Scenario

- Indoor Worker – inhalation of volatile COPCs present in petroleum-impacted soil/fill via indoor air migration.
- Construction and Outdoor Worker – direct contact, incidental ingestion and inhalation of non-volatile COPCs present in site-wide soil/fill, and inhalation of volatile COPCs present in petroleum-impacted soil/fill during intrusive activities

In most instances, these exposures can be readily mitigated during and following redevelopment through proper soil/fill management, and engineering controls including placement of asphalt, building, and landscape cover and construction of vapor barriers or sub-slab depressurization systems in newly constructed buildings.

6.2 Fish and Wildlife Impact Assessment (FWIA)

The Site has been vacant since the former BSC steel plant ceased production in 1983. The historical use of the Site has eliminated the majority of native species. The Site is mainly populated by low-lying vegetation and small stature early successional trees (e.g., eastern cottonwood and poplar). The majority of fauna found on the Site are avian and small mammal species with the exception of the white-tailed deer. No federally listed or proposed threatened or endangered species are known to exist in the project area (USFWS 1999).

The Phase III BPA is slated for redevelopment as a commercial/ industrial area, consistent with surrounding property. Roadways, buildings, parking facilities, and maintained ornamental landscaping will substantially limit availability of suitable cover type for reestablishment of biota. As such, based on the Fish and Wildlife Resource Impact Analysis Decision Key included as Appendix F (NYSDEC DER-10 guidelines, Appendix 3C), no fish and wildlife resources impact analysis is warranted.

7.0 SUMMARY AND CONCLUSIONS

The RI findings indicate conditions consistent with the historic use of the Site for steel-making and finishing operations, and the widespread presence of fill materials containing slag and cindery ash. Key observations and findings from the soil/fill investigation are listed below:

- Base-neutral SVOCs (i.e., PAHs) were detected above the SCOs at several test pit locations across the Site. However, total SVOC concentrations were reported at less than 500 parts per million, which NYSDEC's CP-51 Soil Cleanup Policy (October 2010) has provided as an alternative soil cleanup objective (i.e., in lieu of individual SCOs) for soils where end use of the site will be for commercial or industrial purposes and where a cover (1 foot of clean soil, building and/or pavement) and Site Management Plan will be implemented.
- Arsenic was also detected above the commercial SCO of 16 mg/kg at several test pit locations. Arsenic is a ubiquitous metal with urban background soils in New York State frequently containing concentrations in excess of the commercial SCO, particularly at active and former industrial properties characterized by historic slag fill deposition and coal burning, such as that which occurred on the subject property. Accordingly, comparison of the arsenic data to site-specific background or average concentrations is considered appropriate. To determine the site background concentration, all arsenic data for the Phase III Business Park Area was tabulated and the 95% upper confidence limit (95% UCL) on the mean was calculated (see Appendix G). The data were then reviewed relative to the 95% UCL, with 5x the UCL considered representative of a potential hotspot. Review of the data indicates that none of the arsenic concentrations exceed 5x the UCL value. Based on this analysis and further discussions with the NYSDEC, a site-specific SCO of 118 ppm has been established as the screening criteria for hotspot identification. The following four test pit areas exceeded this site-specific SCO: BPA-3A-TP-6 (0-2); BPA-3-TP-28 (0-2); BPA-3A-TP-33 (0-2); and BPA-3A-TP-37 (0-2). The supplemental test pit investigation surrounding these test pit locations undertaken in February 2012 provided a more definitive delineation of impact within these areas.
- Field observation of potential subsurface impact by petroleum was recorded at certain test pit locations as discussed in Section 4.1. However, with the exception of test pit BPA-3A-TP-53, samples from the associated depth intervals yielded VOC concentrations below commercial SCOs and SVOC concentrations at levels consistent with those found across the Site, suggesting that the observations are representative of residual, weathered organics that do not constitute a remaining source area.

- Mercury and cyanide were identified at elevated levels in shallow fill at BPA-3A-TP-47, BPA-3A-TP-49 and BPA-3A-SS-49 (i.e., proximate to the former gas holder). In addition, bluish staining was observed at BPA-3A-TP-47 and BPA-3A-SS-49. These findings suggest potential localized shallow releases from historic gas holder instrumentation and/or purifier box waste.
- The observation of apparent red paint at BPA-3-TP-42 (0.5 to 1 fbgs) is substantiated by the detection of elevated lead in the associated sample.
- The two borings on the former Soaking Pit Building foundation did not indicate the presence of asbestos (although refusal was encountered at one of the locations, allowing for collection and laboratory analysis of only one subsurface sample). Notwithstanding the potential for subsurface ACM in this area, the borings indicate a thick concrete slab present at grade, mitigating potential for exposure. Based on review of historic drawings, it is possible that a portion of the historic concrete-lined tunnel beneath the building foundation contains asbestos material.

The groundwater investigation findings indicate that, as would be expected based on the relatively low solubility of the soil/fill constituents prevalent in the soil/fill matrix, groundwater is not impacted by COPCs except for:

- Weathered petroleum impacts which were evident in the right-of-way of the Steel Winds II Project within the shallow groundwater saturated zone at a depth of approximately 6.5 fbgs. The petroleum impacts were observed in test pits BP3-Supp-TP-1, TP-4, TP-5, TP-7, TP-10, TP-11, and TP-12.
- The petroleum-impacted area near monitoring wells MWN-19A and MWN-30A. Review of the isopotential map presented as Figure 4 indicates that these impacts as well as the impacted soils near the water table (i.e., smear zone) are likely the result of shallow groundwater migration/fluctuation from off-site SWMU P-11 (Benzol Yard) within the CMS Area.

Based on the RI Findings, remedial measures are warranted. The remaining sections constitute an Alternatives Analysis Report in accordance with NYSDEC DER-10 guidance.

8.0 DEVELOPMENT OF REMEDIAL ACTION OBJECTIVES AND GENERAL RESPONSE ACTIONS

The development of an appropriate remedial approach begins with definition of site-specific Remedial Action Objectives (RAOs) to address substantial human health and ecological risk or other significant environmental issues identified in the Remedial Investigation. General Response Actions are then developed as potential means to achieve the RAOs.

8.1 Remedial Action Objectives

RAOs for this Site have been developed based on the findings of the RI, which have identified elevated soil/fill concentrations (particularly arsenic and PAHs) across the majority of the Site, and localized "hotspot" areas in discrete portions of the Site as listed below. Hotspots are soil/fill areas where non-ubiquitous constituents significantly exceed industrial SCOs and/or had notable field observations indicating gross contamination (free product, significant staining, excessive odor, high PID readings). Those areas with soil/fill above the commercial SCOs will require cover under commercial reuse scenarios; however, unless these soils are also grossly impacted, no further investigation or remediation is warranted.

- Mercury and cyanide-impacted shallow soil/fill near BPA-3A-TP-47, BPA-3A-TP-49, and BPA-3A-SS-49.
- Lead-impacted soil/fill at BPA-3-TP-42.
- Visual and olfactory impacts suggesting potential tar-impacted material in test pit BPA-3A-TP-44.
- Arsenic-impacted surface soil/fill at four locations with concentrations in excess of site-specific SCO of 118 ppm.

In developing the RAOs, consideration is given to the reasonably anticipated future use of the Site (i.e., commercial and/or industrial reuse – see Section 8.4), and the applicable Standards, Criteria, and Guidance (SCGs), including soil cleanup guidance per 6 NYCRR Part 375 and groundwater quality standards and guidance values per Technical and Operational Guidance Series (TOGS) 1.1.1. Accordingly, the RAOs for the Site are to:

- Remediate hotspot soil/fill as described above.

- Mitigate exposure to soil/fill where contaminant levels exceed restricted-commercial SCOs.
- Mitigate potential for exposure to ACM, if present, beneath the former Soaking Pit Building foundation.
- Mitigate potential environmental risk resulting from petroleum-impact to shallow groundwater.
- Implement and maintain engineering and institutional controls to assure that the Site is not used in a manner inconsistent with the reasonably anticipated future use scenario.

8.2 General Response Actions

General Response Actions are broad classes of actions that may satisfy the RAOs. General response actions form the foundation for the identification and screening of remedial technologies and alternatives. General Response Actions considered for the Site are:

- Excavation and treatment or off-site disposal of impacted soil/fill.
- Treatment of petroleum-impacted shallow groundwater and associated saturated and smear zone soil/fill.
- Engineering controls or cover to mitigate contact and contaminant transport.
- Institutional controls (e.g., deed restrictions and other administrative measures) to restrict use of the site and mitigate unacceptable exposure.

8.3 Standards, Criteria and Guidance (SCGs)

This section provides a summary of the standards, criteria, and guidance (SCGs) that are considered applicable or relevant and appropriate to remediation of the Site. SCGs include New York State laws, regulations, and guidance as well as more stringent Federal requirements.

Applicable SCGs pertain to cleanup standards, standards of control, and other substantive requirements, criteria, or limitations promulgated under NY State or Federal environmental or facility siting laws that specifically address a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance at a site. An applicable requirement must directly and fully address the situation at the site.

Relevant and appropriate SCGs pertain to cleanup standards, standards of control, or other substantive requirements, criteria, or limitations promulgated under NY State or Federal environmental or facility siting laws that, while not "applicable" to a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance at a site, address problems or situations sufficiently similar to those encountered at the site that their use is well suited to the particular site.

SCGs are classified as chemical-, action-, or location-specific. Chemical-specific SCGs are usually health- or risk-based concentrations in environmental media (e.g., air, soil, water), or methodologies that when applied to site-specific conditions, result in the establishment of concentrations of a chemical that may be found in, or discharged to, the ambient environment. Location-specific SCGs generally are restrictions imposed when remedial activities are performed in an environmentally sensitive area or special location. Some examples of special locations include floodplains, wetlands, historic places, and sensitive ecosystems or habitats. Action-specific SCGs are restrictions placed on particular treatment or disposal technologies. Examples of action-specific SCGs are effluent discharge limits and hazardous waste manifest requirements.

Additional discussions concerning the specific chemical, action and location-specific SCGs that may be applicable, relevant, or appropriate to remedy selection at the Site are presented below. In each case, the identified SCGs are generally limited to regulations or technical guidance in lieu of the environmental laws from which they are authorized, as the laws are typically less prescriptive in nature and are inherently considered in the regulatory and guidance evaluations.

8.3.1 Chemical-Specific SCGs

The determination of potential chemical-specific SCGs for a site is based on the nature and extent of contamination; potential migration pathways and release mechanisms for site contaminants; the presence of human receptor populations; and the likelihood that exposure to site contaminants will occur. The RI performed for the Phase III Business Park Area provides this information. RI sampling events included the collection and analysis of surface soil, subsurface soil, and groundwater samples. Table 11 presents a list of chemical-specific NY State and Federal SCGs that may be applicable or relevant and appropriate to the Site based on this information.

8.3.2 Location-Specific SCGs

The location of the Site is a fundamental determinant of its impact on human health and the environment. Location-specific SCGs are restrictions placed on the concentration of hazardous substances or the conduct of activities solely because they are in a specific location. Some examples of these unique locations include: floodplains, wetlands, historic places, and sensitive ecosystems or habitats. Table 12 presents the location-specific SCGs that may be applicable or relevant and appropriate to the Site.

8.3.3 Action-Specific SCGs

Table 13 identifies action-specific SCGs that may significantly impact the selection of remedial alternatives for the Phase III BPA Site. This list of potential action-specific SCGs is based on the candidate remedial alternatives identified in Section 10.

8.4 Future Use Evaluation

In developing and screening remedial alternatives, NYSDEC's Part 375 regulations require that the reasonableness of the anticipated future land use be factored into the evaluation. The regulations identify 16 criteria that must be considered. These criteria and the resultant outcome for the Phase III BPA Site are presented in Appendix H. As indicated, the evaluation supports commercial and/or industrial redevelopment as the reasonably anticipated future use of the Site, consistent with surrounding Site use, zoning, and the Master Redevelopment Plan endorsed by Tecumseh, Erie County, and the City of Lackawanna. The remedial alternatives identified in Section 10 are evaluated against their consistency with the reasonably anticipated land use as well as other screening criteria.

In addition to the evaluation of alternatives to remediate to the likely end use of the Site, NYSDEC regulation and policy calls for evaluation of an unrestricted use scenario (considered under 6NYCRR Part 375-2.8 to be representative of cleanup to pre-disposal conditions). Per NYSDEC DER-10 Technical Guidance for Site Investigation and Remediation (Ref. 5), evaluation of a "no-action" alternative is also required to provide a baseline for comparison against other alternatives.

9.0 VOLUME, NATURE, AND EXTENT OF CONTAMINATION

Estimation of the volume, nature, and extent of media that may require remediation to satisfy the RAOs or that needs to be quantified to facilitate evaluation of remedial alternatives is presented in this section. The estimates are a function of the cleanup goal: for the unrestricted use scenario, the cleanup goal would involve achieving unrestricted use SCOs; whereas for the reasonably anticipated future use scenario, the cleanup goal would involve achieving the restricted-commercial SCOs. The volume and extent of media requiring cleanup under these scenarios is presented in Sections 9.1 and 9.2. In addition, the volume and extent of "hotspot" material that may need to be addressed to achieve the RAO for remediation of these areas is discussed in Section 9.3. In all instances these volume estimates (and associated cost estimates presented later in this AAR) are projected based on limited data and observations collected during the RI; additional pre-remedial investigation would be required to refine the estimates, particularly for hotspot areas.

9.1 Comparison to Unrestricted SCOs

Exceedance of the unrestricted use SCOs was noted in the majority of soil/fill samples collected, primarily for carcinogenic PAHs; petroleum SVOCs; metal COPCs (i.e., arsenic, cadmium, chromium, lead, and mercury); and to a lesser extent PCBs (Aroclors 1242, 1254, and 1260). Due to the highly ubiquitous nature of the constituents observed in Site soil/fill and the extent to which they exceeded the unrestricted use SCO values, it is likely that the entire 149-acre property defines the impacted soil/fill area. The depth of impact is assumed to extend into native material, with an average depth of approximately 8 fbgs. Thus, the volume of impacted soil/fill requiring remediation is approximately 1.9 million cubic yards.

9.2 Comparison to Restricted-Commercial SCOs

The soil/fill data indicated widespread exceedance of the Part 375 restricted-commercial SCOs for several ubiquitous constituents. Specifically, nearly all samples collected exhibited exceedance of the commercial SCOs for one or more of the carcinogenic polyaromatic hydrocarbons, with the majority also exhibiting exceedance of arsenic. Based on the data, it is not possible to quantify with any certainty the areas that do not exceed one or more of the commercial SCO criteria. It is therefore assumed, for the purpose of cost estimating, that the entire 149-acre Site is also impacted above the restricted-commercial SCOs.

9.3 Hotspot Soil/Fill

As discussed in Section 8.1, certain test pit locations contained visually impacted soil/fill with the impacts corroborated by analytical results. Two groundwater monitoring wells also exhibited elevated concentrations of petroleum VOCs and SVOCs, likely attributable to contaminant migration from the adjacent SWMU P-11. Figure 5 identifies the location of the impacted areas; the estimated dimensions of each area are approximated since the extent has not been fully defined. The estimated areal and vertical extent of impact in these source areas is described below. Refinement of the volumes will be required through supplemental investigation.

- **Hotspot "A" – Test Pit BPA-3A-TP-42:** Red paint was observed across an approximate 10-foot x 10-foot area at a depth of 0.5 to 1.5 fbgs, with an elevated lead concentration identified in the associated sample. Therefore the extent of in-place impact is estimated to cover 100 square-feet x 1.0 feet, for a corresponding in-place volume of approximately 4 cubic yards. Accounting for contingency and excavation inefficiencies, the volume for ex-situ treatment and/or disposal alternatives is estimated to be 20 cubic yards.

- **Hotspot "B" – Test Pit BPA-3A-TP-47 and BPA-3A-TP-49:** Mercury and cyanide were identified at elevated levels in shallow fill at BPA-3A-TP-47, BPA-3A-TP-49, and BPA-3A-SS-49 (i.e., a surface soil sample proximate to test pit BPA-3A-TP-49). In addition, bluish staining was observed at BPA-3A-TP-47 and BPA-3A-SS-49. The extent of the impacts are estimated to span an approximate 22,500 square-foot area to a depth of 2 fbgs, for a corresponding in-place volume of approximately 1,700 cubic yards. Accounting for contingency and excavation inefficiencies the volume for ex-situ treatment and/or disposal alternatives is estimated to be 2,500 cubic yards.

- **Hotspot "C" – Former Slabbing Mill Return Water Trench:** This surface soil/sediment sample was collected from the middle of the trench south of the Electrical Department building. Arsenic was identified at a concentration of 143 mg/kg, which is above the hotspot cleanup criteria of 118 mg/kg for arsenic presented in Section 7.0. The extent of the surficial impact is estimated to span approximately 425 feet along the 5-foot wide trench to a depth of 2 fbgs, for a corresponding in-place volume of approximately 160 cubic yards. Accounting for contingency and excavation inefficiencies the volume for ex-situ treatment and/or disposal alternatives is estimated to be 250 cubic yards.

- **Hotspot "D" – Test Pit BPA-3A-TP-44:** This test pit was excavated to the south of the Tar Pump House. Oil/tar soaked fill with sheen on the fill and water table and moderate odor were noted on the test pit log in Appendix A. It was also noted on the log that the impacts appeared to begin at the water table (7 fbgs). PID readings ranged from 0 to 3.3 ppm. An additional 16 test pits were excavated to further define the extent of the impact. Therefore, the extent of impact is estimated to cover an approximate 260-foot (E-W) by 200-foot (N-S) area over a depth of 6-8 fbgs (smear zone), for a corresponding in-place volume of approximately 3,850 cubic yards. Accounting for contingency and excavation inefficiencies the volume for ex-situ treatment and/or disposal alternatives is estimated to be 5,800 cubic yards.
- **Hotspot "E" – BPA3A-TP-6:** Arsenic was detected in the original test pit at a concentration of 123 ppm. Arsenic was detected in the supplemental test pit 10 feet to the west at a concentration of 168 ppm and 20 feet to the west at a concentration of 206 ppm. Further delineation to the west prior to or during hotspot excavation work will be required. Therefore, the extent of impact is estimated to be 40 feet by 20 feet, for an in-place volume of approximately 60 cubic yards. Accounting for contingency and excavation inefficiencies the volume for ex-situ treatment and/or disposal alternatives is estimated to be 90 cubic yards.
- **Hotspot "F" – BPA3-TP-28:** Arsenic was detected in the original test pit at a concentration of 130 ppm. Arsenic was detected in the supplemental test pit 10 feet to the west at a concentration of 161 ppm; the 20-foot sample detected arsenic at a concentration of 74.4 ppm. Therefore, the extent of impact is estimated to be 30 feet by 20 feet, for an in-place volume of approximately 45 cubic yards. Accounting for contingency and excavation inefficiencies the volume for ex-situ treatment and/or disposal alternatives is estimated to be 70 cubic yards.
- **Hotspot "G" – BPA3A-TP-33:** Arsenic was detected in the original test pit at an estimated concentration of 132 ppm. Arsenic was detected below the site-specific SCO of 118 ppm at all supplemental test pit locations. Therefore, the extent of impact is estimated to be 20 feet by 20 feet, for an in-place volume of approximately 30 cubic yards. Accounting for contingency and excavation inefficiencies the volume for ex-situ treatment and/or disposal alternatives is estimated to be 45 cubic yards.
- **Hotspot "H" – BPA3A-TP-37:** Arsenic was detected in the original test pit at a concentration of 121 ppm. Arsenic was detected below the site-specific SCO of 118 ppm at all supplemental test pit locations. Therefore, the extent of impact is

estimated to be 20 feet by 20 feet, for an in-place volume of approximately 30 cubic yards. Accounting for contingency and excavation inefficiencies the volume for ex-situ treatment and/or disposal alternatives is estimated to be 45 cubic yards.

Based on the estimated and assumed extent of the impacts described above, the total in-place volume of "hotspot" contamination is estimated at 5,865 cubic yards. The volume of soil/fill for ex-situ treatment and/or disposal alternatives is estimated to be 8,850 cubic yards.

9.4 Groundwater Impacts

9.4.1 Area South of CMS Benzol Yard

Test pits BPA-3A-TP-53 and BPA-3A-TP-58 were excavated adjacent to SWMU P-11, an area where fourteen 35,000-gallon USTs were reportedly removed. In test pit BPA-3A-TP-53, a PID reading of 400 ppm with moderate odor was recorded at the water table (5 fbgs). Visual evidence of impact (sheen) was observed on the fill and water at a depth of 5 fbgs. In test pit BPA-3A-TP-58, petroleum-impacted groundwater with slight odor was identified at the water table (approximately 7 fbgs); a PID reading of 72.5 ppm was detected at this depth. Supplemental test pits excavated within this area indicated similar field evidence of contamination; however, the impacts tapered off to the south.

Groundwater impacts are present in monitoring well MWN-30A and, to a lesser degree, monitoring well MWN-19A. Both wells are located just outside the CMS Area, immediately south of SMWUs P-11 (Benzol Yard). The constituents detected (benzene, toluene, and xylene) within MWN-30A are the same as those detected in the influent to the CMS SWMU P-11 treatment system but at approximately 10% of the concentration.

9.4.2 Steel Winds II Project Right-of-Way

As discussed in Sections 3.6, a supplemental test pit investigation was performed near the north boundary of the Phase III BPA, within the vicinity of the Steel Winds II power poles (identified as poles C-28 and C-29 on Figure 5). As presented in Section 4.4, results of the supplemental test pit investigation indicate weathered petroleum impacts, evident by olfactory petroleum odors and PID readings >50 ppm within the shallow groundwater saturated zone at a depth of approximately 6.5 fbgs. An oily sheen was also observed within the saturated soils and shallow groundwater. The extents of impact are approximately 200 feet in the N-S direction and 460 feet in the E-W direction.

Considering the impact occurs within the shallow groundwater and smear zone soil/fill, in-situ groundwater remediation will be evaluated.

9.5 Asbestos Waste

As discussed in Section 4.4, TurnKey located site drawings showing a historic 15-ft wide by 16-ft high tunnel with a concrete floor and walls along the southern portion of the Soaking Pit Building foundation. Demarcation signs allege asbestos burial along approximately 585 feet of the 850-foot long tunnel. Assuming this portion of the tunnel contains asbestos material intermingled with demolition debris, the estimated volume of ACM is 5,200 cubic yards (see Figure 6).

10.0 DEVELOPMENT AND SCREENING OF REMEDIAL ALTERNATIVES

10.1 Development of Alternatives

The following remedial alternatives have been developed in accordance with the General Response Actions and NYSDEC regulation and policy:

Soil/Fill Alternatives:

- Alternative 1: No Action
- Alternative 2: Excavation of Impacted Soil/Fill to Unrestricted SCOs
- Alternative 3: Hotspot Soil/Fill Removal with Placement of Soil Cover System Prior to Redevelopment
- Alternative 4: Hotspot Soil/Fill Removal with Deferred Soil Cover System During Redevelopment

Groundwater Alternatives:

- Area South of CMS Benzol Yard: Alternative 1: No Action; and Alternative 2: Augmentation of the CMS Benzol Yard Pump-and-Treat System.
- Steel Winds II Project Right-of-Way: Alternative 1: No Action; and Alternative 2: In-Situ Groundwater Treatment.

Asbestos Waste Alternatives (former Soaking Pit Building foundation):

- Alternative 1: Asbestos Removal with Off-Site Disposal
- Alternative 2: Restricted Use with No Further Development
- Alternative 3: Restricted Use as On-Site Soil/Fill Biotreatment Pad

Institutional controls, though identified in the General Response Actions, were not identified as a stand-alone remedial alternative because a deed restriction prohibiting use of groundwater and limiting land reuse to industrial and similar non-residential settings already exists for the larger Tecumseh property. Accordingly, all of the above alternatives inherently include these institutional controls. In addition, Soil/Fill Alternatives 3 and 4 will require development and enforcement of a Site Management Plan (see Section 11). Other institutional and engineering controls that would be considered applicable for this Site and would be incorporated into the remedial alternatives are described in greater detail in Section 11.

10.2 Evaluation of Alternatives

NYSDEC's Brownfield Cleanup Program calls for remedy evaluation in accordance with DER-10 Technical Guidance for Site Investigation and Remediation (May 2010). In addition to achieving RAOs, the remedial alternatives are evaluated against the following criteria consistent with 6NYCRR Part 375-1.8(f):

- **Overall Protectiveness 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.
- **Compliance with Standards, Criteria, and Guidance (SCGs)**. Compliance with SCGs addresses whether a remedy will meet applicable environmental laws, regulations, standards, and guidance.
- **Long-Term Effectiveness and Permanence**. This criterion evaluates the long-term effectiveness of the remedy after implementation. If wastes or treated residuals remain on-site after the selected remedy has been implemented, the following items are evaluated: (i) the magnitude of the remaining risks (i.e., will there be any significant threats, exposure pathways, or risks to the community and environment from the remaining wastes or treated residuals), (ii) the adequacy of the engineering and institutional controls intended to limit the risk, (iii) the reliability of these controls, and (iv) the ability of the remedy to continue to meet RAOs in the future.
- **Reduction of Toxicity, Mobility, or Volume of Contamination through Treatment**. This criterion evaluates the remedy's ability to reduce the toxicity, mobility, or volume of Site contamination. Preference is given to remedies that permanently and significantly reduce the toxicity, mobility, or volume of the wastes at the Site.
- **Short-Term Impacts and Effectiveness**. Short-term effectiveness is an evaluation of the potential short-term adverse impacts and risks of the remedy upon the community, the workers, and the environment during construction and/or implementation. This includes a discussion of how the identified adverse impacts and health risks to the community or workers at the Site will be controlled, and the effectiveness of the controls. This criterion also includes a discussion of engineering controls that will be used to mitigate short term impacts

(i.e., dust control measures), and an estimate of the length of time needed to achieve the remedial objectives.

- **Implementability**. The implementability criterion evaluates the technical and administrative feasibility of implementing the remedy. Technical feasibility includes the difficulties associated with the construction and the ability to monitor the effectiveness of the remedy. For administrative feasibility, the availability of the necessary personnel and material is evaluated along with potential difficulties in obtaining specific operating approvals, access for construction, etc.
- **Cost-Effectiveness**. Capital, operation, maintenance, and monitoring costs are estimated for each remedial alternative and presented on a present worth basis. Detailed cost estimates for each alternative, excluding the no action alternative, are presented on Tables 13 through 20.
- **Community Acceptance**. This criterion evaluates the public's comments, concerns, and overall perception of the remedy. The Community Acceptance criterion incorporates public concerns into the evaluation of the remedial alternatives. Therefore, Community Acceptance of the remedy will be evaluated after the public comment period required by the BCP.
- **Land Use**. In addition to the above criteria, 6NYCRR Part 375-1 specifies that the criterion of Land Use (i.e., the current, intended, and reasonably anticipated future land uses of the Site and its surroundings) be considered in the selection of the remedy. The intended future land use was initially submitted to the NYSDEC via the BCP application. The reasonably anticipated future use of the Site in a commercial/industrial capacity (i.e., as a business park) is further discussed in Appendix H.

10.2.1 Soil/Fill Alternative 1: No Action

The no-action alternative is defined as taking no additional actions to address the impacted soil/fill. The Site is presently subject to a deed restriction prohibiting groundwater use and limiting reuse to industrial and similar non-residential settings, and is fenced along NYS Route 5. While these controls would not be removed, the no action alternative assumes that there would be no maintenance, monitoring, or certifications to assure that these controls remain in place and effective. The no-action alternative also provides a baseline for comparison against the other remedial alternatives and justifies the need for any remedial action.

Overall Protectiveness of Public Health and the Environment – This alternative would protect public health under the current use scenario via the existing engineering and institutional controls; however, localized areas of environmental impact associated with hotpot areas would remain. This alternative would not meet the RAOs for the Site.

Compliance with SCGs – This alternative would not address source area materials or mitigate exposure to contaminants in excess of SCOs, and would therefore not comply with SCGs per 6NYCRR Part 375.

Long-Term Effectiveness and Permanence – This alternative provides no long-term maintenance measures and, as such, provides no reliable long-term control against exposure to impacted soil/fill. All current and future risks would remain under this alternative.

Reduction of Toxicity, Mobility, or Volume of Contamination through Treatment – This alternative provides no reduction in toxicity, mobility, or volume of COPCs in soil/fill.

Short-Term Impacts and Effectiveness – There would be no additional risks posed to the community, Site workers, or the environment associated with implementation of this alternative.

Implementability – No technical implementability issues or action-specific administrative implementability issues are associated with this alternative.

Cost-Effectiveness – There are no capital or operation, maintenance, and monitoring (OM&M) costs associated with this alternative.

Land Use – This alternative is consistent with the reasonably anticipated future use of the Site, but would not promote commercial and industrial redevelopment due to the absence of a release from liability and placement of the responsibility to assure protection of public health following redevelopment on the future buyer or developer.

10.2.2 Soil/Fill Alternative 2: Excavation of Impacted Soil/Fill to Unrestricted SCOs

For unrestricted use scenarios, excavation and off-site treatment or disposal of impacted soil/fill would be performed, obviating the need for engineering and institutional controls. This alternative would necessitate excavation of all soil/fill where COCs exceed unrestricted use SCOs per 6NYCRR Part 375, with transport of the excavated materials to and disposal at a permitted, off-site disposal facility. The estimated total volume of impacted soil/fill that would be removed from the Site and disposed off-site is approximately 1.9 million cubic yards. The same volume of clean soil would be necessary to backfill the excavation. During the RI, subsurface soil/fill samples from Hotspot A were analyzed for leachable (TCLP) VOCs, SVOCs, and metals, as well as flashpoint, and pH. The analyses indicated that the subsurface soil/fill exhibits leachable lead in excess of TCLP limits, requiring on-site treatment or off-site disposal of these materials in a RCRA-permitted facility. For purposes of cost estimating all other excavated materials are assumed to be non-hazardous and would be transported to a commercial solid waste disposal facility.

Overall Protectiveness of Public Health and the Environment – Excavation and off-site disposal to unrestricted use SCOs would be protective of public health under any reuse scenario. However, this alternative would permanently use and displace 1.9 million cubic yards of valuable landfill airspace, causing ancillary environmental issues due to reduced landfill capacity, and would require removal of 1.9 million cubic yards of clean soil from an off-site borrow source, also contributing to significant detrimental off-site environmental issues.

Compliance with SCGs – Excavation and off-site disposal would need to be performed in accordance with applicable, relevant, and appropriate SCGs. Soil excavation activities would necessitate preparation of and adherence to a community air monitoring plan for particulates in accordance with Appendix 1B of DER-10.

Long-Term Effectiveness and Permanence – This alternative would achieve removal of all impacted unsaturated soil/fill; therefore, no unsaturated soil/fill impacts would remain on the Site. Saturated soil/fill impacts within two areas of the Site are addressed as shallow groundwater and smear zone soil/fill impacts as presented in Section 10.2.5 and are therefore not considered to be soil/fill hotspots. The excavation alternative would provide long-term effectiveness and permanence. Post-remedial monitoring and certifications would not be required.

Reduction of Toxicity, Mobility, or Volume of Contamination through Treatment – Through removal of all impacted soil/fill, this alternative would permanently and significantly reduce the toxicity, mobility, and volume of contamination within the Site. However, since this alternative transfers Site soil/fill from one environment to another, an overall reduction of toxicity, mobility, and volume would not occur.

Short-Term Impacts and Effectiveness – The short-term adverse impacts and risks to the community, workers, and environment during implementation of this alternative are significant. Site workers would be required to wear personal protective equipment (PPE) during excavation to prevent direct contact with soil/fill. Dust control methods would be required to limit the release of particulates during placement of the backfill soils. Physical hazards, primarily related to potential accidents from heavy truck traffic on NY State Route 5, would be expected, as the excavation work would require removal of approximately 135,700 truckloads of soil and import of a similar number of clean loads from the borrow source. Substantial disruption of the neighboring community would occur due to material transport and deliveries and noise from heavy equipment used to construct the remedy. This action would result in storm water impacts at the borrow source(s) and on-site; diesel fuel consumption on the order of 678,500 gallons (assuming 20 miles round trip, 8 miles per gallons), with several thousands of gallons also consumed by excavation and grading equipment. The USEPA's estimated CO_2 generation rate for diesel engines is approximately 22.2 pounds per gallon of diesel consumed. Accordingly, this alternative would produce over 15 million pounds of greenhouse gas while at the same time stripping hundreds of acres of CO_2 consuming trees and shrubs from the site.

The Remedial Action Objectives would be achieved once the soil/fill is removed from the Site and backfill soils are in place (est. 2-3 years).

Implementability – Significant technical and administrative implementability issues would be encountered in construction of this unrestricted use alternative. These include, but are not limited to: the need for construction, maintenance, and operation of substantial dewatering facilities; the need to coordinate and secure disposal contracts with numerous permitted off-site landfills, as no single location would be able to accept the volume of soil/fill generated under this alternative; difficulty locating local borrow sources for such a large volume of backfill; traffic coordination for trucks entering and exiting NY State Route 5; and the need to relocate rail lines to allow excavation beneath the existing tracks.

Cost-Effectiveness – Capital costs for implementation of this alternative are estimated at $179 million. There are no OM&M costs associated with this alternative. Table 14 presents a breakdown of these capital costs.

Land Use – This alternative, although inconsistent with the reasonably anticipated future use of the Site, would not preclude commercial and industrial redevelopment.

10.2.3 Soil/Fill Alternative 3: Hotspot Soil/Fill Removal with Placement of Soil Cover System Prior to Redevelopment

This alternative would initially involve removal of the hotspot areas described in Section 9.3. The lead-impacted soil/fill (Hotspot A) would require stabilization prior to off-site disposal or off-site stabilization/disposal in a RCRA-permitted treatment storage and disposal facility. Hotspots B and C soil/fill would be excavated and disposed off-site at a permitted NY State sanitary landfill or other permitted solid waste disposal facility. The petroleum-impacted soil/fill (Hotspot D) would likely be treated via on-site bioremediation (e.g., on a biopad constructed over a portion of the former Soaking Pit Building foundation) with relocation of the treated soils back into the excavation area, unless tar impacts were found to be extensive, in which case these materials would need to be segregated and disposed off-site. Previous experience during test pit excavations indicates the material is well-drained; however, provisions for managing groundwater will be in place. Hotspots E through H soil/fill would be excavated and disposed off-site. The arsenic-impacted soil/fill may require stabilization prior to off-site disposal; however, based on the similar approach undertaken as part of the Phase II rail relocation IRM, it is anticipated that these areas will be suitable for direct disposal in a Subtitle D sanitary landfill facility. Since only the upper two feet of soil/fill would be removed, grading of these hotspot areas will be performed in place of backfilling.

Following hotspot soil/fill removal, a 12-inch soil cover would be installed prior to Certificate of Completion (COC) issuance and redevelopment. The estimated total volume of clean soil required for the cover system is approximately 240,500 cubic yards. The cover would then be removed, as necessary, to accommodate build-out during the redevelopment period. Standard institutional and engineering controls would also be implemented under this alternative. Specifically, a Site Management Plan (SMP) incorporating an Excavation Plan; an Operation, Maintenance, and Monitoring (OM&M) Plan; and ongoing Engineering and Institutional Control certification requirements would be developed and enforced through an environmental easement. The environmental easement will restrict use of the Phase III Business Park Area to commercial and industrial applications and preclude groundwater use without treatment.

Overall Protectiveness of Public Health and the Environment – This alternative meets NYSDEC requirements for a Track IV cleanup under the BCP regulations and is therefore protective of public health and the environment at the Site. Accordingly, Alternative 3 would achieve the RAOs. However, placement of a 12-inch soil cover over the Phase III Business Park area would require immediate clearing of the Site and borrow source(s), resulting in rapid loss of 149 acres of greenhouse gas consuming plant life and cover for habitat and foraging on-site and a likely similar acreage off-site, which is inconsistent with NYSDEC's DER-31 green remediation policy. In addition, significant short-term impacts would result from implementation of this alternative as described below.

Compliance with SCGs – Excavation and off-site disposal, as well as on-site biotreatment of petroleum-impacted soil/fill, would need to be performed in accordance with applicable, relevant, and appropriate SCGs. Imported cover material would need to meet backfill quality criteria per 6NYCRR Part 375. Borrow source mining would require a permit and storm water pollution prevention plan (SWPPP) for all disturbed areas greater than 1 acre in size. Vegetative cover stripping and cover placement would be performed under the BCP and would therefore require an equivalent SWPPP to address on-site impacts. Subgrade preparation activities would necessitate preparation of and adherence to a community air monitoring plan for particulates in accordance with Appendix 1B of DER-10. As indicated above, this alternative is inconsistent with NYSDEC's DER-31 green remediation policy due to rapid loss of vegetative cover on the site and off-site, as well as significant air emissions attributable to use of heavy diesel equipment for excavation and transport on-site and at the borrow source.

Long-Term Effectiveness and Permanence – Removal of the hotspot soil/fill areas as well as construction of a cover system prior to redevelopment would prevent direct contact with soil/fill exceeding restricted-commercial SCOs. The efficacy of the cover system will be maintained and monitored via the Site Management Plan. Periodic inspection and maintenance of the cover and possible repair of the soil and vegetative layers would be required to assure long-term cover integrity. The institutional controls outlined in Section 11 would be required for long-term effectiveness. Saturated soil/fill impacts within two areas of the Site are addressed as shallow groundwater and smear zone soil/fill impacts as presented in Section 10.2.5 and are therefore not considered to be soil/fill hotspots.

Reduction of Toxicity, Mobility, or Volume of Contamination through Treatment – Removal of hotspot soil/fill would permanently and significantly reduce the toxicity, mobility, and volume of the soil/fill that could potentially be contacted or produce localized areas of environmental impact at the Site. However, since this alternative transfers Site soil/fill from one environment to another, an overall reduction of toxicity and volume would not occur, with the exception of the petroleum-impacted soil/fill bioremediated on-site and the arsenic-impacted soil/fill if stabilization is required. Placement of a soil cover over the remaining areas would somewhat reduce the mobility of contaminants from erosion, although the RI concluded that this pathway is not likely significant under the current (undeveloped) scenario. Accordingly the toxicity, mobility, and volume of remaining residual contaminants would not be appreciably reduced under this alternative.

Short-Term Effectiveness and Impacts – Similar to Alternative 2, the short-term adverse impacts and risks to the community, workers, and environment during implementation of this approach are significant. Because the site clearing and soil cover placement would occur in a single construction season as opposed to a gradual progression during build out, excess physical hazards (primarily related to potential accidents from soil deliveries and associated increased truck traffic on NY State Route 5) would be expected. Disruption of the neighboring community would occur due to material transport, deliveries, noise, and air emissions from heavy equipment used to strip the site and construct the cover. Community air monitoring, dust control, and soil erosion measures would be required during subgrade preparation and soil cover placement.

Moreover, under this alternative, the Phase III Business Park Area would require over 240,500 cubic yards of imported cover soil, which would be stripped from an off-site borrow source and then transported to the site in approximately 17,200 truckloads and graded/raked using heavy, diesel-fueled grading equipment. This action alone would result in storm water impacts at the borrow source(s) and on-site; diesel fuel consumption on the order of 43,000 gallons (assuming 20 miles round trip, 8 miles per gallon); and related traffic, dust and air emissions. These impacts would be compounded when redevelopment is initiated, as much of the soil cover (est. 80%) would need to be removed and hauled off-site to allow for build out. Thus, an additional 34,400 gallons of diesel fuel may be consumed, resulting in total consumption of approximately 77,400 gallons of diesel fuel for transportation, with several thousands of gallons also consumed by excavation and grading equipment. As indicated above, the USEPA's estimated CO_2 generation rate for diesel engines is approximately 22.2 pounds per gallon of diesel consumed. Accordingly, the transportation of soil cover to the Site and subsequent removal and off-site transportation would produce over 1.7 million pounds of greenhouse gas while at the same time stripping hundreds of acres of CO_2 consuming trees and shrubs.

Finally, the existing soil/fill currently allows for good surface water percolation and drainage. If a soil cover were placed over the Phase III Business Park Area ahead of redevelopment, it would be absent the permanent storm water drainage system and Site grading that will be designed and constructed when redevelopment occurs. As a result, ponding, washout, and undesirable drainage patterns can be expected, damaging the cover system if soil cover is placed before final grading and storm water collection and conveyance systems are in place. The RAOs would be achieved upon cover placement.

Implementability – Technical and administrative implementability issues anticipated under this alternative include difficulty locating local borrow sources for such a large volume of cover soil (estimated 240,500 CY); traffic coordination for trucks entering and exiting NY State Route 5; the need to integrate the cover with rail lines traversing the property; and the need to design and provide for significant erosion and storm water controls to mitigate ponding, washout, and undesirable storm water drainage and runoff patterns. A pre-redevelopment cover system is also certain to be damaged and repaired multiple times by development work and buried infrastructure (sewer, water, gas, electric, telephone, etc.), necessitating multiple inspections by an environmental professional, and documentation/ explanation in annual Periodic Review Reports.

No significant administrative implementability issues are associated with this alternative.

Cost-Effectiveness – The estimated capital cost for this alternative is $9.5 million, which includes: hotspot removal and disposal/treatment; construction of the 12-inch landscape cover over the entire 149 acres; development of a Site Management Plan; and environmental-based redevelopment costs associated with removal of the temporary soil cover system. Annual OM&M costs for groundwater monitoring, cover maintenance, and annual certifications are estimated to be $36,000, resulting in an estimated present worth cost of $10.2 million. Table 15 presents a breakdown of these costs.

Land Use – This alternative would be consistent with the reasonably anticipated future use of the Site. However, the placement of soil cover over the Site would significantly impair the ability and cost of redeveloping the Site. Redevelopment would require the removal and displacement of most if not all of the soil cover during infrastructure and building construction, would necessitate deeper excavation to access existing for utilities, and would limit the ability to locate existing foundations and other near-surface structures that may require removal during redevelopment.

10.2.4 Soil/Fill Alternative 4: Hotspot Soil/Fill Removal with Deferred Soil Cover System during Redevelopment

This alternative is similar to Alternative 3 in that it provides for construction of a 12-inch soil cover over exposed areas of the Site following hotspot soil/fill removal; however, the cover would be placed on a sub-parcel basis <u>during</u> the redevelopment stage (i.e., as a condition of receiving a sub-parcel specific COC) to coordinate with and exclude the cover that inherently will be provided by building, road, parking areas and landscaping. The size of the sub-parcels would vary according to the build-out plan; however, a minimum acreage (e.g., 10-15 acres) incorporating the proposed redevelopment buildings and structures is envisioned.

Overall Protectiveness of Public Health and the Environment – Based on the removal of hotspot soil/fill and the fact that the Site is isolated, covered by indigenous vegetation, secured with fencing, and patrolled by security during off hours to discourage trespassing, this alternative is protective of public health and the environment under the current (undeveloped) scenario. This alternative would be protective of public health and the environment under the future use scenario, as it provides for implementation of the 12-inch cover system in areas not otherwise covered by buildings, roads, etc. as well as segregation of developed subparcels from undeveloped areas of the Site. Therefore, Alternative 4 successfully achieves the RAOs for the Site.

Compliance with SCGs – Excavation and off-site disposal, as well as on-site biotreatment of petroleum-impacted soil/fill, would need to be performed in accordance with applicable, relevant, and appropriate SCGs. Imported cover material would need to meet backfill quality criteria per 6NYCRR Part 375. Borrow source mining would require a permit and storm water pollution prevention plan (SWPPP) for all disturbed areas greater than 1 acre in size. Vegetative cover would be placed during the redevelopment period along with buildings, roads, and other build-out and, as such, would be subject to storm water regulations. Soil excavation and cover activities would necessitate preparation of and adherence to a community air monitoring plan for particulates in accordance with Appendix 1B of DER-10.

Long-Term Effectiveness and Permanence – Removal of the hotspot soil/fill areas as well as construction of a cover system on a subparcel basis prior to occupancy would prevent direct contact with soil/fill exceeding restricted-commercial SCOs. The efficacy of the cover system will be maintained and monitored via the Site Management Plan. Periodic inspection and maintenance of the soil cover as well as the "hardscape" cover provided by asphalt roads, concrete, etc. would be required to assure long-term cover integrity. The institutional controls outlined in Section 11 would be required for long-term effectiveness. Saturated soil/fill impacts within two areas of the Site are addressed as shallow groundwater and smear zone soil/fill impacts as presented in Section 10.2.5 and are therefore not considered to be soil/fill hotspots.

Reduction of Toxicity, Mobility, or Volume of Contamination through Treatment – Removal of hotspot soil/fill would permanently and significantly reduce the toxicity, mobility, and volume of the soil/fill that could potentially be contacted or produce localized areas of environmental impact at the Site. However, since this alternative transfers Site soil/fill from one environment to another, an overall reduction of toxicity and volume would not occur, with the exception of the petroleum-impacted soil/fill bioremediated on-site. Placement of a soil cover in conjunction with cover provided by build-out over the remaining areas may somewhat reduce the mobility of contaminants from erosion, although the RI concluded that this pathway is not likely significant under the current (undeveloped) scenario. Accordingly the toxicity, mobility, and volume of remaining residual contaminants would not be appreciably reduced under this alternative.

Short-Term Impacts and Effectiveness – Because cover will be placed on a gradual basis as development occurs and will exclude hardscape cover inherently provided by buildings, roads, parking areas, etc. (which are anticipated to represent 80-90% of the site acreage), short-term impacts will be minimized. The net volume of soil cover required under this approach would be approximately 48,100 cubic yards, representing approximately 3,400 truck trips from borrow sources over a multi-year period in lieu of a single construction season, negating traffic concerns along Route 5. As the cover soil placement will coordinate with the build-out, no additional removal work will be required. Community air monitoring, dust control, and soil erosion measures would only be required during Site development. The RAOs would be achieved upon cover placement.

Implementability – No significant technical or administrative implementability issues are anticipated under this alternative.

Cost-Effectiveness – The estimated capital cost for this alternative is $2.7 million which includes: hotspot removal and disposal/treatment; cover system construction during remediation (i.e., areas not covered by building, parking, or roads; assumed to be approximately 20% of the Site); development of a Site Management Plan; and environmental-based redevelopment costs associated with air monitoring during intrusive work. Annual OM&M costs for groundwater monitoring, cover maintenance, and annual certifications are estimated to be $36,000, resulting in an estimated present worth cost of $3.4 million. Table 16 presents a breakdown of these costs.

Land Use – This alternative is consistent with the reasonably anticipated future use of the Site. Furthermore, this alternative facilitates redevelopment by deferring final soil cover placement until redevelopment, thus avoiding the costs, time delays, and unnecessary disruption of placing, removing, and replacing cover during building, road, and utility construction.

10.2.5 Groundwater Alternatives

As discussed in Section 7.0 and 9.4, the following two areas within the Phase III BPA warrant groundwater remediation.

10.2.5.1 Area South of CMS Benzol Yard

Petroleum-impacts were observed within test pits excavated adjacent to SWMU P-11 (Benzol Yard), and included elevated PID readings, petroleum odor, and visual evidence of impact (sheen) at the water table (5 to 7 fbgs). Groundwater impacts are present in monitoring well MWN-30A and, to a lesser degree, monitoring well MWN-19A. Both wells are located just outside the CMS Area, immediately south of the Benzol Yard. The constituents detected (benzene, toluene, and xylene) within MWN-30A are the same as those detected in the influent to the CMS SWMU P-11 treatment system but at approximately 10% of the concentration.

Alternative 1: No Action

The No Action alternative does not include groundwater treatment (either active or passive) or monitoring specific to this area.

Overall Protectiveness of Public Health and the Environment – The Site as it exists is not fully protective of public health and the environment due to the presence of elevated petroleum constituents in shallow groundwater and saturated soil/fill.

Compliance with SCGs – Under the current and reasonably anticipated future industrial use scenario, elevated concentrations of VOCs are present in the shallow groundwater within this area of the Site and have the potential to migrate off-site.

Long-Term Effectiveness and Permanence – The No Action alternative does not provide long-term effectiveness or permanence as groundwater and saturated soil/fill would not be remediated. Therefore, this alternative does not achieve the groundwater RAO.

Reduction of Toxicity, Mobility, or Volume of Contamination through Treatment – The No Action alternative does not reduce the toxicity, mobility, or volume of VOCs present in the shallow groundwater or saturated soil/fill.

Short-Term Effectiveness – There would be no short-term adverse impacts and risks to the community, workers, or the environment attributable to implementation of the No Action alternative.

Implementability – No technical or administrative implementability issues are associated with the No Action alternative.

Cost-Effectiveness – There are no capital or OM&M costs associated with the No Action alternative.

Land Use – This alternative is consistent with the reasonably anticipated future use of the Site, but would not promote commercial or industrial redevelopment due to the absence of a release from liability and placement of the responsibility to assure protection of public health following redevelopment on the future buyer or developer.

<u>*Alternative 2: Augmentation of the CMS Benzol Yard Pump-and-Treat System*</u>

This alternative would include continued OM&M of the existing ICM for the CMS Benzol Yard with augmentation to extend the capture of the groundwater plume that extends south into the Phase III BPA. The augmentation would include installation of four extraction wells in an L shape along the southeastern boundary of the CMS Area that would be tied into the existing SWMU P-11 ICM groundwater collection and treatment system. These new wells would be pumped at rate so as to create an inward hydraulic gradient at monitoring wells MWN-19A and MWN-30A.

The CMS Report proposed a conservative 10-year continuation of the Benzol Yard OM&M. After that time and with NYSDEC concurrence, the recovery and treatment system would be shut down.

Overall Protectiveness of Public Health and the Environment – This alternative would be protective of public health and the environment as the impacted groundwater would be collected and treated prior to re-injection within the infiltration gallery on the CMS Site. An inward hydraulic gradient will be created to prevent further migration of the groundwater plume. Therefore, this alternative would meet the RAO for Site groundwater.

Compliance with SCGs – This alternative is compliant with SCGs by containing, recovering, and treating the dissolved groundwater plume.

Long-Term Effectiveness and Permanence – This alternative is expected to provide long-term effectiveness and permanence as it minimizes the potential for migration of VOC-contaminated groundwater. Upon shut-down of the groundwater collection and treatment system in an estimated 10 years (per the CMS Report), monitoring would assess the long-term permanence of the remedy.

Reduction of Toxicity, Mobility, or Volume of Contamination through Treatment – This alternative permanently reduces mobility, volume, and toxicity of groundwater contaminants. Free product, if present, will be separated from groundwater and recycled, and groundwater contaminants will be treated in an air stripper.

Short-Term Effectiveness – There would be no short-term risks or disruptions posed to the site workers, community, or environment due to implementation of this alternative. The RAO would be achieved once an inward hydraulic gradient is observed at MWN-19A and MWN-30A.

Implementability – No technical or administrative implementability issues are associated with alternative.

Cost-Effectiveness – The capital costs for installation of four extraction wells and connection to the existing SWMU P-11 ICM groundwater collection and treatment system is approximately $172,000. Annual groundwater monitoring is estimated to be $4,000 per year. Based on an assumed 30 years of annual groundwater monitoring, the present worth of this alternative is approximately $180,000. Table 17 provides a summary of the remedial costs for this alternative. Capital and OM&M cost associated with the groundwater treatment system are further detailed in the December 2011 CMS Report.

Land Use – This alternative is consistent with the reasonably anticipated future use of the Site.

10.2.5.2 Steel Winds II Project Right-of-Way

A supplemental test pit investigation performed near the north boundary of the Phase III BPA, within the Steel Winds II Project right-of-way, indicated weathered petroleum impacts, including petroleum odors and elevated PID readings, within the shallow groundwater (approximately 6.5 fbgs) and smear zone soil/fill.

Alternative 1: No Action

The No Action alternative does not include groundwater treatment (either active or passive) or monitoring specific to this area.

Overall Protectiveness of Public Health and the Environment – The Site as it exists is not fully protective of public health and the environment due to the presence of elevated petroleum constituents in shallow groundwater and smear zone soil/fill.

Compliance with SCGs – Under the current and reasonably anticipated future industrial use scenario, weathered petroleum impacts were observed within the shallow groundwater and smear zone soil/fill within this area of the Site and have the potential to impact off-site groundwater.

Long-Term Effectiveness and Permanence – The No Action alternative does not provide long-term effectiveness or permanence as groundwater and smear zone soil/fill would not be remediated. Therefore, this alternative does not achieve the groundwater RAO.

Reduction of Toxicity, Mobility, or Volume of Contamination through Treatment – The No Action alternative does not reduce the toxicity, mobility, or volume of petroleum impacts to the shallow groundwater and smear zone soil/fill.

Short-Term Effectiveness – There would be no short-term adverse impacts and risks to the community, workers, or the environment attributable to implementation of the No Action alternative.

Implementability – No technical or administrative implementability issues are associated with the No Action alternative.

Cost-Effectiveness – There are no capital or OM&M costs associated with the No Action alternative.

Land Use – This alternative is consistent with the reasonably anticipated future use of the Site, but would not promote commercial or industrial redevelopment due to the absence of a release from liability and placement of the responsibility to assure protection of public health following redevelopment on the future buyer or developer.

Alternative 2: In-Situ Groundwater Treatment

For treatment of aromatic VOCs, in-situ groundwater treatment is generally regarded as a reliable and proven remedial alternative. Toward that end, enhanced microbial biodegradation will be accomplished through injection of a biological amendment product to accelerate aerobic or anaerobic bioremediation of the aromatic VOCs. Prior to selection of the most appropriate approach, additional groundwater samples would be collected and analyzed for various parameters to determine the current chemistry of the groundwater. This alternative would involve directly injecting product into the contaminated groundwater from approximately 5 to 18 fbgs using small diameter drive rods and a high-capacity hydraulic injection pump. Delivery points will be equally spaced in a grid pattern across the approximate 200-foot by 460-foot area. Two new overburden groundwater wells would be installed to provide additional downgradient groundwater quality and elevation data.

Overall Protectiveness of Public Health and the Environment – This alternative would be protective of public health and the environment, as it would be expected to reduce petroleum impacts to groundwater in a reasonably short timeframe. Therefore, this alternative would meet the RAO for Site groundwater.

Long-Term Effectiveness and Permanence – This alternative is expected to provide long-term effectiveness in remediating petroleum-impacted groundwater to reduce environmental risk.

Reduction of Toxicity, Mobility, or Volume of Contamination through Treatment – The toxicity, mobility, and volume of petroleum impacts to the shallow groundwater and smear zone soil/fill would be significantly and permanently reduced through in-situ bioremediation.

Short-Term Impacts and Effectiveness – There would be no short-term risks or disruptions posed to the site workers, community, or environment due to implementation of this alternative. The RAO would be achieved once petroleum impacts to shallow groundwater and smear zone soil/fill are mitigated (est. 12 to 18 months).

Implementability – Implementation of the in-situ bioremediation alternative would not be subject to special technical implementability issues. Injection of biological amendments would require standard equipment and labor, both of which are readily available. No action-specific administrative implementability issues are associated with this alternative.

Cost-Effectiveness – The capital cost for injection of a biological amendment is estimated to be $88,000 (see Table 18), including post-remedial groundwater monitoring and reporting to confirm effectiveness and permanence.

Land Use – This alternative is consistent with the reasonably anticipated future use of the Site.

10.2.6 Asbestos Waste Alternative 1: Asbestos Removal with Off-Site Disposal

This alternative involves removal of ACM and associated demolition debris allegedly encapsulated within a portion of the former Soaking Pit Building tunnel (see Figure 6), with transport of the material to and disposal at a permitted, off-site disposal facility where it would need to be handled as special regulated waste. As described in Section 9.4, the estimated total volume of intermingled asbestos waste and debris that would be removed and disposed off-site is approximately 5,200 cubic yards. The resultant excavation would be backfilled with BUD-approved slag material or other approved import material to match existing grade.

Overall Protectiveness of Public Health and the Environment – Removal and off-site disposal of the asbestos waste would be protective of public health and the environment under the future use scenario. However, this alternative would permanently use and displace 5,200 cubic yards of valuable landfill airspace, and would have potential significant short-term impacts to public health and the environment as discussed below.

Compliance with SCGs – Removal of asbestos waste and off-site disposal would need to be performed in accordance with applicable, relevant, and appropriate SCGs. Asbestos removal activities would necessitate preparation of and adherence to a community air monitoring plan for particulates in accordance with Appendix 1B of DER-10, as well as baseline, project and post-abatement clearance air monitoring for asbestos by a qualified third party contractor. Variances from New York State DOL regulations governing asbestos removal operations may be required to allow friable material to be disposed without bagging.

Long-Term Effectiveness and Permanence – This alternative would achieve removal of the alleged asbestos waste; therefore, no impacts would remain on the Site providing long-term effectiveness and permanence. Specific post-remedial monitoring and certifications relative to the former Soaking Pit Building foundation would not be required.

Reduction of Toxicity, Mobility, or Volume of Contamination through Treatment – Through removal of all asbestos waste, this alternative would permanently and significantly reduce the volume of asbestos containing material within the Site. However, the material is believed to be encapsulated within a portion of the concrete tunnel, and as such is not presently mobile nor does it pose a potential toxic effect since it is not in an environment where the inhalation exposure pathway is complete. Because this alternative transfers ACM from one environment to another, an overall reduction of toxicity, mobility, and volume would not occur.

Short-Term Impacts and Effectiveness – The short-term adverse impacts and risks to the community, workers, and environment during implementation of this alternative are significant. Site workers would be required to wear personal protective equipment (PPE) during asbestos removal to mitigate inhalation of asbestos fibers. Significant control methods (continuous water spray, limits on excavation area) would be required to limit the release of ACM during removal; however, strong westerly winds off Lake Erie and the large quantity of materials requiring removal will undoubtedly result in some suspension of friable asbestos fibers, posing a threat to neighboring residents (i.e., Bethlehem Village, located directly downwind of the site) from airborne transport of friable ACM. Physical hazards, primarily related to potential accidents from heavy truck traffic on NY State Route 5, can also be expected. Because the material is likely bulkier than soil, transport trucks will carry less weight, requiring additional trips. Assuming that each truck would be capable of transporting 10 cubic yards of debris, 520 round trips with dump trailers would be required for disposal. Any accident involving damage or turnover of a transport vehicle would likely have far-reaching detrimental impacts, as wind-blown asbestos fibers would be carried across a wide radius. Disruption of the neighboring community may occur due to material transport and noise from heavy equipment used to construct the remedy. The Remedial Action

Objectives would be achieved once the asbestos waste is removed from the Site (est. 6 months).

Implementability – Significant technical issues would be encountered with this implementation of this alternative. These include, but are not limited to: special precautions to safely excavate unknown asbestos waste material from a below-grade tunnel; and site control to prevent asbestos waste from becoming airborne during removal. Administrative implementability issues would include the need to apply for and receive a NYSDOL variance to allow all debris to be handled as bulk demolition wastes in lieu of bagging asbestos-containing materials, and the need to identify a landfill facility capable of handling a large quantity of ACM, as these materials require special subsurface disposal.

Cost-Effectiveness – Capital costs for implementation of this alternative are estimated at $1.2 Million, as shown on Table 19. No post-remedial operation and maintenance costs are associated with this alternative.

Land Use – This alternative would be consistent with the reasonably anticipated future use of the Site.

10.2.7 Asbestos Waste Alternative 2: Restricted Use with No Further Development

This alternative involves allowing ACM to remain encapsulated within the Soaking Pit Building tunnel, covering the approximate 585-ft by 160-ft area with one foot of vegetated soil or 2 feet of non-vegetated soil (per 6NYCRR Part 375 and 40 CFR 61.151), and placing a specific restriction in the site environmental easement to prevent future development over this area of the Phase III Business Park.

Overall Protectiveness of Public Health and the Environment – This alternative is protective of public health and the environment under the current (undeveloped) scenario as the materials are presently encapsulated. This alternative would be protective of public health and the environment under the future use scenario with an environmental easement preventing any future development over a portion of the former Soaking Pit Building foundation.

Compliance with SCGs – This alternative would comply with applicable SCGs.

Long-Term Effectiveness and Permanence – Allowing the ACM to remain encapsulated in place would prevent direct contact with the waste. Development of a specific use restriction (i.e., no future development) under the site-wide Environmental Easement would be required for long-term effectiveness.

Reduction of Toxicity, Mobility, or Volume of Contamination through Treatment – The ACM is believed to be encapsulated within a portion of the concrete tunnel and, as such, is not presently mobile nor does it pose a potential toxic effect since it is not in an environment where the inhalation exposure pathway is complete. Under this alternative the ACM would remain contained in place. Accordingly the toxicity, mobility, and volume of remaining contaminants would not be reduced under this alternative.

Short-Term Impacts and Effectiveness – There are no short-term impacts with this alternative. The RAOs would be achieved once the environmental easement is executed.

Implementability – No significant technical or administrative implementability issues are anticipated under this alternative.

Cost-Effectiveness – The estimated capital cost for this alternative is $158,000 for survey of the Soaking Pit Building foundation, placement of the 2-foot cover, and development of an area-specific restriction under the site-wide environmental easement. Table 20 presents a breakdown of these costs.

Land Use – This alternative is consistent with the reasonably anticipated future use of the Site. However, no development would be permitted over the foundation in accordance with the environmental easement.

10.2.8 Asbestos Waste Alternative 3: Restricted Use as On-Site Soil/Fill Biotreatment Pad

Under this alternative, a portion of the former Soaking Pit Building foundation would be converted to a biotreatment pad for treatment of petroleum-impacted soil/fill excavated from the Tecumseh Business Park Areas during remedial work, as well as any additional petroleum-impacted soil/fill, if encountered during the redevelopment phase of these areas (See Figure 6). The Environmental Easement would stipulate that this area would be used for treatment of Business Park Area soil/fill only and, upon completion of treatment, no additional development would be allowed. The 585-ft by 160-ft area would be enclosed by a 6-ft chain link fence with a locking double-access gate and identification/warning signs. The foundation would be prepared for biotilling with two feet of non-vegetated material (per 6NYCRR Part 375 and 40 CFR 61.151), consisting of one foot of slag followed by one foot of sand or wood chip mulch buffer. A demarcation layer (e.g., plastic netting) would be placed over this portion of the former Soaking Pit Building foundation beneath the 2-foot cover layer.

Overall Protectiveness of Public Health and the Environment – This alternative is protective of public health and the environment under the current (undeveloped) scenario as the materials are presently encapsulated. This alternative would be protective of public health and the environment under the future use scenario with an Environmental Easement restricting future use of the area to biotreatment of Business Park Area soil/fill. Following use of the area for soil/fill treatment, the Environmental Easement would stipulate that no future development be permitted.

Compliance with SCGs – This alternative would comply with applicable SCGs. Any site preparation activities for construction of the biotreatment pad or fence would necessitate preparation of and adherence to a community air monitoring plan for particulates in accordance with Appendix 1B of DER-10.

Long-Term Effectiveness and Permanence – Allowing the asbestos materials to remain encapsulated in place with use of the above-grade slab as a base for a biopad would prevent direct contact with any ACM. A specific condition in the Environmental Easement preventing use of this portion of the former Soaking Pit Building foundation, other than as a biopad, would be required for long-term effectiveness. The demarcation layer would serve as an additional indication to future owners that excavation is not permitted in this area of the Site.

Reduction of Toxicity, Mobility, or Volume of Contamination through Treatment – The ACM is believed to be encapsulated within a portion of the concrete tunnel and, as such, is not presently mobile nor does it pose a potential toxic effect since it is not in an environment where the inhalation exposure pathway is complete. Under this alternative the ACM would remain contained in place. Accordingly the toxicity, mobility, and volume of remaining contaminants would not be reduced under this alternative.

Short-Term Impacts and Effectiveness – There are no short-term impacts with this alternative beyond the personal protective equipment and air monitoring required during biotreatment pad construction. The RAOs would be achieved once the environmental easement has been executed.

Implementability – No significant technical or administrative implementability issues are anticipated under this alternative.

Cost-Effectiveness – The estimated capital cost for this alternative is $240,000 which includes survey of the former Soaking Pit Building foundation, biotreatment pad preparation, and fence installation. Table 21 presents a breakdown of these costs.

Land Use – This alternative is consistent with the reasonably anticipated future use of the Site. However, no development would be permitted over the foundation in accordance with the environmental easement.

10.3 Proposed Remedy

The previous sections describe the remedial alternatives and evaluate these alternatives against the screening criteria. This final section of the evaluation considers the information and evaluations contained in the previous sections to identify appropriate remedial measures to achieve the RAOs for the Phase III Business Park Area.

10.3.1 Soil/Fill Alternatives

The proposed remedial approach for the impacted soil/fill is *Alternative 4 – Hotspot Soil/Fill Removal with Deferred Soil Cover System during Redevelopment* because it satisfies the RAOs for the Site, is significantly less disruptive to the community, is consistent with current and future land use, and represents a lower cost than Alternatives 2 or 3. This alternative would involve removal of the hotspot areas described in Section 9.3 followed by off-site disposal of Hotspots A through C and E through H soil/fill and on-site biotreatment of Hotspot D soil/fill (tarry materials, if present, would need to be segregated and disposed off-site). An estimated 8,850 CY of impacted soil/fill would be excavated (although confirmation of this volume would be required prior to remedy implementation). As a condition of occupancy, Site developers would be required to cover all soil/fill areas that exceed the restricted-commercial SCOs through placement of asphalt, building, or landscape cover. The landscape cover would involve placement of at least one foot of clean soil followed by seeding to promote vegetative growth. The clean soil would be required to meet NYSDEC DER-10 standards for commercial sites (i.e., lower of Part 375 public health or groundwater protection values for restricted-commercial sites).

The 30-year present worth cost is estimated to be $3.4 million with a projected $2.7 million for capital expenditures and $36,000 for annual groundwater monitoring, Site maintenance, and environmental easement certification.

10.3.2 Groundwater Alternatives

10.3.2.1 Area South of CMS Benzol Yard

The proposed remedy for shallow groundwater and smear zone soil/fill in this area is *Alternative 2 – Augmentation of the CMS Benzol Yard Pump-and-Treat System* because it satisfies the RAO for Site groundwater; and is expected to permanently reduce mobility, volume, and toxicity of groundwater and smear zone soil/fill contaminants and provide long-term effectiveness and permanence.

The capital costs for installation of four extraction wells and connection to the existing SWMU P-11 ICM groundwater collection and treatment system is approximately

$172,000. Annual groundwater monitoring is estimated to be $4,000 per year. Based on an assumed 30 years of annual groundwater monitoring, the present worth of this alternative is approximately $180,000. OM&M cost associated with the groundwater treatment system are detailed in the December 2011 CMS Report.

10.3.2.2 Steel Winds II Project Right-of-Way

The proposed remedy for the shallow groundwater and smear zone soil/fill in this area is *Alternative 2 – In Situ Treatment* via injection of a biological amendment because it satisfies the RAO for Site groundwater; and is expected to permanently reduce mobility, volume, and toxicity of groundwater and smear zone soil/fill contaminants and provide long-term effectiveness and permanence. In addition, in-situ groundwater treatment is generally regarded as a "presumptive remedy" for impacts of this nature.

The capital cost for injection of a biological amendment is estimated to be $88,000, including post-remedial groundwater monitoring and reporting to confirm effectiveness and permanence.

10.3.3 Asbestos Waste Alternatives

The proposed remedy for the asbestos waste is *Alternative 3 – Restricted Use as On-Site Soil/Fill Biotreatment Pad* because it satisfies the RAOs for the Site, minimizes short-term impacts, is cost-feasible, and provides a beneficial use for this area of the Site.

The estimated capital cost for this alternative is $240,000, which includes survey of this portion of the former Soaking Pit Building foundation to facilitate development of specific restrictions for this area under the Environmental Easement, site preparation, biotreatment pad preparation (including demarcation layer and 2-foot layer of non-vegetated material), and fencing.

11.0 POST-REMEDIAL REQUIREMENTS

11.1 Final Engineering Report

Following completion of the remedial measures, a Final Engineering Report (FER) will be submitted to the NYSDEC. The FER will include the following information and documentation, consistent with the NYSDEC regulations contained in 6 NYCRR Part 375-1.6(c):

- Background and Site description.
- Summary of the Site remedy that satisfied the remedial action objectives for the Site.
- Certification by a professional engineer to satisfy the requirements outlined in 6 NYCRR Part 375-1.6(c)(4).
- Description of engineering and institutional controls at the Site.
- Site map showing the areas remediated.
- Documentation of imported materials.
- Documentation of materials disposed off-site.
- Copies of daily inspection reports and, if applicable, problem identification and corrective measure reports.
- Air monitoring data and reports.
- Photo documentation of remedial activities.
- Text describing the remedial activities performed; a description of any deviations from the Work Plan and associated corrective measures taken; and other pertinent information necessary to document that the site activities were carried out in accordance with this Work Plan.
- Analytical data packages and data usability summary reports (DUSRs).

11.2 Site Management Plan

A Site Management Plan (SMP) covering the entire Phase III BPA will be prepared and submitted concurrent with the FER. The purpose of the Site Management Plan is to assure that proper procedures are in place to provide for long-term protection of public health and the environment after remedial construction is complete. The SMP is comprised of four main components:

- Engineering and Institutional Control Plan
- Site Monitoring Plan
- Operation and Maintenance Plan
- Inspections, Reporting, and Certifications

11.2.1 Engineering and Institutional Control Plan

An institutional control in the form of a new Environmental Easement will be necessary to limit future use of the Site to restricted (commercial or industrial) applications and prevent groundwater use for potable purposes. The Environmental Easement would also stipulate that a portion of the former Soaking Pit Building foundation be used for treatment of BPA soil/fill only and, upon completion of treatment, no additional development be allowed. An existing deed restriction is on file for the Tecumseh Site limiting reuse to commercial/industrial applications. However, industrial uses are loosely defined and allow incidental commercial-type facilities such as offices and laboratories, provided that they do not provide for occupancy by multiple numbers of persons under the age of 18. The deed restriction also prohibits construction or use of groundwater extraction wells (excluding monitoring and remediation wells).

Tecumseh will prepare an Engineering and Institutional Control (EC/IC) Plan that will include a complete description of all institutional and/or engineering controls employed at the Site, including the mechanisms that will be used to continually implement, maintain, monitor, and enforce such controls. The EC/IC Plan will include:

- A description of all EC/ICs on the site.
- The basic implementation and intended role of each EC/IC.
- A description of the key components of the ICs set forth in the Environmental Easement.
- A description of the features to be evaluated during each required inspection and periodic review, including the EC/IC certification, reporting, and Site monitoring.
- A description of plans and procedures to be followed for construction of the 12-inch soil cover as a condition of occupancy.
- Any other provisions necessary to identify or establish methods for implementing the EC/ICs required by the Site remedy, as determined by the NYSDEC.

11.2.2 Site Monitoring Plan

The Site Monitoring Plan will describe the measures for evaluating the performance and effectiveness of the remedy to reduce or mitigate contamination at the Site, including:

- Sampling and analysis of all appropriate media (e.g., groundwater).
- Assessing compliance with applicable NYSDEC standards, criteria and guidance, particularly ambient groundwater standards and Part 375 SCOs for soil.
- Assessing achievement of the remedial performance criteria.
- Evaluating site information periodically to confirm that the remedy continues to be effective in protecting public health and the environment; and
- Preparing the necessary reports for the various monitoring activities.

To adequately address these issues, this Site Monitoring Plan will provide information on:

- Sampling locations, protocol, and frequency.
- Information on all designed monitoring systems (e.g., well logs).
- Analytical sampling program requirements.
- Reporting requirements.
- Quality Assurance/Quality Control (QA/QC) requirements.
- Inspection and maintenance requirements for monitoring wells.
- Monitoring well decommissioning procedures.
- Annual inspection and periodic certification.

Semi-annual groundwater monitoring to assess overall reduction in contamination on-site and off-site will be conducted for the first two years. The frequency thereafter will be discussed with the NYSDEC. Trends in contaminant levels in groundwater in the affected areas will be evaluated to determine if the remedy continues to be effective in achieving remedial goals.

11.2.3 Operation and Maintenance Plan

An Operation & Maintenance (O&M) plan governing maintenance of the cover system will include:

- Include the operation and maintenance activities necessary to allow individuals unfamiliar with the Site to maintain the soil cover system.
- Include an O&M contingency plan.
- Evaluate Site information periodically to confirm that the remedy continues to be effective for the protection of public health and the environment. If necessary, the O&M Plan will be updated to reflect changes in Site conditions or the manner in which the cover system is maintained.

11.2.4 Inspections, Reporting, and Certifications

11.2.4.1 Inspections

Site-wide inspection will be conducted annually or as otherwise approved by the NYSDEC. All applicable inspection forms and other records, including all media sampling data and system maintenance reports, generated for the Site during the reporting period will be provided in electronic format in a Periodic Review Report (PRR).

11.2.4.2 Reporting

The PRR will be submitted to the NYSDEC annually, or as otherwise approved, beginning 18 months after the Certificate of Completion or equivalent document is issued. The report will be prepared in accordance with NYSDEC DER-10 and submitted within 45 days of the end of each certification period. The PRR will include:

- Identification, assessment, and certification of all EC/ICs required by the remedy for the Site.
- Results of the required annual Site inspections and severe condition inspections, if applicable.
- All applicable inspection forms and other records generated for the Site during the reporting period in electronic format.
- A summary of any discharge monitoring data and/or information generated during the reporting period with comments and conclusions.
- Data summary tables and graphical representations of contaminants of concern by media (groundwater, soil vapor), which include a listing of all compounds analyzed, along with the applicable standards, with all exceedances highlighted. These will include a presentation of past data as part of an evaluation of contaminant concentration trends.

- Results of all analyses, copies of all laboratory data sheets, and the required laboratory data deliverables for all samples collected during the reporting period will be submitted electronically in a NYSDEC-approved format.
- A Site evaluation that includes the following:
  - The compliance of the remedy with the requirements of the site-specific RAWP, ROD, or Decision Document.
  - The operation and the effectiveness of all treatment units, etc., including identification of any needed repairs or modifications.
  - Any new conclusions or observations regarding site contamination based on inspections or data generated by the Site Monitoring Plan for the media being monitored.
  - Recommendations regarding any necessary changes to the remedy and/or Site Monitoring Plan.
  - The overall performance and effectiveness of the remedy.

11.2.4.3 Certification

The signed EC/IC Certification will be included in the PRR described in Section 4.2.4.2: For each institutional or engineering control identified for the Site, a Professional Engineer licensed to practice in New York State will certify that all of the following statements are true:

- The inspection of the Site to confirm the effectiveness of the institutional and engineering controls required by the remedial program was performed under my direction.
- The engineering and institutional controls employed at this Site are unchanged from the date the control was put in place, or last approved by the NYSDEC.
- Nothing has occurred that would impair the ability of the control to protect the public health and environment.
- Nothing has occurred that would constitute a violation or failure to comply with any Site Management Plan for this control.
- Access to the Site will continue to be provided to the NYSDEC to evaluate the remedy, including access to evaluate the continued maintenance of this control.
- If a financial assurance mechanism is required under the oversight document for the Site, the mechanism remains valid and sufficient for the intended purpose under the document.
- Use of the Site is compliant with the Environmental Easement.

- The engineering control systems are performing as designed and are effective.
- To the best of my knowledge and belief, the work and conclusions described in this certification are in accordance with the requirements of the Site remedial program and generally accepted engineering practices.
- The information presented in this report is accurate and complete.

11.2.4.4 Corrective Measures Plan

If any component of the remedy is found to have failed, or if the periodic certification cannot be provided due to the failure of an institutional or engineering control, a Corrective Measures Plan will be submitted to the NYSDEC for approval. This plan will explain the failure and provide the details and schedule for performing work necessary to correct the failure. Unless an emergency condition exists, no work will be performed pursuant to the Corrective Measures Plan until it is approved by the NYSDEC.

12.0 REFERENCES

1. *RCRA Facility Investigation (RFI) Report for the Former Bethlehem Steel Corporation Facility, Lackawanna, New York, Parts I through VII*, prepared for Bethlehem Steel Corporation by URS Consultants, Inc., January 2005.

2. *RCRA Facility Assessment (RFA) Report for the Bethlehem Steel Corporation Facility, Lackawanna, New York*. EPA-330/2-88-054. NEIC, Denver, CO. 1988.

3. *Remedial Investigation/Alternatives Analysis Report Work Plan for Phase III Business Park*, prepared for ArcelorMittal Tecumseh Redevelopment Inc. by TurnKey Environmental Restoration, LLC, May 2008.

4. *Remedial Investigation/Alternatives Analysis Report Work Plan for Steel Winds II Site*, prepared for BQ Energy, LLC by Benchmark Environmental Engineering & Science, PLLC, May 2008.

5. *DER-10/Technical Guidance for Site Investigation and Remediation*, prepared by New York State Department of Environmental Conservation, May 3, 2010.

6. *Solid Waste Management Unit (SWMU) Assessment Report for WQCS #3A*, prepared by Bethlehem Steel Corporation, 1989.

7. *Guidance for Evaluating Soil Vapor Intrusion in the State of New York*. New York State Department of Health, Center for Environmental Health, Bureau of Environmental Exposure Investigation, October 2006. Revised June 25, 2007.

8. *Corrective Measures Study Report – Final Draft; Former Bethlehem Steel Site, Lackawanna, NY*, prepared for Tecumseh Redevelopment Inc. by TurnKey Environmental Restoration, LLC, December 2011.

TABLES

TurnKey Environmental Restoration, LLC

TABLE 1

CONSTITUENTS OF POTENTIAL CONCERN (COPCs)

Remedial Investigation / Alternatives Analysis Report
Phase III Business Park Area
Tecumseh Redevelopment Inc.
Lackawanna, New York

COMPOUND	CAS #
Volatile Organic Compounds	
(STARS Method 8021B)	
Benzene	*71-43-2*
n-Butylbenzene	*104-51-8*
sec-Butylbenzene	*135-98-8*
tert-Butylbenzene	*98-06-6*
p-Cymene	*99-87-6*
Ethylbenzene	*100-41-4*
Isopropylbenzene	*98-82-8*
Methyl tert butyl ether	*1634-04-4*
n-Propylbenzene	*103-65-1*
Toluene	*108-88-3*
1,2,4-Trimethylbenzene	*95-63-6*
1,3,5-Trimethylbenzene	*108-67-8*
m-Xylene	*95-47-6*
o-Xylene	*106-42-3*
p-Xylene	*108-38-3*
TCL Semi-Volatile Organic Compounds	
(Method 8270C - base/neutrals only)	
Acenaphthene	*83-32-9*
Acenaphthylene	*208-96-8*
Anthracene	*120-12-7*
Benzo(a)anthracene	*56-55-3*
Benzo(b)fluoranthene	*205-99-2*
Benzo(k)fluoranthene	*207-08-9*
Benzo(g,h,i)perylene	*191-24-2*
Benzo(a)pyrene	*50-32-8*
Benzyl alcohol	*100-51-6*
Bis(2-chloroethoxy) methane	*111-91-1*
Bis(2-chloroethyl) ether	*111-44-4*
2,2'-Oxybis (1-Chloropropane)	*108-60-1*
Bis(2-ethylhexyl) phthalate	*117-81-7*
4-Bromophenyl phenyl ether	*101-55-3*
Butyl benzyl phthalate	*85-68-7*
4-Chloroaniline	*106-47-8*
2-Chloronaphthalene	*91-58-7*
4-Chlorophenyl phenyl ether	*7005-72-3*
Chrysene	*218-01-9*
Dibenzo(a,h)anthracene	*53-70-3*
Dibenzofuran	*132-64-9*
Di-n-butyl phthalate	*84-74-2*
1,2-Dichlorobenzene	*95-50-1*
1,3-Dichlrobenzene	*541-73-1*
1,4-Dichlrobenzene	*106-46-7*
3,3'-Dichlorobenzidine	*91-94-1*
Diethyl phthalate	*84-66-2*
TCL Semi-Volatile Organic Compounds (cont'd)	
(Method 8270C - base/neutrals only)	
Dimethyl phthalate	*131-11-3*
2,4-Dinitrotoluene	*121-14-2*
2,6-Dinitrotoluene	*606-20-2*
Di-n-octyl phthalate	*117-84-0*
Fluoranthene	*206-44-0*
Fluorene	*86-73-7*
Hexachlorobenzene	*118-74-1*
Hexachlorobutadiene	*87-68-3*
Hexachlorocyclopentadiene	*77-47-4*
Hexachloroethane	*67-72-1*
Indeno(1,2,3-cd)pyrene	*193-39-5*
Isophorone	*78-59-1*
2-Methylnaphthalene	*91-57-6*
Naphthalene	*91-20-3*
2-Nitroaniline	*88-74-4*
3-Nitroaniline	*99-09-2*
4-Nitroaniline	*100-01-6*
Nitrobenzene	*95-95-3*
N-Nitrosodiphenylamine	*86-30-6*
N-Nitroso-Di-n-propylamine	*621-64-7*
Phenanthrene	*85-01-8*
Pyrene	*129-00-0*
1,2,4-Trichlorobenzene	*120-82-1*
Metals	
(Method 6010B)	
Arsenic	*7440-38-2*
Cadmium	*7440-43-9*
Chromium	*7440-47-3*
Lead	*7439-92-1*
Mercury *(Method 7470A(water) and 7471A(solid))*	*7439-97-6*
Wet Chemistry	
Cyanide *(Method 9010B)*	*57-12-5*
PCBs	
Method 8082	
Aroclor 1016	*12674-11-2*
Aroclor 1221	*11104-28-2*
Aroclor 1232	*11141-16-5*
Aroclor 1242	*53469-21-9*
Aroclor 1248	*12672-29-6*
Aroclor 1254	*11097-69-1*
Aroclor 1260	*11096-82-5*

TurnKey Environmental Restoration, LLC

TABLE 2

EXPANDED PARAMETER LIST

Remedial Investigation / Alternatives Analysis Report
Phase III Business Park Area
Tecumseh Redevelopment Inc.
Lackawanna, New York

Collected 1 per 10 samples per matrix (or as indicated on Table 3)

COMPOUND	CAS #
TCL Volatile Organic Compounds	
(Full List TCL VOCs plus STARS, via Method 8021B)	
Acetone	67-64-1
Benzene	71-43-2
Bromoform	75-25-2
Bromochloromethane	74-97-5
Bromodichloromethane	75-27-4
Bromomethane (Methyl bromide)	74-83-9
2-Butanone (MEK)	78-93-3
n-Butylbenzene	104-51-8
sec-Butylbenzene	135-98-8
tert-Butylbenzene	98-06-6
Carbon disulfide	75-15-0
Carbon tetrachloride	56-23-5
Chlorobenzene	108-90-7
Chloroethane	75-00-3
Chloroform	67-66-3
Chloromethane (Methyl chloride)	74-87-3
Cyclohexane	110-82-7
p-Cymene (p-isopropyltoluene)	99-87-6
1,2-Dibromo-3-chloropropane	96-12-8
1,2-Dibromoethane (EDB)	106-93-4
Dibromochloromethane	124-48-1
Dichlorodifluoromethane (Freon-12)	75-71-8
1,2-Dichlorobenzene	95-50-1
1,3-Dichlorobenzene	541-73-1
1,4-Dichlorobenzene	106-46-7
1,1-Dichloroethane	75-34-3
1,2-Dichloroethane (EDC)	107-06-2
1,1-Dichloroethylene (1,1-DCE)	75-35-4
trans-1,2-Dichloroethylene	156-60-5
cis-1,2-Dichloroethylene	156-59-2
cis-1,3-Dichloropropene	10061-01-5
trans-1,3-Dichloropropene	10061-02-6
1,2-Dichloropropane	78-87-5
Ethylbenzene	100-41-4
2-Hexanone	591-78-6
Isopropylbenzene (Cumene)	98-82-8
Methyl acetate	79-20-9
Methylene chloride	75-09-2
Methylcyclohexane	108-87-2
4-methyl-2-pentanone (MIBK)	108-10-1
Methyl tert butyl ether (MTBE)	1634-04-4
n-Propylbenzene	103-65-1
Styrene	100-42-5
1,1,1,2-Tetrachloroethane	630-20-6
Tetrachloroethylene (PCE)	127-18-4
Toluene	108-88-3
1,2,3-Trichlorobenzene	87-61-6
1,2,4-Trichlorobenzene	120-82-1
1,1,1-Trichloroethane	71-55-6
1,1,2-Trichloroethane	79-00-5
Trichloroethylene (TCE)	79-01-6
Trichlorofluoromethane (Freon-11)	75-69-4
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-11	76-13-1
1,2,4-Trimethylbenzene	95-63-6
1,3,5-Trimethylbenzene	108-67-8
Vinyl chloride	75-01-4
m-Xylene	95-47-6
o-Xylenes	106-42-3
p-Xylene	108-38-3
Total Xylenes	1330-20-7

COMPOUND	CAS #
TCL Semi-Volatile Organic Compounds	
(Method 8270C - base-neutrals and acid extractables)	
Acenaphthene	83-32-9
Acenaphthylene	208-96-8
Anthracene	120-12-7
Benzo(a)anthracene	56-55-3
Benzo(a)pyrene	50-32-8
Benzo(b)fluoranthene	205-99-2
Benzo(g,h,i)perylene	191-24-2
Benzo(k)fluoranthene	207-08-9
Benzyl alcohol	100-51-6
bis(2-Chloroethoxy)methane	111-91-1
bis(2-Chloroethyl)ether	111-44-4
2,2'-oxybis(1-chloropropane); bis(2-chloroisopropyl)ether	108-60-1
bis(2-Ethylhexyl)phthalate	117-81-7
Butyl benzyl phthalate	85-68-7
4-Bromophenyl phenyl ether	101-55-3
4-Chloroaniline	106-47-8
4-Chloro-3-methylphenol	59-50-7
2-Chloronaphthalene	91-58-7
2-Chlorophenol	95-57-8
4-Chlorophenyl-phenylether	7005-72-3
Chrysene	218-01-9
Dibenzo(a,h)anthracene	53-70-3
Dibenzofuran	132-64-9
3,3'-Dichlorobenzidine	91-94-1
2,4-Dichlorophenol	120-83-2
1,2-Dichlorobenzene	95-50-1
1,3-Dichlorobenzene	541-73-1
1,4-Dichlorobenzene	106-46-7
Diethyl phthalate	84-66-2
2,4-Dimethylphenol	105-67-9
Dimethyl phthalate	131-11-3
Di-n-butyl phthalate	84-74-2
Di-n-octyl phthalate	117-84-0
4,6-Dinitro-2-methylphenol	534-52-1
2,4-Dinitrophenol	51-28-5
2,4-Dinitrotoluene	121-14-2
2,6-Dinitrotoluene	606-20-2
Fluoranthene	206-44-0
Fluorene	86-73-7
Hexachlorobenzene	118-74-1
Hexachlorobutadiene	87-68-3
Hexachlorocyclopentadiene	77-47-4
Hexachloroethane	67-72-1
Indeno(1,2,3-cd)pyrene	193-39-5
Isophorone	78-59-1
2-Methylnaphthalene	91-57-6
2-Methylphenol (o-Cresol)	95-48-7
4-Methylphenol (p-Cresol)	106-44-5
Naphthalene	91-20-3
2-Nitroaniline	88-74-4
3-Nitroaniline	99-09-2
4-Nitroaniline	100-01-6
Nitrobenzene	98-95-3
2-Nitrophenol	88-75-5
4-Nitrophenol	100-02-7

COMPOUND	CAS #
TCL Semi-Volatile Organic Compounds	
(Method 8270C - base-neutrals and acid extractables)	
N-Nitrosodiphenylamine	86-30-6
N-Nitroso-di-n-propylamine	621-64-7
Pentachlorophenol	87-86-5
Phenanthrene	85-01-8
Phenol	108-95-2
Pyrene	129-00-0
1,2,4-Trichlorobenzene	120-82-1
2,4,5-Trichlorophenol	95-95-4
2,4,6-Trichlorophenol	88-06-2
TAL Metals	
(Method 6010B)	
Antimony	7440-38-2
Arsenic	7440-38-2
Barium	7440-39-3
Beryllium	7440-39-3
Cadmium	7440-43-9
Calcium	7440-70-2
Chromium	7440-47-3
Cobalt	7440-48-4
Copper	7440-50-8
Iron	7439-89-6
Lead	7439-92-1
Mercury (Method 7470A(water) and 7471A(solid))	7439-97-6
Magnesium	7439-95-4
Manganese	7439-96-5
Nickel	7440-02-0
Potassium	7440-09-7
Selenium	7782-49-2
Silver	7440-22-4
Sodium	7440-23-5
Thallium	7440-28-0
Vanadium	7440-62-2
Zinc	7440-66-6
Wet Chemistry	
Cyanide (Method 9010B)	57-12-5
PCBs	
Method 8082	
Aroclor 1016	12674-11-2
Aroclor 1221	11104-28-2
Aroclor 1232	11141-16-5
Aroclor 1242	53469-21-9
Aroclor 1248	12672-29-6
Aroclor 1254	11097-69-1
Aroclor 1260	11096-82-5

TABLE 3a

ANALYTICAL PROGRAM SUMMARY FOR PHASE III BPA

Remedial Investigation/Alternatives Analysis Report
Phase III Business Park Area
Tecumseh Redevelopment Inc.
Lackawanna, New York

Test Pit/Monitoring Well Sample Identifier	Investigation Rationale	Depth Sampled/ Screened (fbgs)	Date Sampled	Analysis: TCL + STARS VOCs	STARS VOCs	TCL SVOCs	TCL SVOCs (Base Neutrals Only)	Total Metals	TAL Metals	Arsenic	Cadmium	Chromium	Cyanide	Lead	Mercury	TCL PCBs	Flashpoint	pH	TCLP VOC	TCLP SVOC	TCLP Metals	Comments
Soil/Fill																						
BPA-3-TP-1	General Coverage: No known or suspected impact	0-2	8/12/2008	--	--	--	X	--	--	X	X	X	X	X	X	--	--	--	--	--	--	
BPA-3-TP-2	Area of multiple fuel, oil, and grease tanks	0-2	8/13/2008	--	X	--	X	--	--	X	X	X	X	X	X	--	--	--	--	--	--	
BPA-3-TP-2		2-4	8/13/2008	X	--	--	--	--	--	--	--	--	--	--	--	X	X	--	X	X	X	
BPA-3-TP-3		3-6	8/13/2008	X	--	X	--	--	X	--	--	--	--	--	--	X	--	--	--	--	--	
BPA-3-TP-4	Former Sinter Building	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
BPA-3-TP-5		0-2	8/11/2008	--	X	--	X	--	--	X	X	X	X	X	X	X	--	--	--	--	--	
BPA-3-TP-6		0-2	8/11/2008	X	--	--	X	--	--	X	X	X	X	X	X	--	--	--	--	--	--	
BPA-3-TP-6		2-6	8/11/2008	X	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
BPA-3-TP-7		0-2	8/13/2008	--	X	--	X	--	--	X	X	X	X	X	X	--	--	--	--	--	--	
BPA-3-TP-8		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
BPA-3-TP-9	Area of existing WQCS #3a garage (SWMU-19)	0-2	8/12/2008	--	X	--	X	--	--	X	X	X	X	X	X	--	--	--	--	--	--	
BPA-3-TP-10	Former area of SWMU-25 and SWMU-26	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
BPA-3-TP-11	Former thaw house	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
BPA-3-TP-12		0-2	8/15/2008	--	X	--	X	--	--	X	X	X	X	X	X	--	--	--	--	--	--	
BPA-3-TP-13	Former stripper building	0-2	8/14/2008	--	--	--	X	--	--	X	X	X	X	X	X	--	--	--	--	--	--	
BPA-3-TP-14	Portion of former Open Hearth No. 3	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
BPA-3-TP-15		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
BPA-3-TP-16		0-2	8/15/2008	--	--	--	X	--	--	X	X	X	X	X	X	--	--	--	--	--	--	
BPA-3-TP-17		0-2	8/20/2008	--	--	--	X	--	--	X	X	X	X	X	X	--	--	--	--	--	--	
BPA-3-TP-18		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
BPA-3-TP-19		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
BPA-3-TP-20		0-2	8/20/2008	X	--	X	--	--	X	--	--	--	X	--	--	X	--	--	--	--	--	MS/MSD
BPA-3-TP-21	Area of former welfare building & transformers	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
BPA-3-TP-22		0-2	8/19/2008	--	X	--	X	--	--	X	X	X	X	X	X	--	--	--	--	--	--	
BPA-3-TP-23		0-2	8/20/2008	--	X	--	X	--	--	X	X	X	X	X	X	X	--	--	--	--	--	
BPA-3-TP-24		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
BPA-3-TP-25		3-7	8/20/2008	--	--	--	X	--	--	X	X	X	X	X	X	--	--	--	--	--	--	
BPA-3-TP-26	Former Open Hearth No. 3 substation	0-1	8/15/2008	--	--	--	X	--	--	X	X	X	X	X	X	X	--	--	--	--	--	
BPA-3-TP-27		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
BPA-3-TP-28		0-2	8/15/2008	--	--	--	X	--	--	X	X	X	X	X	X	X	--	--	--	--	--	
BPA-3-TP-29	Area of SWMU-21 through SWMU-23	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
BPA-3-TP-30		0-2	8/18/2008	--	--	--	X	--	--	X	X	X	X	X	X	--	--	--	--	--	--	
BPA-3-TP-31		0-2	8/19/2008	--	--	--	X	--	--	X	X	X	X	X	X	--	--	--	--	--	--	
BPA-3-TP-32		0-2	8/19/2008	--	X	--	X	--	--	X	X	X	X	X	X	--	--	--	--	--	--	Blind
BPA-3-TP-33		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
BPA-3-TP-34		0-4	8/19/2008	--	--	--	X	--	--	X	X	X	X	X	X	--	--	--	--	--	--	
BPA-3-TP-35		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
BPA-3-TP-36		0-2	8/18/2008	--	--	--	X	--	--	X	X	X	X	X	X	--	--	--	--	--	--	MS/MSD
BPA-3-TP-37	General Coverage: No known or suspected impact	0-2	8/15/2008	--	--	--	X	--	--	X	X	X	X	X	X	--	--	--	--	--	--	
BPA-3-TP-38	Area of 2,000 gal oil tank	0-2	8/19/2008	--	X	--	X	--	--	X	X	X	X	X	X	--	--	--	--	--	--	
BPA-3-TP-39		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
BPA-3-TP-40	Area of molding warming building	0-2	8/21/2008	--	--	--	X	--	--	X	X	X	X	X	X	--	--	--	--	--	--	
BPA-3-TP-41	General Coverage: No known or suspected impact	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
BPA-3-TP-42		0-2	8/21/2008	X	--	--	X	--	--	X	X	X	X	X	X	--	--	--	--	--	--	
BPA-3-TP-42		Waste	8/21/2008	--	--	X	--	--	--	--	--	--	--	--	--	X	X	--	X	--	X	Blind 2
BPA-3-TP-43	Former Basic Oxygen Furnace (BOF) Plant	0-2	8/21/2008	--	--	--	X	--	--	X	X	X	X	X	X	--	--	--	--	--	--	
BPA-3-TP-44		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
BPA-3-TP-45		0-2	8/21/2008	--	--	--	X	--	--	X	X	X	X	X	X	--	--	--	--	--	--	
BPA-3-TP-46		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
BPA-3-TP-47		0-2	8/22/2008	--	--	--	X	--	--	X	X	X	X	X	X	--	--	--	--	--	--	
BPA-3-TP-48		0-2	8/22/2008	--	--	--	X	--	--	X	X	X	X	X	X	--	--	--	--	--	--	
BPA-3-TP-49		0-2	8/22/2008	--	X	--	X	--	--	X	X	X	X	X	X	X	--	--	--	--	--	
BPA-3-TP-50		0-2	8/26/2008	X	--	X	--	--	X	--	--	--	--	--	--	X	--	--	--	--	--	Blind 3
BPA-3-TP-51		0-2	8/26/2008	--	X	--	X	--	--	X	X	X	X	X	X	--	--	--	--	--	--	

TABLE 3a

ANALYTICAL PROGRAM SUMMARY FOR PHASE III BPA

Remedial Investigation/Alternatives Analysis Report
Phase III Business Park Area
Tecumseh Redevelopment Inc.
Lackawanna, New York

Test Pit/Monitoring Well Sample Identifier	Investigation Rationale	Depth Sampled/ Screened (fbgs)	Date Sampled	Analysis																		Comments
				TCL + STARS VOCs	STARS VOCs	TCL SVOCs	TCL SVOCs (Base Neutrals Only)	Total Metals	TAL Metals	Arsenic	Cadmium	Chromium	Cyanide	Lead	Mercury	TCL PCBs	Flashpoint	pH	TCLP VOC	TCLP SVOC	TCLP Metals	
BPA-3-TP-51	Former Basic Oxygen Furnace (BOF) Plant	2-9	8/26/2008	--	--	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
BPA-3-TP-52		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
BPA-3-TP-53		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
BPA-3-TP-54		0-2	8/26/2008	X	--	--	X	--	--	X	X	X	X	X	X	--	--	--	--		--	
BPA-3-TP-54		--	8/26/2008	X	--	--	--	--	--	--	--	--	--	--	--	X	X	--	X	X	X	
BPA-3-TP-55		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
BPA-3-TP-56	Area of former Linde Plant	0-2	8/25/2008	--	--	--	X	--	--	X	X	X	X	X	X	--	--	--	--	--	--	
BPA-3-TP-57		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
BPA-3-TP-58		0-2	8/25/2008	--	X	--	X	--	--	X	X	X	X	X	X	--	--	--	--	--	--	
BPA-3-TP-59	General Coverage: No known or suspected impact	0-2	8/26/2008	--	--	--	X	--	--	X	X	X	X	X	X	--	--	--	--	--	--	
BPA-3-TP-60	General Coverage: No known or suspected impact	0-2	8/22/2008	--	--	--	X	--	--	X	X	X	X	X	X	--	--	--	--	--	--	
BPA-3-TP-61	Area of 1,000 gal. tank	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
BPA-3-TP-62		0-2	8/26/2008	--	X	--	X	--	--	X	X	X	X	X	X	--	--	--	--	--	--	
BPA-3-TP-63	Former stripper building	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
BPA-3-TP-64		0-2	8/26/2008	--	--	--	X	--	--	X	X	X	X	X	X	--	--	--	--	--	--	MS/MSD
BPA-3-TP-65	General Coverage: No known or suspected impact	0-2	8/26/2008	--	--	--	X	--	--	X	X	X	X	X	X	--	--	--	--	--	--	
BPA-3-TP-66		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
BPA-3-TP-67	Portion of former 45"-90" Universal Slabbing Mill (SWMU P-28 through SWMU P-32)	0-4	8/28/2008	--	--	--	X	--	--	X	X	X	X	X	X	X	--	--	--	--	--	
BPA-3-TP-68		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
BPA-3-TP-69		0-2	8/28/2008	X	--	X	--	--	X	--	--	--	X	--	--	X	--	--	--	--	--	
BPA-3-TP-70		0-2	8/29/2008	--	X	--	X	--	--	X	X	X	X	X	X	--	--	--	--	--	--	
BPA-3-TP-71	Area of former Universal Slabbing Mill return water trench	0-2	8/29/2008	--	--	--	X	--	--	X	X	X	X	X	X	X	--	--	--	--	--	
BPA-3-TP-72		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Not completed due to open ditch; 3 surface soils collected instead
BPA-3-TP-73		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
BPA-3-TP-74		0-2	8/29/2008	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
BPA-2-TP-74		2-8	8/29/2008	--	--	--	X	--	--	X	X	X	X	X	X	--	--	--	--	--	--	
BPA-3-TP-75	Area of 2,000 gal. and 5,000 gal. USTs	0-2	8/29/2008	X	--	X	--	--	X	--	--	--	X	--	--	X	--	--	--	--	--	
BPA-3-TP-76	Potential former AST area	0-2	8/28/2008	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
BPA-3-TP-76		2-7	8/28/2008	--	--	--	X	--	--	X	X	X	X	X	X	--	--	--	--	--	--	
BPA-3-TP-77		0-2	8/28/2008	X	--	X	--	--	X	--	--	--	X	--	--	--	--	--	--	--	--	
BPA-3-TP-78		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
BPA-3-TP-79	General Coverage: No known or suspected impact	0-2	8/28/2008	--	--	--	X	--	--	X	X	X	X	X	X	--	--	--	--	--	--	
BPA-3-TP-80		0-2	8/28/2008	--	--	--	X	--	--	X	X	X	X	X	X	--	--	--	--	--	--	
BPA-3-TP-80		2-7	8/28/2008	--	--	--	X	--	--	X	X	X	X	X	X	--	--	--	--	--	--	
BPA-3-TP-81		0-2	8/22/2008	--	--	--	X	--	--	X	X	X	X	X	X	--	--	--	--	--	--	
BPA-3-TP-82		0-2	8/22/2008	--	--	--	X	--	--	X	X	X	X	X	X	--	--	--	--	--	--	
BPA-3-TP-83	Area of WQS Clarifiers and Thickners	0-2	8/14/2008	--	X	--	X	--	--	X	X	X	X	X	X	--	--	X	--	--	--	
BPA-3-TP-84		0-2	8/14/2008	--	X	--	X	--	--	X	X	X	X	X	X	--	--	X	--	--	--	
BPA-3-TP-85		0-2	8/14/2008	--	X	--	X	--	--	X	X	X	X	X	X	--	--	X	--	--	--	
BPA-3-TP-86	Area of WQS Tank	0-2	8/14/2008	--	X	--	X	--	--	X	X	X	X	X	X	--	--	X	--	--	--	
			Totals	**12**	**18**	**7**	**53**	**0**	**6**	**52**	**52**	**52**	**56**	**52**	**52**	**15**	**3**	**4**	**3**	**2**	**3**	
Surface Samples																						
East Trench		0-0.5	9/22/2008	--	--	--	X	--	--	X	X	X	X	X	X	X	--	--	--	--	--	
Middle Trench		0-0.5	9/22/2008	--	--	--	X	--	--	X	X	X	X	X	X	X	--	--	--	--	--	
West Trench		0-0.5	9/22/2008	--	--	--	X	--	--	X	X	X	X	X	X	X	--	--	--	--	--	

TABLE 3a

ANALYTICAL PROGRAM SUMMARY FOR PHASE III BPA

Remedial Investigation/Alternatives Analysis Report
Phase III Business Park Area
Tecumseh Redevelopment Inc.
Lackawanna, New York

Test Pit/Monitoring Well Sample Identifier	Investigation Rationale	Depth Sampled/ Screened (fbgs)	Date Sampled	Analysis																		Comments
				TCL + STARS VOCs	STARS VOCs	TCL SVOCs	TCL SVOCs (Base Neutrals Only)	Total Metals	TAL Metals	Arsenic	Cadmium	Chromium	Cyanide	Lead	Mercury	TCL PCBs	Flashpoint	pH	TCLP VOC	TCLP SVOC	TCLP Metals	
Groundwater																						
MWN-56A			1/14/2009	--	X	--	X	--	X	--	--	--	--	--	--	--	--	--	--	--	--	
MWN-57A			1/14/2009	--	X	--	X	--	X	--	--	--	--	--	--	--	--	--	--	--	--	
MWN-10A			1/14/2009	--	X	--	X	--	X	--	--	--	--	--	--	--	--	--	--	--	--	
MWN-58A			1/14/2009	--	X	--	X	--	X	--	--	--	--	--	--	--	--	--	--	--	--	
MWN-59A			1/14/2009	--	X	--	X	--	X	--	--	--	--	--	--	--	--	--	--	--	--	
MWN-60A			1/14/2009	--	X	--	X	--	X	--	--	--	--	--	--	--	--	--	--	--	--	
MWS-34A			1/16/2009	--																		
MWS-35A			1/16/2009	--																		MS/MSD
MWS-33A			1/16/2009	--																		
MWS-30A			1/16/2009	--																		
			Totals	**0**	**6**	**0**	**6**	**0**	**6**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	

TABLE 3b

ANALYTICAL PROGRAM SUMMARY FOR PHASE IIIA BPA

Remedial Investigation/Alternatives Analysis Report
Phase IIIA Business Park Area
Tecumseh Redevelopment Inc.
Lackawanna, New York

Test Pit/Monitoring Well Sample Identifier	Investigation Rationale	Depth Sampled/ Screened (fbgs)	Date Sampled	Analysis										Comments
				TCL + STARS VOCs	STARS VOCs	TCL SVOCs	TCL SVOCs (Base Neutrals Only)	TAL Metals	COPC Metals	Cyanide	Barium	TCL PCBs	pH	
Soil/Fill														
BPA-3A-TP-1	Downgradient of former Grease & Oil House and Acetylene Container Storage	0-2	11/18/2009	--	--	--	X	--	X	--	--	--	--	
BPA-3A-TP-2	Former Air Compressor Station near Soaking Pit Building foundation	0-2	11/18/2009	--	--	--	X	--	X	--	--	--	--	
BPA-3A-TP-3	Downgradient of former Air Compressor Station near Soaking Pit Building	2-6	11/18/2009	--	--	--	X	--	X	--	--	--	--	
BPA-3A-TP-4	Downgradient of Electric Department Building	0-2	11/18/2009	--	--	--	X	--	X	--	--	--	--	
BPA-3A-TP-5	No known or suspected impact	--	--	--	--	--	--	--	--	--	--	--	--	
BPA-3A-TP-6		0-2	11/18/2009	--	--	--	X	--	X	--	--	--	--	
BPA-3A-TP-7		--	--	--	--	--	--	--	--	--	--	--	--	
BPA-3A-TP-8	No known or suspected impact	5-8	11/18/2009	X	--	--	X	--	X	--	--	--	--	
BPA-3A-TP-9		--	--	--	--	--	--	--	--	--	--	--	--	
BPA-3A-TP-10		--	--	--	--	--	--	--	--	--	--	--	--	
BPA-3A-TP-11		--	--	--	--	--	--	--	--	--	--	--	--	
BPA-3A-TP-12	Former area of Track Scale House	--	--	--	--	--	--	--	--	--	--	--	--	
BPA-3A-TP-13	No known or suspected impact	--	--	--	--	--	--	--	--	--	--	--	--	
BPA-3A-TP-14		4-6	11/18/2009	X	--	--	X	--	X	--	--	--	--	
BPA-3A-TP-15		--	--	--	--	--	--	--	--	--	--	--	--	
BPA-3A-TP-16		--	--	--	--	--	--	--	--	--	--	--	--	
BPA-3A-TP-17	Former Instrument Repair Shop	3-6	11/20/2009	X	--	X	--	X	--	X	--	X	--	MS/MSD
BPA-3A-TP-18	Former 15,000-gallon diesel oil AST	3-6	11/20/2009	--	X	--	X	--	X	--	--	--	--	
BPA-3A-TP-19	Former Automotive Service Station	3-6	11/20/2009	X	--	X	--	X	--	X	--	X	--	
BPA-3A-TP-20	No known or suspected impact	--	--	--	--	--	--	--	--	--	--	--	--	
BPA-3A-TP-21		--	--	--	--	--	--	--	--	--	--	--	--	
BPA-3A-TP-22		0-2	11/20/2009	--	--	--	X	--	X	--	--	--	--	
BPA-3A-TP-23		--	--	--	--	--	--	--	--	--	--	--	--	
BPA-3A-TP-24	Downgradient of former Open Hearth No. 3 Building	0-2	11/20/2009	--	--	--	X	--	X	--	--	--	--	
BPA-3A-TP-25	Former 2,000-gallon fuel oil AST	3-5	11/20/2009	--	X	--	X	--	X	--	--	--	--	Blind 1
BPA-3A-TP-26	Former Fuel Oil Storage Building (2 ASTs)	0-2	11/23/2009	--	X	--	X	--	X	--	--	--	--	
BPA-3A-TP-27	Former Oil House	0-2	11/23/2009	--	X	--	X	--	X	--	--	--	--	
BPA-3A-TP-28	Former Transformer Substation 7E	0-2	11/23/2009	--	--	--	X	--	X	--	--	X	--	
BPA-3A-TP-29	Former Transformer Substation 7E	0-2	11/23/2009	--	--	--	X	--	X	--	--	X	--	
BPA-3A-TP-30	Former Precipitator Transformers	2-5	11/23/2009	--	--	--	X	--	X	--	--	X	--	
BPA-3A-TP-31	Former Precipitator Transformers	3-5	11/23/2009	--	--	--	X	--	X	--	--	X	--	
BPA-3A-TP-32	Former Precipitator Transformers	0-2	11/23/2009	--	--	--	X	--	X	--	--	X	--	
BPA-3A-TP-33	Former 1,500-gallon pitch AST	0-2	11/23/2009	--	--	--	X	--	X	--	--	--	--	
BPA-3A-TP-34	Former Tar Pump House	0-2	11/23/2009	--	--	--	X	--	X	--	--	--	--	
BPA-3A-TP-35	Downgradient of Water Treatment Pump House	0-2	11/23/2009	--	--	--	X	--	X	--	--	--	--	
BPA-3A-TP-36	No known or suspected impact	--	--	--	--	--	--	--	--	--	--	--	--	
BPA-3A-TP-37		0-2	11/24/2009	X	--	X	--	X	--	X	--	X	--	
BPA-3A-TP-38		--	--	--	--	--	--	--	--	--	--	--	--	
BPA-3A-TP-39		--	--	--	--	--	--	--	--	--	--	--	--	
BPA-3A-TP-40	No known or suspected impact	0-2	11/24/2009	--	--	--	X	--	X	--	--	--	--	
BPA-3A-TP-41		--	--	--	--	--	--	--	--	--	--	--	--	
BPA-3A-TP-42		--	--	--	--	--	--	--	--	--	--	--	--	
BPA-3A-TP-43		--	--	--	--	--	--	--	--	--	--	--	--	

TABLE 3b

ANALYTICAL PROGRAM SUMMARY FOR PHASE IIIA BPA

Remedial Investigation/Alternatives Analysis Report
Phase IIIA Business Park Area
Tecumseh Redevelopment Inc.
Lackawanna, New York

Test Pit/Monitoring Well Sample Identifier	Investigation Rationale	Depth Sampled/ Screened (fbgs)	Date Sampled	Analysis										Comments
				TCL + STARS VOCs	STARS VOCs	TCL SVOCs	TCL SVOCs (Base Neutrals Only)	TAL Metals	COPC Metals	Cyanide	Barium	TCL PCBs	pH	
BPA-3A-TP-44	Former Tar Pump House	7-8	11/24/2009	X	--	X	--	X	--	X	--	X	--	
BPA-3A-TP-45	Former 1M cubic foot gas holder	0-2	11/30/2009	--	--	--	X	--	X	X	X	--	--	MS/MSD
BPA-3A-TP-46	Former 1M cubic foot gas holder	0-2	11/30/2009	--	--	--	X	--	X	X	X	--	--	
BPA-3A-TP-47	Former 1M cubic foot gas holder	0-2	11/30/2009	--	--	--	X	--	X	X	X	--	--	
BPA-3A-TP-48	Former 1M cubic foot gas holder	0-2	11/30/2009	--	--	--	X	--	X	X	X	--	--	
BPA-3A-SS-49	Former gas holder pump house	0	11/30/2009	--	--	--	X	--	X	X	X	--	--	
BPA-3A-TP-49	Former gas holder pump house	0-2	11/30/2009	--	--	--	X	--	X	X	X	--		Blind 2
BPA-3A-TP-49	Former gas holder pump house	5-7	11/30/2009	--	--	--	--	X	--	--	--	--	X	
BPA-3A-TP-50	Adjacent to SWMU P-12	0-2	11/30/2009	--	X	--	X	--	X	--	--	--	--	
BPA-3A-TP-51	Adjacent to/downgradient of SWMU P-12	0-2	11/30/2009	X	--	X	--	X	--	X	--	X	--	
BPA-3A-TP-52	Adjacent to SWMU P-12	0-2	12/2/2009	--	X	--	X	--	X	--	--	--	--	MS/MSD
BPA-3A-TP-53	Adjacent to SWMU P-12	5-7	12/1/2009	X	--	X	--	X	--	X	--	--	--	
BPA-3A-TP-54	Former Open Hearth No. 3 building footprint	0-2	12/2/2009	--	X	--	X	--	X	--	--	--	--	
BPA-3A-TP-55	Former Open Hearth No. 3 building footprint	0-2	12/2/2009	X	--	X	--	X	--	X	--	X	--	Blind 3
BPA-3A-TP-56	Former Open Hearth No. 3 building footprint	0-2	12/2/2009	--	X	--	X	--	X	--	--	--	--	
BPA-3A-TP-57	No known or suspected impact	0-2	11/24/2009	--	X	--	X	--	X	--	--	--	--	
BPA-3A-TP-58	Adjacent to Benzol Loading Dock	5-6	11/30/2009	--	X	--	X	--	X	--	--	--	--	
			Totals	**9**	**10**	**7**	**34**	**8**	**34**	**13**	**6**	**11**	**1**	
Groundwater														
MWS-04	General Site Coverage	--	1/21/2010	--	X	--	X	--	X	--	--	--	--	
MWN-19A	General Site Coverage	--	1/21/2010	X	--	X	--	X	--	X	--	--	--	MS/MSD, Blind Dup
MWN-19B	General Site Coverage	--	1/21/2010	--	X	--	X	--	X	--	--	--	--	
MWN-30A	General Site Coverage	--	1/21/2010	--	X	--	X	--	X	--	--	--	--	
MWS-31A	General Site Coverage	--	1/21/2010	--	X	--	X	--	X	--	--	--	--	
MWN-61A	General Site Coverage	--	1/21/2010	--	X	--	X	--	X	--	--	--	--	
MWN-62-D	General Site Coverage	--	1/21/2010	--	X	--	X	--	X	--	--	--	--	
			Totals	**1**	**6**	**1**	**6**	**1**	**6**	**1**	**0**	**0**	**0**	

TABLE 4

GROUNDWATER MONITORING WELL CONSTRUCTION DETAILS

Remedial Investigation/Alternatives Analysis Report
Phase III Business Park Area
Tecumseh Redevelopment Inc.
Lackawanna, New York

Well I.D.	Northing	Easting	Ground Elev. (fmsl)	Stick-up (feet)	TOR Elev. (fmsl)	Total Depth (fbTOR)	Screen Length (feet)	Screened Interval (fbgs)		Riser / Screen Diam. (in.)	Riser / Screen Material	Screen Slot Size (in.)	Stratigraphic Unit Monitoring
								top	bottom				
MONITORING WELLS NORTH													
MWN-10	1026373.615	1075621.513	583.30	2.17	585.47	18.33	10	6.00	16.00	4	PVC/SS	0.010	F
MWN-19A	1027566.513	1074436.041	583.07	2.22	585.29	18.24	10	6.00	16.00	2	PVC/SS	0.010	F,S,P
MWN-19B	1027555.852	1074440.480	582.77	2.29	585.06	28.81	10	16.00	26.00	2	PVC,SS/SS	0.010	P
MWN-30A	1027642.623	1074640.826	582.67	2.92	585.59	20.95	15	3.00	18.00	2	SS/SS	0.010	F
MWN-40A	1026195.305	1074615.333	587.86	2.10	589.96	19.00	10	9.00	19.00	2	PVC/SS	0.010	F
MWN-56A	1027217.933	1075838.118	582.16	2.08	584.24	20.28	10	8.00	18.00	2	PVC/PVC	0.010	F
MWN-57A	1027059.679	1075257.817	583.42	2.78	586.20	21.78	10	8.00	18.00	2	PVC/PVC	0.010	F
MWN-58A	1025264.761	1076437.256	584.08	2.85	586.93	19.69	10	8.00	18.00	2	PVC/PVC	0.010	F
MWN-59A	1024786.311	1075925.932	584.40	3.04	587.44	21.32	10	8.00	18.00	2	PVC/PVC	0.010	F
MWN-60A	1024331.051	1076408.328	583.77	2.79	586.56	20.40	10	8.00	18.00	2	PVC/PVC	0.010	F
MWN-61A	1025357.610	1075641.250	584.72	2.19	586.91	18.03	10	6.00	16.00	2	PVC/PVC	0.010	F
MWN-62D	1026206.635	1074783.613	582.34	2.27	584.61	65.96	9	54.00	63.00	2	PVC/PVC	0.010	R
MONITORING WELLS SOUTH													
MWS-03	1024939.229	1075241.079	585.70	1.72	587.42	20.43	10	8.00	18.00	4	PVC/SS	0.010	F
MWS-04	1023844.145	1075429.974	583.61	2.44	586.05	20.43	10	7.00	17.00	4	PVC/SS	0.010	F
MWS-24A	1024237.749	1074911.499	591.77	2.56	594.33	23.00	10	13.00	23.00	2	PVC,SS/SS	0.020	F,S
MWS-24B	1024246.099	1074904.119	591.79	2.59	594.38	39.20	10	26.00	36.00	2	PVC,SS/SS	0.010	S,C
MWS-30A	1023018.759	1076614.467	583.21	2.52	585.73	20.42	10	8.00	18.00	2	PVC/SS	0.010	F
MWS-31A	1023875.581	1075671.716	583.98	2.64	586.62	14.28	7	4.00	11.00	2	PVC/SS	0.010	F
MWS-33A	1023627.520	1076549.551	584.29	2.82	587.11	21.12	10	8.00	18.00	2	PVC/SS	0.010	F
MWS-34A	1024438.871	1075824.708	584.57	2.56	587.13	21.31	10	8.00	18.00	2	PVC/SS	0.010	F
MWS-35A	1023289.235	1075682.948	584.29	2.49	586.78	20.83	10	8.00	18.00	2	PVC/SS	0.010	F
PIEZOMETERS													
P-38S	1024722.409	1076613.560	584.37	1.41	585.78	14.00	10	4.00	14.00	0.75	PVC/PVC	0.010	F,CS
P-39S	1024682.574	1076504.369	584.53	2.03	586.56	14.00	10	4.00	14.00	0.75	PVC/PVC	0.010	F,C
P-46S	1026491.365	1076118.306	582.24	0.00	582.24	13.00	10	3.00	13.00	0.75	PVC/PVC	0.010	F
P-47S	1026503.088	1076149.445	581.09	1.80	582.89	13.00	10	3.00	13.00	0.75	PVC/PVC	0.010	F
P-58S	1025621.176	1075503.741	585.41	1.64	587.05	*well construction data not available*							F
P-59S	1026211.884	1075300.838	584.28	2.44	586.72	*well construction data not available*							F
P-60S	1026016.893	1075159.269	584.24	1.47	585.71	*well construction data not available*							F

Notes:
1. Monitoring well MWS-24A has an obstruction at approximately 6.35 fbTOR.

Stratigraphic Unit:
- F = fill unit
- S = Sand unit
- R = bedrock unit
- CS = Clayey Silt unit
- P = Peat unit
- C = Clay unit

Material:
- PVC = polyvinyl chloride
- SS = Stainless Steel

TABLE 5

SUMMARY OF GROUNDWATER ELEVATIONS
Januarary 29, 2010 and December 5, 2011

Remedial Investigation / Alternatives Analysis Report
Phase III Business Park Area
Tecumseh Redevelopment Inc.
Lackawanna, New York

Location	Reference Point	Ref. Point Elevation [1] (fmsl) 1/29/10	Ref. Point Elevation [1] (fmsl) 12/5/10	Water Depth Below Ref. Pt. (feet) 1/29/10	Water Depth Below Ref. Pt. (feet) 12/5/11	Water Table Elevation [1] (fmsl) 1/29/10
Phase Wells III Monitoring Wells(23)						
MWN-10	TOR	585.47	6.12	7.95	579.35	577.52
MWN-19A	TOR	585.29	7.44	7.82	577.85	577.47
MWN-19B	TOR	585.06	10.03	10.27	575.03	574.79
MWN-24A	TOR	588.05	11.55	11.48	576.50	576.57
MWN-24B	TOR	587.88	15.31	15.86	572.57	572.02
MWN-30A	TOR	585.59	8.03	7.92	577.56	577.67
MWN-40A	TOR	589.96	13.76	13.50	576.20	576.46
MWN-56A	TOR	584.24	6.90	6.77	577.34	577.47
MWN-57A	TOR	586.20	8.61	8.43	577.59	577.77
MWN-58A	TOR	586.93	10.08	9.93	576.85	577.00
MWN-59A	TOR	587.44	10.36	10.16	577.08	577.28
MWN-60A	TOR	586.56	9.65	9.50	576.91	577.06
MWN-61A	TOR	586.91	9.68	9.44	577.23	577.47
MWN-62D	TOR	584.61	12.13	12.47	572.48	572.14
MWS-03	TOR	587.42	13.47	13.23	573.95	574.19
MWS-04	TOR	586.05	9.51	9.38	576.54	576.67
MWS-24A	TOR	594.33				
MWS-24B	TOR	594.38	20.11	20.11	574.27	574.27
MWS-30A	TOR	585.73	8.96	8.71	576.77	577.02
MWS-31A	TOR	586.62	10.21	10.05	576.41	576.57
MWS-33A	TOR	587.11	11.41	10.88	575.70	576.23
MWS-34A	TOR	587.14	11.38	11.32	575.76	575.82
MWS-35A	TOR	586.78	10.15	9.87	576.63	576.91
Phase III Piezometers (7)						
P-38S	TOR	585.78	5.94	8.79	579.84	576.99
P-39S	TOR	586.56	9.70	9.61	576.86	576.95
P-46S	TOR	582.24	5.70		576.54	
P-47S	TOR	582.89	6.63	6.49	576.26	576.40
P-58S	TOR	587.05	9.74	9.49	577.31	577.56
P-59S	TOR	586.72	9.14	8.49	577.58	578.23
P-60S	TOR	585.71	7.93		577.78	
Phase III Staff Guages (4)						
SG-02		582.07	15.81	11.31	566.26	570.76
SG-03		583.72	15.38	12.79	568.34	570.93
SG-04		586.12	10.91	11.14	575.21	574.98
SG-05		582.35	7.50	7.08	574.85	575.27

Notes:

1. Elevation is measured in feet; distance above mean sea level (fmsl).

MWS-24A has an obstruction at 9.0 fbgs

P-46S Could not be acessed during the 1/29/10 water level event

P-60S Could not be acessed during the 1/29/10 water level event

TABLE 6a

SUMMARY OF SOIL ANALYTICAL DATA

Remedial Investigation/Alternatives Analysis Report
Phase III Business Park Area
Tecumseh Redevelopment Inc.
Lackawanna, New York

Parameter [1]	Unrestricted SCOs [2] (ppm)	Sample Location													
		BPA-3-TP-1 (0-2')	BPA-3-TP-2 (0-2')	BPA-3-TP-2 (2-4')	BPA-3-TP-3 (3-6')	BPA-3-TP-5 (0-2')	BPA-3-TP-6 (0-2')	BPA-3-TP-6 (2-6')	BPA-3-TP-7 (0-2')	BPA-3-TP-9 (0-2')	BPA-3-TP-12 (0-2')	BPA-3-TP-13 (0-2')	BPA-3-TP-16 (0-2')	BPA-3-TP-17 (0-2')	BPA-3-TP-20 (0-2')
Volatile Organic Compounds (VOCs) - mg/kg [3]															
Acetone	0.05	--	--	ND	ND	--	ND	ND	0.094	--	--	--	--	--	0.006 J
Benzene	0.06	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	--	--	ND
2-Butanone (MEK)	0.12	--	--	ND	ND	--	ND	ND	0.013 J	--	--	--	--	--	ND
Carbon disulfide	--	--	--	ND	ND	--	ND	ND	ND	--	--	--	--	--	ND
Ethylbenzene	1	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	--	--	ND
Isopropylbenzene (Cumene)	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	--	--	ND
Methyl acetate	--	--	--	ND	ND	--	ND	ND	ND	--	--	--	--	--	ND
Methylcyclohexane	--	--	--	ND	ND	--	ND	ND	ND	--	--	--	--	--	ND
Methylene chloride	0.05	--	--	0.002 J	0.006	--	ND	ND	0.012	--	--	--	--	--	0.014
Toluene	0.7	--	ND	ND	ND	ND	ND	0.002 J	ND	ND	0.004 J	--	--	--	ND
Total Xylene	0.26	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	--	--	ND
o-Xylenes	0.26	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	--	--	ND
m&p-Xylene	0.26	--	ND	0.002 J	0.002 J	ND	ND	ND	0.002 J	ND	ND	--	--	--	ND
n-Propylbenzene	3.9	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	--	--	ND
p-Cymene (p-isopropyltoluene)	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	--	--	ND
1,2,4-Trimethylbenzene	3.6	--	ND	0.001 J	0.001 J	ND	ND	ND	0.001 J	ND	ND	--	--	--	ND
1,3,5-Trimethylbenzene	8.4	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	--	--	ND
sec-Butylbenzene	11	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	--	--	ND
tert-Butylbenzene	5.9	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	--	--	ND
Semi-Volatile Organic Compounds (SVOCs) - mg/kg [3]															
Acenaphthene	20	2.8 J	ND	--	1.2 J	0.93 J	0.082 J	--	--	ND	ND	ND	ND	ND	0.11 J
Acenaphthylene	100	1.5 J	0.45 J	--	3.3 J	4.4	0.6 J	--	--	0.98 J	ND	0.39 J	ND	0.09 J	0.47 J
Acetophenone	--	ND	ND	--	ND	ND	ND	--	--	ND	ND	ND	ND	ND	ND
Anthracene	100	11 J	0.86 J	--	6.5 J	8.9	0.62 J	--	--	0.72 J	0.17 J	0.52 J	2 J	0.092 J	0.64 J
Benzo(a)anthracene	1	23	3 J	--	12	25	2.9	--	--	2.1	0.88 J	1.7 J	37 J	0.36 J	1.8
Benzo(b)fluoranthene	1	22	4.4	--	11	25	4.4	--	--	4.2	1 J	2.5 J	65	0.69 J	2.8
Benzo(k)fluoranthene	0.8	10 J	1.4 J	--	5.1 J	7.9	1.8 J	--	--	1.6 J	0.44 J	0.97 J	26 J	0.29 J	1.1
Benzo(g,h,i)perylene	100	14 J	3 J	--	7.6	15	3.9	--	--	3.8	0.86 J	1.2 J	57	0.34 J	0.69 J
Benzo(a)pyrene	1	18 J	2.7 J	--	9.5	20	3.6	--	--	3.2	0.83 J	1.6 J	57	0.44 J	1.8
Biphenyl	--	ND	ND	--	0.39 J	0.28 J	ND	--	--	ND	ND	ND	ND	ND	ND
bis(2-Ethylhexyl)phthalate	--	ND	ND	--	ND	ND	ND	--	--	ND	ND	ND	ND	ND	ND
4-Chloroaniline	--	ND	ND	--	ND	ND	ND	--	--	ND	ND	ND	ND	ND	ND
Carbazole	--	--	--	--	2.9	--	--	--	--	--	--	--	--		0.2 J
Chrysene	1	23 B	3.3 BJ	--	10 B	21 B	3.1 B	--	--	2.8 B	1.2 BJ	2.7 BJ	44 B	0.4 BJ	1.9 B
Dibenzo(a,h)anthracene	0.33	4.4 J	0.85 J	--	2.2 J	3.8 J	0.73 J	--	--	0.94 J	ND	0.35 J	12 J	0.073 J	0.22 J
Dibenzofuran	--	3.3 J	ND	--	2.8 J	3 J	0.15 J	--	--	0.1 J	ND	ND	ND	ND	0.24 J
Fluoranthene	100	50 B	3.1 J	--	27	66	5.8	--	--	1.9 J	1.5 J	2.9 J	42	0.52 J	3.8
Fluorene	30	4 J	ND	--	5.7 J	6	0.16 J	--	--	0.083 J	ND	ND	ND	ND	0.18 J
Indeno(1,2,3-cd)pyrene	0.5	12 J	2.3 J	--	6.7	13	2.9	--	--	2.9	0.75 J	1 J	47	0.24 J	0.72 J
Isophorone	--	ND	ND	--	ND	ND	ND	--	--	ND	ND	ND	ND	ND	ND
2-Methylnaphthalene	--	1.1 J	0.81 J	--	1.8 J	0.84 J	0.085 J	--	--	0.16 J	ND	ND	ND	ND	0.11 J
Naphthalene	12	ND	0.23 J	--	2.7 J	1.9 J	0.19 J	--	--	0.17 J	ND	ND	ND	0.079 J	0.1 J
N-Nitroso-di-n-propylamine	--	ND	ND	--	ND	ND	ND	--	--	ND	ND	ND	ND	ND	ND
Phenanthrene	100	32 B	0.8 BJ	--	27 B	44 B	2.4 B	--	--	0.7 BJ	0.69 BJ	2 BJ	10 BJ	0.23 J	2.3
Pyrene	100	37 B	6.6	--	19	45	5.1	--	--	2.2 B	1.2 J	3 J	44	0.4 J	2.8
PCBs - mg/kg [3]															
Aroclor 1248	0.1	--	--	0.013 J	0.01 J	ND	--	--	--	--	--	--	--	--	ND
Aroclor 1254	0.1	--	--	0.051	0.11	ND	--	--	--	--	--	--	--	--	ND
Aroclor 1260	0.1	--	--	ND	ND	ND	--	--	--	--	--	--	--	--	ND
Aroclor 1262	0.1	--	--	0.03	0.017 J	0.034 J	--	--	--	--	--	--	--	--	--
Inorganic Compounds - mg/kg															
Aluminum	--	--	--	--	11400	--	--	--	--	--	--	--	--	--	11800 *
Arsenic	13	8.8	19.7	--	45	17.1	12.7	--	--	27.3	99.2 E	10.9 E	7.3 E	5.7 E	20.2 E
Barium	350	--	--	--	140	--	--	--	--	--	--	--	--	--	132 N*
Beryllium	7.2	--	--	--	1.5	--	--	--	--	--	--	--	--	--	1.4 *
Cadmium	2.5	1.8	2	--	1.5	0.92	3.1	--	--	3.4	2.8	2	0.56	1.5 *	4.9 *
Calcium	--	--	--	--	52300	--	--	--	--	--	--	--	--	--	63700 EJ*
Chromium [4]	31	423	110	--	30.6	124	69.1	--	--	35.9	60.8 EN	134 EN	397 EN	212 N*	129 N*
Cobalt	--	--	--	--	4.6	--	--	--	--	--	--	--	--	--	6.5 *
Copper	50	--	--	--	80	--	--	--	--	--	--	--	--	--	77.5
Iron	--	--	--	--	48400	--	--	--	--	--	--	--	--	--	37900 J
Lead	63	184	231	--	144	120	925	--	--	381	287 EN*	259 EN*	80 EN*	1140	843 J
Magnesium	--	--	--	--	7070	--	--	--	--	--	--	--	--	--	9110 *
Manganese	1600	--	--	--	2220	--	--	--	--	--	--	--	--	--	21200 J*
Nickel	30	--	--	--	14.6	--	--	--	--	--	--	--	--	--	19.2 EN
Potassium	--	--	--	--	1200	--	--	--	--	--	--	--	--	--	1180 *
Mercury	0.18	0.303	0.118	--	0.189	0.555	0.261	--	--	0.303	0.057	0.522	0.278	0.31 N	0.917 N
Silver	2	--	--	--	ND	--	--	--	--	--	--	--	--	--	ND
Sodium	--	--	--	--	462	--	--	--	--	--	--	--	--	--	324 *
Vanadium	--	--	--	--	24.5	--	--	--	--	--	--	--	--	--	84.6 N*
Zinc	109	--	--	--	323	--	--	--	--	--	--	--	--	--	284 EJ
Cyanide	27	ND	ND	--	--	ND	ND	--	--	ND	ND	ND	2	ND	--
General Chemistry															
pH		--	--	--	--	--	--	--	--	--	--	--	--	--	--
Flashpoint		--	--	--	--	--	--	--	--	--	--	--	--	--	--

Parameter [1]	Sample Location													
	BPA-3-TP-22 (0-2')	BPA-3-TP-23 (0-2')	BPA-3-TP-25 (3-7')	BPA-3-TP-26 (0-1')	BPA-3-TP-28 (0-2')	BPA-3-TP-30 (0-2')	BPA-3-TP-31 (0-2')	BPA-3-TP-32 (0-2')	BPA-3-TP-34 (0-4')	BPA-3-TP-36 (0-2')	BPA-3-TP-37 (0-2')	BPA-3-TP-38 (0-2')	BPA-3-TP-40 (0-2')	BPA-3-TP-42 (0-2')
Volatile Organic Compounds (VOCs) - mg/kg [3]														
Acetone	--	--	--	--	--	--	--	--	--	--	--	--	--	0.5
Benzene	ND	ND	--	--	--	--	--	ND	--	--	--	9E-04 J	--	ND
2-Butanone (MEK)	--	--	--	--	--	--	--	--	--	--	--	--	--	0.032 J
Carbon disulfide	--	--	--	--	--	--	--	--	--	--	--	--	--	ND
Ethylbenzene	ND	ND	--	--	--	--	--	ND	--	--	--	ND	--	ND
Isopropylbenzene (Cumene)	ND	ND	--	--	--	--	--	ND	--	--	--	ND	--	0.012 J
Methyl acetate	--	--	--	--	--	--	--	--	--	--	--	--	--	ND
Methylcyclohexane	--	--	--	--	--	--	--	--	--	--	--	--	--	0.017 J
Methylene chloride	--	--	--	--	--	--	--	--	--	--	--	--	--	0.057
Toluene	0.00029 J	0.003 J	--	--	--	--	--	0.0004 J	--	--	--	ND	--	ND
Total Xylene	ND	ND	--	--	--	--	--	ND	--	--	--	ND	--	0.021 J
o-Xylenes	ND	ND	--	--	--	--	--	ND	--	--	--	ND	--	0.01 J
m&p-Xylene	ND	ND	--	--	--	--	--	ND	--	--	--	ND	--	0.01 J
n-Propylbenzene	ND	ND	--	--	--	--	--	ND	--	--	--	ND	--	0.016 J
p-Cymene (p-isopropyltoluene)	ND	ND	--	--	--	--	--	ND	--	--	--	ND	--	0.094
1,2,4-Trimethylbenzene	ND	0.009 J	--	--	--	--	--	ND	--	--	--	9E-04 J	--	0.68
1,3,5-Trimethylbenzene	ND	ND	--	--	--	--	--	ND	--	--	--	ND	--	0.53
sec-Butylbenzene	ND	ND	--	--	--	--	--	ND	--	--	--	ND	--	0.085
tert-Butylbenzene	ND	ND	--	--	--	--	--	ND	--	--	--	ND	--	0.014 J
Semi-Volatile Organic Compounds (SVOCs) - mg/kg [3]														
Acenaphthene	0.79 J	0.17 J	0.32 J	0.22 J	ND	ND	1.8	0.037 J	0.099 J	ND	0.18 J	ND	ND	ND
Acenaphthylene	1.4 J	0.88 J	0.19 J	0.18 J	0.4 J	0.15 J	0.29 J	0.15 J	0.72 J	ND	4.7	0.16 J	ND	0.26 J
Acetophenone	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Anthracene	3.2	1	0.8 J	0.51 J	0.57 J	0.17 J	7.3	0.17 J	0.82 J	ND	2.4	0.15 J	ND	0.19 J
Benzo(a)anthracene	7	4.1	2.1	1.5 J	1.7 J	1.2 J	18	0.8 J	3.6	0.92 J	12	0.62 J	0.6 J	0.87 J
Benzo(b)fluoranthene	10	9.2	3.1	1.7 J	2.1 J	1.7 J	20	1.4	5.9	1.6 J	17	0.91 J	1.2	1.7
Benzo(k)fluoranthene	2.4	3.6	0.84 J	0.64 J	0.88 J	1 J	8.4	0.58 J	1.3 J	0.65 J	4.9	0.36 J	0.48 J	0.69 J
Benzo(g,h,i)perylene	1.9	2.9	0.7 J	1.3 J	1.7 J	0.96 J	4.8	0.44 J	1.7 J	0.85 J	12	0.33 J	0.66 J	0.81 J
Benzo(a)pyrene	6.5	6.4	2	1.4 J	1.8 J	1.4 J	15	0.89 J	3.9	1.2 J	13	0.71 J	1	1.1
Biphenyl	ND	0.088 J	ND	ND	ND	ND	0.1	ND	ND	ND	ND	ND	ND	ND
bis(2-Ethylhexyl)phthalate	ND	ND	1.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Chloroaniline	ND	ND	0.72 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbazole	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chrysene	6.5 B	4.1 B	2 B	1.6 BJ	2 BJ	1.4 BJ	15 B	0.87 BJ	3.5 B	1.4 BJ	10 B	0.66 BJ	0.8 BJ	1.1 B
Dibenzo(a,h)anthracene	0.7 J	0.74 J	0.22 J	ND	0.46 J	ND	1.6	0.12 J	0.56 J	0.27 J	3 J	0.1 J	0.069 J	0.22 J
Dibenzofuran	1.1 J	0.43 J	0.22 J	ND	ND	ND	1.2	0.039 J	0.2 J	ND	0.44 J	0.052 J	ND	0.048 J
Fluoranthene	16	9.8	4.4	2.1 J	3 J	1.5 J	26 D	1.5	6.4	1 J	19	1	0.65 J	1.4
Fluorene	1.7 J	0.47 J	0.3 J	0.17 J	ND	ND	2.1	0.046 J	0.27 J	ND	0.32 J	ND	ND	ND
Indeno(1,2,3-cd)pyrene	2.1	3	0.7 J	1.1 J	1.4 J	0.92 J	5.1	0.43 J	1.6 J	0.79 J	11	0.35 J	0.56 J	0.73 J
Isophorone	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Methylnaphthalene	0.27 J	0.4 J	0.36 J	ND	ND	ND	0.28 J	0.044 J	0.18 J	ND	0.53 J	0.24 J	ND	0.13 J
Naphthalene	0.29 J	0.92 J	0.27 J	ND	ND	ND	0.36 J	ND	0.2 J	ND	0.63 J	0.14 J	ND	ND
N-Nitroso-di-n-propylamine	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	12	3.4	3	1.5 BJ	1.6 BJ	0.6 BJ	21	0.64 J	3	0.5 BJ	4.5 B	0.46 J	0.18 J	0.57 J
Pyrene	11	7.9	3.1	1.8 J	2.4 J	1.2 J	25	1.2	4.9	0.97 J	17	0.89 J	0.59 J	1.1
PCBs - mg/kg [3]														
Aroclor 1248	--	0.012 J	--	ND	ND	--	--	--	--	--	--	--	--	--
Aroclor 1254	--	0.032	--	ND	ND	--	--	--	--	--	--	--	--	--
Aroclor 1260	--	ND	--	0.03	0.046	--	--	--	--	--	--	--	--	--
Aroclor 1262	--	--	--	ND	ND	--	--	--	--	--	--	--	--	--
Inorganic Compounds - mg/kg														
Aluminum	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Arsenic	17.2 E	15.6 E	6.6 E	45.4 E	130 E	21.6	44.5 E	27.6 E	64 E	11.1	53 E	32.3 E	ND	22.7
Barium	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Beryllium	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Cadmium	1.7 *	0.33 *	1.6 *	1	1.9	0.82	2.4 *	2 *	4 *	1.6	0.73	2.8 *	0.52	0.59
Calcium	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chromium [4]	109 N*	37.7 N*	28.3 N*	95.4 EN	216 EN	56 EN	122 N*	482 N*	109 N*	118 EN	96.2 EN	53.5 N*	731 N	146 NJ
Cobalt	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Copper	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Iron	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Lead	156	54.6	80.7	156 EN*	178 EN*	89 EN	244	61.1	283	121 EN	94.3 EN*	209	15 *	4550 J*
Magnesium	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Manganese	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nickel	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Potassium	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Mercury	2 N	0.19 N	57.1 N	0.081	0.077	0.136	0.14 N	0.057 N	2.5 N	0.055	0.083	0.093 N	ND	0.072
Silver	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sodium	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Cyanide	ND	ND	2.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.2	ND
General Chemistry														
pH	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Flashpoint	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Parameter [1]	Sample Location														
	BPA-3-TP-42 (waste)	BPA-3-TP-43 (0-2')	BPA-3-TP-45 (0-2')	BPA-3-TP-47 (0-2')	BPA-3-TP-48 (0-2')	BPA-3-TP-49 (0-2')	BPA-3-TP-50 (0-2')	BPA-3-TP-51 (0-2')	BPA-3-TP-51 (2-9')	BPA-3-TP-54 (Sat Soil)	BPA-3-TP-54 (0-2')	BPA-3-TP-56 (0-2')	BPA-3-TP-58 (0-2')	BPA-3-TP-59 (0-2')	BPA-3-TP-60 (0-2')
Volatile Organic Compounds (VOCs) - mg/kg [3]															
Acetone	--	--	--	--	--	--	0.023 BJ	--	--	0.017 BJ	0.008 BJ	--	--	--	--
Benzene	--	--	--	--	--	--	ND	--	--	ND	ND	--	ND	--	--
2-Butanone (MEK)	--	--	--	--	--	--	ND	--	--	ND	ND	--	--	--	--
Carbon disulfide	--	--	--	--	--	--	0.002 BJ	--	--	0.002 J	0.002 J	--	--	--	--
Ethylbenzene	--	--	--	--	--	--	ND	--	--	ND	ND	--	ND	--	--
Isopropylbenzene (Cumene)	--	--	--	--	--	--	ND	--	--	ND	ND	--	ND	--	--
Methyl acetate	--	--	--	--	--	--	ND	--	--	ND	ND	--	--	--	--
Methylcyclohexane	--	--	--	--	--	--	ND	--	--	ND	ND	--	--	--	--
Methylene chloride	--	--	--	--	--	--	0.013 BJ	--	--	0.019 J	0.015 B	--	--	--	--
Toluene	--	--	--	--	--	--	ND	--	--	ND	ND	--	ND	--	--
Total Xylene	--	--	--	--	--	--	ND	--	--	ND	ND	--	ND	--	--
o-Xylenes	--	--	--	--	--	--	ND	--	--	ND	ND	--	ND	--	--
m&p-Xylene	--	--	--	--	--	--	ND	--	--	ND	ND	--	ND	--	--
n-Propylbenzene	--	--	--	--	--	--	ND	--	--	ND	ND	--	ND	--	--
p-Cymene (p-isopropyltoluene)	--	--	--	--	--	--	ND	--	--	0.006 J	ND	--	ND	--	--
1,2,4-Trimethylbenzene	--	--	--	--	--	--	ND	--	--	ND	ND	--	ND	--	--
1,3,5-Trimethylbenzene	--	--	--	--	--	--	ND	--	--	ND	ND	--	ND	--	--
sec-Butylbenzene	--	--	--	--	--	--	ND	--	--	ND	ND	--	ND	--	--
tert-Butylbenzene	--	--	--	--	--	--	ND	--	--	ND	ND	--	ND	--	--
Semi-Volatile Organic Compounds (SVOCs) - mg/kg [3]															
Acenaphthene	ND	ND	0.1 J	0.048 J	0.44 J	0.082 J	ND	ND	ND	--	ND	ND	ND	ND	ND
Acenaphthylene	0.16 J	0.057 J	0.069 J	0.13 J	1.4	0.64 J	0.2 J	ND	0.16 J	--	ND	0.85 J	1.8 J	0.29 J	0.22 J
Acetophenone	2.6	ND	ND	ND	ND	ND	ND	ND	ND	--	ND	ND	ND	ND	ND
Anthracene	0.11 J	0.047 J	0.28 J	0.1 J	1.7	0.52 J	0.3 J	0.16 J	0.17 J	--	ND	0.41 J	1.5 J	0.17 J	0.2 J
Benzo(a)anthracene	0.45 J	0.28 J	1.3	0.58 J	9.2	2.8	1	0.65 J	0.91 J	--	0.34 J	1.6 J	5.9	1.1 J	1.2
Benzo(b)fluoranthene	1.1	0.58 J	1.4	0.96	9.6	4	1.4	0.75 J	1.2	--	0.24 J	2.1 J	7.1	1.8 J	2
Benzo(k)fluoranthene	0.43 J	0.18 J	0.57 J	0.36 J	4.4	1.9	0.36 J	0.31 J	0.56 J	--	0.19 J	0.96 J	3.1 J	0.44 J	0.85 J
Benzo(g,h,i)perylene	0.36 J	0.26 J	0.92 J	0.64 J	4.5	2.2	0.85 J	0.48 J	0.92 J	--	0.28 J	2 J	5.9	1.1 J	0.88 J
Benzo(a)pyrene	0.67 J	0.34	1.2	0.77 J	7.3	3.1	0.91 J	0.63 J	1 J	--	0.22 J	1.9 J	6.4	1.2 J	1.3
Biphenyl	ND	ND	ND	ND	0.09 J	ND	ND	ND	ND	--	ND	ND	ND	ND	ND
bis(2-Ethylhexyl)phthalate	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	ND	ND	ND	ND	ND
4-Chloroaniline	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	ND	ND	ND	ND	ND
Carbazole	ND	--	--	--	--	--	0.1 J	--	--	--	--	--	--	--	--
Chrysene	0.61 BJ	0.5 BJ	1.2 B	0.6 BJ	7.8 B	2.8 B	1.1 B	1 BJ	0.8 BJ	--	0.56 BJ	2 BJ	5.8 B	1.6 BJ	1.2 B
Dibenzo(a,h)anthracene	0.12 J	0.084 J	0.25 J	0.15 J	1.3	0.59 J	0.25 J	ND	0.2 J	--	ND	0.46 J	1.4 J	0.31 J	0.2 J
Dibenzofuran	0.043 J	ND	0.059 J	ND	0.71 J	0.086 J	0.12 J	ND	0.11 J	--	ND	ND	0.2 J	ND	ND
Fluoranthene	0.76 J	0.71 J	2.5	0.84 J	17	4	2.3	0.87 J	1.5	--	0.35 J	2.7 J	11	1.5 J	2.9
Fluorene	ND	ND	0.11 J	ND	0.78 J	0.11 J	0.056 J	ND	0.075 J	--	ND	ND	0.35 J	ND	0.04 J
Indeno(1,2,3-cd)pyrene	0.35 J	0.22 J	0.76 J	0.54 J	4.4	2	0.74 J	0.41 J	0.9 J	--	0.21 J	1.6 J	5.2	1 J	0.8 J
Isophorone	1.8	ND	ND	ND	ND	ND	ND	ND	ND	--	ND	ND	ND	ND	ND
2-Methylnaphthalene	0.17 J	ND	ND	ND	0.33 J	0.044 J	0.05 J	ND	0.11 J	--	ND	ND	ND	ND	ND
Naphthalene	0.16 J	0.036 J	ND	ND	0.74 J	0.11 J	0.16 J	ND	0.064 J	--	ND	ND	ND	ND	0.044 J
N-Nitroso-di-n-propylamine	ND	ND	ND	ND	ND	ND	ND	ND	0.076 J	--	ND	ND	ND	ND	ND
Phenanthrene	0.31 J	0.36 J	1.6	0.35 J	9.4	1.4	1.5	0.5 BJ	0.58 J	--	0.41 BJ	0.98 J	4.4	0.6 BJ	0.62 J
Pyrene	0.66 J	0.45 J	1.9	0.64 J	13	3.5	1.7	0.83 J	1.2	--	0.43 J	2.5 J	9	1.4 J	2.6
PCBs - mg/kg [3]															
Aroclor 1248	ND	--	--	--	--	0.84	ND	--	--	ND	--	--	--	--	--
Aroclor 1254	ND	--	--	--	--	0.9	0.12	--	--	ND	--	--	--	--	--
Aroclor 1260	ND	--	--	--	--	0.43	0.019	--	--	ND	--	--	--	--	--
Aroclor 1262	--	--	--	--	--	ND	ND	--	--	ND	--	--	--	--	--
Inorganic Compounds - mg/kg															
Aluminum	--	--	--	--	--	--	12600	--	--	--	--	--	--	--	--
Arsenic	--	6.5	11.1	10.8	18.4	11.2	7.2	48.9	--	--	4.7	34	9.1	19.9	9.7
Barium	--	--	--	--	--	--	73.2	--	--	--	--	--	--	--	--
Beryllium	--	--	--	--	--	--	1.6	--	--	--	--	--	--	--	--
Cadmium	--	1.4	1.9	ND	0.38	0.5	ND	2.4 E	--	--	4.3 E	0.94	1.2	2.3 E	0.3
Calcium	--	--	--	--	--	--	250000	--	--	--	--	--	--	--	--
Chromium [4]	--	537 N	536 N	234	243	104	520	97.9	--	--	314	48.4	93.8	453	96.6
Cobalt	--	--	--	--	--	--	3.8	--	--	--	--	--	--	--	--
Copper	--	--	--	--	--	--	43	--	--	--	--	--	--	--	--
Iron	--	--	--	--	--	--	116000	--	--	--	--	--	--	--	--
Lead	--	173 *	224 *	262	158	554	96.8 N	267 N	--	--	549 N	39.1	59.9	1120 N	170
Magnesium	--	--	--	--	--	--	30500	--	--	--	--	--	--	--	--
Manganese	--	--	--	--	--	--	18900	--	--	--	--	--	--	--	--
Nickel	--	--	--	--	--	--	21.6	--	--	--	--	--	--	--	--
Potassium	--	--	--	--	--	--	697	--	--	--	--	--	--	--	--
Mercury	--	0.089	0.878	1.3	0.246	1.4	0.453	0.11	--	--	0.165	0.031	0.053	0.217	0.209
Silver	--	--	--	--	--	--	ND	--	--	--	--	--	--	--	--
Sodium	--	--	--	--	--	--	279	--	--	--	--	--	--	--	--
Vanadium	--	--	--	--	--	--	470	--	--	--	--	--	--	--	--
Zinc	--	--	--	--	--	--	100	--	--	--	--	--	--	--	--
Cyanide	--	2.3	ND	ND	ND	ND	--	ND	--	--	ND	ND	ND	ND	ND
General Chemistry															
pH	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Flashpoint	--	--	--	--	--	--	--	--	--	>176	--	--	--	--	--

Table 6a

SUMMARY OF SOIL ANALYTICAL DATA

Remedial Investigation/Alternatives Analysis Report
Phase III Business Park Area
Tecumseh Redevelopment Inc.
Lackawanna, New York

Parameter [1]	Unrestricted SCOs [2] (ppm)	Sample Location																				Surface Samples						
		BPA-3-TP-62 (0-2')	BPA-3-TP-64 (0-2')	BPA-3-TP-65 (0-2')	BPA-3-TP-67 (0-4')	BPA-3-TP-69 (0-2')	BPA-3-TP-70 (0-2')	BPA-3-TP-71 (0-2')	BPA-3-TP-74 (2-8')	BPA-3-TP-75 (0-2')	BPA-3-TP-76 (2-7')	BPA-3-TP-77 (0-2')	BPA-3-TP-79 (0-2')	BPA-3-TP-80 (0-2')	BPA-3-TP-80 (2-7')	BPA-3-TP-81 (0-2')	BPA-3-TP-82 (0-2')	BPA-3-TP-83 (0-2')	BPA-3-TP-84 (0-2')	BPA-3-TP-85 (0-2')	BPA-3-TP-86 (0-2')	East Trench	Middle Trench	West Trench	Blind [5]	Blind 2 [5]	Blind 3 [5]	Blind 4 [5]
Volatile Organic Compounds (VOCs) - mg/kg [3]																												
Acetone	**0.05**	--	--	--	--	0.043 J	--	--	--	ND	--	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.02 BJ	--
Benzene	**0.06**	--	--	--	--	ND	ND	--	--	ND	--	ND	--	--	--	--	--	0.021	ND	ND	ND	--	--	--	ND	--	ND	--
2-Butanone (MEK)	**0.12**	--	--	--	--	0.015 J	--	--	--	ND	--	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND	--
Carbon disulfide	**--**	--	--	--	--	0.003 J	--	--	--	0.002 J	--	0.002 J	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.003 J	--
Ethylbenzene	**1**	--	--	--	--	ND	ND	--	--	ND	--	ND	--	--	--	--	--	ND	ND	ND	0.012	--	--	--	ND	--	ND	--
Isopropylbenzene (Cumene)	**--**	--	--	--	--	ND	ND	--	--	ND	--	ND	--	--	--	--	--	ND	ND	ND	ND	--	--	--	ND	--	ND	--
Methyl acetate	**--**	--	--	--	--	ND	--	--	--	ND	--	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND	--
Methylcyclohexane	**--**	--	--	--	--	ND	--	--	--	ND	--	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND	--
Methylene chloride	**0.05**	--	--	--	--	0.015 B	--	--	--	0.01 B	--	0.005 B	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.012 B	--
Toluene	**0.7**	--	--	--	--	ND	ND	--	--	ND	--	ND	--	--	--	--	--	0.012	ND	0.005 J	0.012	--	--	--	0.0005 J	--	ND	--
Total Xylene	**0.26**	--	--	--	--	ND	ND	--	--	ND	--	ND	--	--	--	--	--	ND	ND	ND	0.093	--	--	--	ND	--	ND	--
o-Xylenes	**0.26**	--	--	--	--	ND	ND	--	--	ND	--	ND	--	--	--	--	--	ND	ND	ND	0.019	--	--	--	ND	--	ND	--
m&p-Xylene	**0.26**	--	--	--	--	ND	ND	--	--	ND	--	ND	--	--	--	--	--	ND	ND	ND	0.074 [1]	--	--	--	ND	--	ND	--
n-Propylbenzene	**3.9**	--	--	--	--	ND	ND	--	--	ND	--	ND	--	--	--	--	--	ND	ND	ND	ND	--	--	--	ND	--	ND	--
p-Cymene (p-isopropyltoluene)	**--**	--	--	--	--	ND	ND	--	--	ND	--	ND	--	--	--	--	--	ND	ND	ND	ND	--	--	--	ND	--	ND	--
1,2,4-Trimethylbenzene	**3.6**	--	--	--	--	ND	ND	--	--	ND	--	ND	--	--	--	--	--	ND	ND	ND	0.013	--	--	--	ND	--	ND	--
1,3,5-Trimethylbenzene	**8.4**	--	--	--	--	ND	ND	--	--	ND	--	ND	--	--	--	--	--	ND	ND	ND	ND	--	--	--	ND	--	ND	--
sec-Butylbenzene	**11**	--	--	--	--	ND	ND	--	--	ND	--	ND	--	--	--	--	--	ND	ND	ND	ND	--	--	--	ND	--	ND	--
tert-Butylbenzene	**5.9**	--	--	--	--	ND	ND	--	--	ND	--	ND	--	--	--	--	--	ND	ND	ND	ND	--	--	--	ND	--	ND	--
Semi-Volatile Organic Compounds (SVOCs) - mg/kg																												
Acenaphthene	**20**	ND	ND	ND	5.8	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.092 J	0.26 J	ND	ND	ND	ND	6.1	0.12 J	0.11 J	0.039 J	0.059 J	ND	ND
Acenaphthylene	**100**	0.29 J	ND	ND	0.3 J	0.22 J	0.22 J	0.5 J	ND	ND	ND	0.18 J	ND	0.61 J	ND	0.98	1.2	0.34 J	ND	0.26 J	0.25 J	1.1	0.92 J	1.5	0.12 J	0.08 J	0.24 J	0.63 J
Acetophenone	**--**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Anthracene	**100**	0.26 J	0.15 J	ND	11	0.27 J	0.38 J	0.48 J	ND	0.17 J	0.2 J	0.43 J	ND	0.7 J	ND	0.61	1.6	0.25 J	0.16 J	0.23 J	0.18 J	13	0.78 J	1.1	0.21 J	0.17 J	0.3 J	0.75 J
Benzo(a)anthracene	**1**	**1.2 J**	0.72 J	0.23 J	**21**	**1.2 J**	**1.6 J**	**2.3 J**	0.43 J	0.96 J	1 J	**2.1 J**	0.11 J	**2.8 J**	0.7 J	**3.9**	**9.2**	**1.6 J**	0.84 J	**1.1 J**	**1.2 J**	**16**	**2.6**	**3**	0.92 J	0.93 J	**1.3**	**4.6**
Benzo(b)fluoranthene	**1**	**1.4 J**	0.93 J	0.31 J	**20**	**1.2 J**	**1.9 J**	**2.7 J**	0.42 J	1 J	**1.1 J**	**2.2 J**	0.26 J	**3.2 J**	0.8 J	**5.6**	**11**	**1.9 J**	**1.2 J**	**1.8 J**	**1.4 J**	**25**	**5.3**	**6.3**	**1.9**	**1.3**	**1.4 J**	**4.6**
Benzo(k)fluoranthene	**0.8**	**1 J**	0.4 J	ND	**5.2**	0.59 J	**0.86 J**	**1.2 J**	0.24 J	0.52 J	0.43 J	**0.96 J**	0.077 J	**1.1 J**	0.39 J	**1.6**	**4.4**	**0.88 J**	0.47 J	**0.85 J**	0.54 J	**11**	**2.6**	**2.6**	0.47 J	0.47 J	0.59 J	**2 J**
Benzo(g,h,i)perylene	**100**	1.3 J	0.62 J	0.25 J	7.8	1 J	1.8 J	2.1 J	0.38 J	0.79 J	0.6 J	1.5 J	0.11 J	1.8 J	0.47 J	2.2	5.3	1.2 J	0.63 J	0.96 J	1 J	5.9	1.5	1.8	0.51 J	0.73 J	0.85 J	2.5 J
Benzo(a)pyrene	**1**	**1.4 J**	0.66 J	0.2 J	**15**	**1.2 J**	**1.6 J**	**2.3 J**	0.34 J	0.86 J	0.89 J	**1.9 J**	0.055 J	**2.8 J**	0.67 J	**4.1**	**9**	**1.8 J**	0.84 J	**1.2 J**	1.2 J	**19**	**4**	**4.3**	**1.1**	0.95 J	0.97	**3.8**
Biphenyl	**--**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.47 J	ND	ND	ND	ND	ND	ND
bis(2-Ethylhexyl)phthalate	**--**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Chloroaniline	**--**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbazole	**--**	--	--	--	--	ND	--	--	--	ND	--	0.22 J	--	--	--	--	--	--	--	--	--				--	--	0.13 J	--
Chrysene	**1**	**1.6 BJ**	**1.2 BJ**	0.5 BJ	**18 B**	**1.4 BJ**	**1.8 BJ**	**2.6 BJ**	0.82 BJ	**1.3 BJ**	**1.1 BJ**	**2.2 BJ**	0.3 BJ	**3.1 BJ**	1 BJ	**3.8 B**	**8.6**	**1.8 BJ**	**1.2 BJ**	**1.8 BJ**	**1.3 BJ**	**15**	**2.8**	**3**	0.99 B	**1.2 B**	**1.3 B**	**4.2 B**
Dibenzo(a,h)anthracene	**0.33**	**0.35 J**	0.19 J	ND	**3.1 J**	0.32 J	**0.45 J**	**0.62 J**	ND	0.28 J	0.2 J	**0.5 J**	ND	**0.6 J**	0.16 J	**0.68 J**	**1.6**	**0.36 J**	ND	0.3 J	ND	**1.8**	**0.45 J**	**0.49 J**	0.15 J	0.2 J	0.25 J	**0.77 J**
Dibenzofuran	**--**	ND	ND	ND	3.3 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.1 J	0.16 J	ND	ND	ND	ND	4.6	0.085 J	0.23 J	0.04 J	ND	0.14 J	ND
Fluoranthene	**100**	2.3 J	0.76 J	0.22 J	45	1.8 J	2.6 J	3.8 J	0.58 J	1.3 J	1.6 J	3.1 J	0.22 J	5.1	1.1 J	7.2	16	2.3 J	1.2 J	1.7 J	1.4 J	12	7	8.5	1.7	1.8 J	2.8	7.8
Fluorene	**30**	ND	ND	ND	6.2	ND	ND	ND	ND	ND	ND	ND	ND	0.16 J	ND	0.19 J	0.34 J	ND	ND	ND	ND	8.2	0.15 J	0.44 J	0.047 J	0.059 J	0.08 J	ND
Indeno(1,2,3-cd)pyrene	**0.5**	**1.1 J**	**0.51 J**	0.19 J	**7.9**	**0.94 J**	**1.4 J**	**1.8 J**	0.32 J	**0.71 J**	**0.65 J**	**1.4 J**	0.11 J	**1.9 J**	0.45 J	**2.3**	**5.2**	**1.2 J**	**0.53 J**	**0.94 J**	**0.92 J**	**5.9**	**1.5**	**1.7**	0.49 J	**0.6 J**	**0.78 J**	**2.3 J**
Isophorone	**--**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Methylnaphthalene	**--**	ND	ND	ND	0.75 J	ND	ND	ND	ND	ND	ND	0.16 J	ND	ND	ND	0.076 J	0.097 J	ND	ND	ND	ND	3.1	0.087 J	0.13 J	0.046 J	ND	0.06 J	ND
Naphthalene	**12**	ND	ND	ND	1.2 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.092 J	0.13 J	ND	ND	ND	ND	4.9	0.12 J	0.33 J	ND	0.038 J	0.17 J	ND
N-Nitroso-di-n-propylamine	**--**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	**100**	0.8 BJ	0.3 BJ	ND	41	1.2 J	1.4 J	1.6 J	0.38 J	0.58 J	0.6 J	1.8 J	0.089 J	2.5 J	1 J	2.6	5.3	0.76 BJ	0.66 BJ	0.74 BJ	0.62 BJ	7.1	2.5	4.2	0.72 J	0.9 J	2	2.8 J
Pyrene	**100**	1.9 J	0.74 J	0.24 J	29	1.7 J	2.4 J	3.4 J	0.5 J	1.3 J	1 J	2.6 J	0.11 J	4.1	0.94 J	5.4	13	1.9 J	1.1 J	1.6 J	1.3 J	22	3.8	4.3	1.2	1.4	2	6.8
PCBs - mg/kg [3]																												
Aroclor 1248	**0.1**	--	--	--	ND	ND	--	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	ND	ND	ND	--	--	ND	--
Aroclor 1254	**0.1**	--	--	--	**0.31**	0.07 J	--	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	**0.12**	ND	0.02 J	--	--	**0.14**	--
Aroclor 1260	**0.1**	--	--	--	0.1	**0.11 J**	--	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	0.023	0.0061 J	0.017 J	--	--	ND	--
Aroclor 1262	**0.1**	--	--	--	ND	ND	--	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND	--
Inorganic Compounds - mg/kg																												
Aluminum	**--**	--	--	--	--	7610	--	--	--	8310	--	8150	--	--	--	--	--	--	--	--	--	--	--	--	--	--	12300	--
Arsenic	**13**	**22.1**	6.3	**18.9**	**26 EN***	**13 EN***	**33 EN***	**24.8 EN***	**14.8 EN***	10 EN*	12.3 EN*	**63.2 EN***	**21 EN***	**25.6 EN***	**25.7 EN***	**48.5**	**79**	9.7 E	11.7 E	**16.8 E**	**33 E**	**24.3**	**143**	**29.1**	**25.8 E**	11.9	9.9	**18 EN***
Barium	**350**	--	--	--	--	100	--	--	--	66.2	--	109	--	--	--	--	--	--	--	--	--	--	--	--	--	--	75.7	--
Beryllium	**7.2**	--	--	--	--	0.96	--	--	--	0.45	--	1.2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2.1	--
Cadmium	**2.5**	1.2 E	1.7 E	1.2 E	**20.8 N***	1.1 N*	**3.8 N***	**10.8 N***	1 N*	0.71 N*	0.51 N*	**2.8 N***	1.1 N*	1.7 N*	0.69 N*	0.5	1.6	0.42	0.3	2.2	**2.8**	0.52	1.2	0.59	1.2 *	**3.2**	ND	0.95 N*
Calcium	**--**	--	--	--	--	114000	--	--	--	43500	--	54500	--	--	--	--	--	--	--	--	--	--	--	--	--	**--**	237000	--
Chromium [4]	**31**	**304**	**270**	**585**	**159 N***	**685 N***	**115 N***	**217 N***	**60.7 N***	**192 N***	10.2 N*	**144 N***	**54.6 N***	**125 N***	**141 N***	**52.1**	**106**	**219 EN**	**517 EN**	**113 EN**	**92.9 EN**	**510**	**130**	**101**	**385 N***	**254 N**	**424**	**65.9 N***
Cobalt	**--**	--	--	--	--	4.1	--	--	--	4.7	--	5.1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2.8	--
Copper	**50**	--	--	--	--	**302**	--	--	--	**406**	--	**200**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	29.4	--
Iron	**--**	--	--	--	--	81600	--	--	--	50700	--	56900	--	--	--	--	--	--	--	--	--	--	--	--	--	--	111000	--
Lead	**63**	**114 N**	**110 N**	49.5 N	**1200 E***	**113 E***	**191 E***	**862 E***	**88.2 E***	**78.7 E***	53.3 E*	**302 E***	**224 E***	**763 E***	**80.4 E***	**119**	**201**	58 EN*	**165 EN***	**417 EN***	**446 EN***	**119**	**139**	**132**	**81 EN***	**960 ***	60 N	**140 E***
Magnesium	**--**	--	--	--	--	17500	--	--	--	8360	--	9600	--	--	--	--	--	--	--	--	--	--	--	--	--	--	28600	--
Manganese	**1600**	--	--	--	--	**28000**	--	--	--	**6460**	--	**4910**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	**15500**	--
Nickel	**30**	--	--	--	--	25.4	--	--	--	18.1	--	22.6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	10.1	--
Potassium	**--**	--	--	--	--	457	--	--	--	740	--	741	--	--	--	--	--	--	--	--	--	--	--	--	--	--	625	--
Mercury	**0.18**	**0.209**	0.033	0.029	**1.6**	**0.247**	**0.339**	**0.95**	**0.423**	0.159	0.026	0.11	4.8	**0.284**	0.105	0.123	0.131	**0.372**	0.075	0.053	0.14	**0.533**	0.149	0.176	0.05	**0.801**	**0.774**	**0.314**
Silver	**2**	--	--	--	--	0.61	--	--	--	ND	--	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND	--
Sodium	**--**	--	--	--	--	251	--	--	--	ND	--	249	--	--	--	--	--	--	--	--	--	--	--	--	--	--	367	--
Vanadium	**--**	--	--	--	--	410	--	--	--	97.1	--	69	--	--	--	--	--	--	--	--	--	--	--	--	--	--	347	--
Zinc	**109**	--	--	--	--	98.3	--	--	--	**144**	--	**357**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	62.5	--
Cyanide	**27**	ND	ND	ND	ND	ND	ND	ND	2.4	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.8	3.3 J	ND	1.1	25.6	1.2	ND	ND	--	ND
General Chemistry																												
pH		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	9.52	10.9	10.2	8.82	--	--	--	--	--	--	--
Flashpoint		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Notes:

1. Only those parameters detected at a minimum of 1 sample location are presented; all other compounds reported as non-detect.
2. Values per NYSDEC Part 375 Soil Cleanup Objectives (June 2006)
3. Sample results were reported by the laboratory in ug/kg and converted to mg/kg for comparison to SCOs.
4. The total Chromium SCO was determined by adding the hexavalent and trivalent Chromium SCOs.
5. Blind collected from BPA-3-TP-32, Blind 2 collected from BPA-3-TP-42, Blind 3 collected from BPA-3-TP-50, Blind 4 collected from BPA-3-

Definitions:

ND = Parameter not detected above laboratory detection limit.
NA = Sample not analyzed for parameter.
"--" = No SCO available.
J = Estimated value; result is less than the sample quantitation limit but greater than zero.
b = Analyte was detected in associated blank and in sample. Value above action level for consideration as external contamination.
B = Indicates a value greater than or equal to the instrument detection limit, but less than the quantitation limit.
* = Indicates the spike or duplicate analysis is not within the quality control limits.
D = All compounds were identified in an analyisis at the secondary dilution factor.
N = Indicates spike sample recovery is not within the quality control limits.
P = Detected concentrations between two GC columns >25%; lower value is reported and flagged (for CLP methodology only).
J = Estimated value; result is less than the sample quantitation limit but greater than zero.
E = Identifies compounds whose concentrations exceed the calibration range of the Instrument for that specific analysis.

BOLD = result exceeds SCO.

TABLE 6b

SUMMARY OF SOIL ANALYTICAL DATA

Remedial Investigation/Alternatives Analysis Report
Phase III Business Park Area
Tecumseh Redevelopment Inc.
Lackawanna, New York

Parameter [1]	Commercial SCOs [2] (ppm)	Sample Location BPA-3-TP-1 (0-2')	BPA-3-TP-2 (0-2')	BPA-3-TP-2 (2-4')	BPA-3-TP-3 (3-6')	BPA-3-TP-5 (0-2')	BPA-3-TP-6 (0-2')	BPA-3-TP-6 (2-6')	BPA-3-TP-7 (0-2')	BPA-3-TP-9 (0-2')	BPA-3-TP-12 (0-2')	BPA-3-TP-13 (0-2')	BPA-3-TP-16 (0-2')	BPA-3-TP-17 (0-2')	BPA-3-TP-20 (0-2')	BPA-3-TP-22 (0-2')	BPA-3-TP-23 (0-2')
Volatile Organic Compounds (VOCs) - mg/kg [3]																	
Acetone	**500**	--	--	ND	ND	--	ND	ND	0.094	--	--	--	--	--	0.006 J	--	--
Benzene	**44**	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	--	--	ND	ND	ND
2-Butanone (MEK)	**500**	--	--	ND	ND	--	ND	ND	0.013 J	--	--	--	--	--	ND	--	--
Carbon disulfide	**--**	--	--	ND	ND	--	ND	ND	ND	--	--	--	--	--	ND	--	--
Ethylbenzene	**390**	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	--	--	ND	ND	ND
Isopropylbenzene (Cumene)	**--**	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	--	--	ND	ND	ND
Methylcyclohexane	**--**	--	--	ND	ND	--	ND	ND	ND	--	--	--	--	--	ND	--	--
Methylene chloride	**500**	--	--	0.002 J	0.006	--	ND	ND	0.012	--	--	--	--	--	0.014	--	--
Toluene	**500**	--	ND	ND	ND	ND	ND	0.002 J	ND	ND	0.004 J	--	--	--	ND	0.00029 J	0.003 J
Total Xylene	**500**	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	--	--	ND	ND	ND
o-Xylenes	**500**	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	--	--	ND	ND	ND
m&p-Xylene	**500**	--	ND	0.002 J	0.002 J	ND	ND	ND	0.002 J	ND	ND	--	--	--	ND	ND	ND
n-Propylbenzene	**500**	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	--	--	ND	ND	ND
p-Cymene (p-isopropyltoluene)	**--**	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	--	--	ND	ND	ND
1,2,4-Trimethylbenzene	**190**	--	ND	0.001 J	0.001 J	ND	ND	ND	0.001 J	ND	ND	--	--	--	ND	ND	0.009 J
1,3,5-Trimethylbenzene	**190**	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	--	--	ND	ND	ND
sec-Butylbenzene	**500**	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	--	--	ND	ND	ND
tert-Butylbenzene	**500**	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	--	--	ND	ND	ND
Semi-Volatile Organic Compounds (SVOCs) - mg/kg [3]																	
Acenaphthene	**500**	2.8 J	ND	--	1.2 J	0.93 J	0.082 J	--	--	ND	ND	ND	ND	ND	0.11 J	0.79 J	0.17 J
Acenaphthylene	**500**	1.5 J	0.45 J	--	3.3 J	4.4	0.6 J	--	--	0.98 J	ND	0.39 J	ND	0.09 J	0.47 J	1.4 J	0.88 J
Acetophenone	**--**	ND	ND	--	ND	ND	ND	--	--	ND	ND	ND	ND	ND	ND	ND	ND
Anthracene	**500**	11 J	0.86 J	--	6.5 J	8.9	0.62 J	--	--	0.72 J	0.17 J	0.52 J	2 J	0.092 J	0.64 J	3.2	1
Benzo(a)anthracene	**5.6**	**23**	3 J	--	**12**	**25**	2.9	--	--	2.1	0.88 J	1.7 J	**37 J**	0.36 J	1.8	**7**	4.1
Benzo(b)fluoranthene	**5.6**	**22**	4.4	--	**11**	**25**	4.4	--	--	4.2	1 J	2.5 J	**65**	0.69 J	2.8	**10**	**9.2**
Benzo(k)fluoranthene	**56**	10 J	1.4 J	--	5.1 J	7.9	1.8 J	--	--	1.6 J	0.44 J	0.97 J	26 J	0.29 J	1.1	2.4	3.6
Benzo(g,h,i)perylene	**500**	14 J	3 J	--	7.6	15	3.9	--	--	3.8	0.86 J	1.2 J	57	0.34 J	0.69 J	1.9	2.9
Benzo(a)pyrene	**1**	**18 J**	**2.7 J**	--	**9.5**	**20**	**3.6**	--	--	**3.2**	0.83 J	**1.6 J**	**57**	0.44 J	**1.8**	**6.5**	**6.4**
Biphenyl	**--**	ND	ND	--	0.39 J	0.28 J	ND	--	--	ND	ND	ND	ND	ND	ND	ND	0.088 J
bis(2-Ethylhexyl)phthalate	**--**	ND	ND	--	ND	ND	ND	--	--	ND	ND	ND	ND	ND	ND	ND	ND
4-Chloroaniline	**--**	ND	ND	--	ND	ND	ND	--	--	ND	ND	ND	ND	ND	ND	ND	ND
Carbazole	**--**	--	--	--	2.9	--	--	--	--	--	--	--	--		0.2 J	--	--
Chrysene	**56**	23 B	3.3 BJ	--	10 B	21 B	3.1 B	--	--	2.8 B	1.2 BJ	2.7 BJ	44 B	0.4 BJ	1.9 B	6.5 B	4.1 B
Dibenzo(a,h)anthracene	**0.56**	**4.4 J**	**0.85 J**	--	**2.2 J**	**3.8 J**	**0.73 J**	--	--	**0.94 J**	ND	0.35 J	**12 J**	0.073 J	0.22 J	**0.7 J**	**0.74 J**
Dibenzofuran	**--**	3.3 J	ND	--	2.8 J	3 J	0.15 J	--	--	0.1 J	ND	ND	ND	ND	0.24 J	1.1 J	0.43 J
Fluoranthene	**500**	50 B	3.1 J	--	27	66	5.8	--	--	1.9 J	1.5 J	2.9 J	42	0.52 J	3.8	16	9.8
Fluorene	**500**	4 J	ND	--	5.7 J	6	0.16 J	--	--	0.083 J	ND	ND	ND	ND	0.18 J	1.7 J	0.47 J
Indeno(1,2,3-cd)pyrene	**5.6**	**12 J**	2.3 J	--	**6.7**	**13**	2.9	--	--	2.9	0.75 J	1 J	**47**	0.24 J	0.72 J	2.1	3
Isophorone	**--**	ND	ND	--	ND	ND	ND	--	--	ND	ND	ND	ND	ND	ND	ND	ND
2-Methylnaphthalene	**--**	1.1 J	0.81 J	--	1.8 J	0.84 J	0.085 J	--	--	0.16 J	ND	ND	ND	ND	0.11 J	0.27 J	0.4 J
Naphthalene	**500**	ND	0.23 J	--	2.7 J	1.9 J	0.19 J	--	--	0.17 J	ND	ND	ND	0.079 J	0.1 J	0.29 J	0.92 J
N-Nitroso-di-n-propylamine	**--**	ND	ND	--	ND	ND	ND	--	--	ND	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	**500**	32 B	0.8 BJ	--	27 B	44 B	2.4 B	--	--	0.7 BJ	0.69 BJ	2 BJ	10 BJ	0.23 J	2.3	12	3.4
Pyrene	**500**	37 B	6.6	--	19	45	5.1	--	--	2.2 B	1.2 J	3 J	44	0.4 J	2.8	11	7.9
PCBs - mg/kg [3]																	
Aroclor 1248	**1**	--	--	0.013 J	0.01 J	ND	--	--	--	--	--	--	--	--	ND	--	0.012 J
Aroclor 1254	**1**	--	--	0.051	0.11	ND	--	--	--	--	--	--	--	--	ND	--	0.032
Aroclor 1260	**1**	--	--	ND	ND	ND	--	--	--	--	--	--	--	--	ND	--	ND
Aroclor 1262	**1**	--	--	0.03	0.017 J	0.034 J	--	--	--	--	--	--	--	--	--	--	--
Inorganic Compounds - mg/kg																	
Aluminum	**--**	--	--	--	11400	--	--	--	--	--	--	--	--	--	11800 *	--	--
Arsenic	**16**	8.8	**19.7**	--	**45**	**17.1**	12.7	--	--	**27.3**	**99.2 E**	10.9 E	7.3 E	5.7 E	**20.2 E**	**17.2 E**	15.6 E
Barium	**10000**	--	--	--	140	--	--	--	--	--	--	--	--	--	132 N*	--	--
Beryllium	**590**	--	--	--	1.5	--	--	--	--	--	--	--	--	--	1.4 *	--	--
Cadmium	**9.3**	1.8	2	--	1.5	0.92	3.1	--	--	3.4	2.8	2	0.56	1.5 *	4.9 *	1.7 *	0.33 *
Calcium	**--**	--	--	--	52300	--	--	--	--	--	--	--	--	--	63700 EJ*	--	--
Chromium [5]	**1900**	423	110	--	30.6	124	69.1	--	--	35.9	60.8 EN	134 EN	397 EN	212 N*	129 N*	109 N*	37.7 N*
Cobalt	**--**	--	--	--	4.6	--	--	--	--	--	--	--	--	--	6.5 *	--	--
Copper	**270**	--	--	--	80	--	--	--	--	--	--	--	--	--	77.5	--	--
Iron	**--**	--	--	--	48400	--	--	--	--	--	--	--	--	--	37900 J	--	--
Lead	**1000**	184	231	--	144	120	925	--	--	381	287 EN*	259 EN*	80 EN*	**1140**	843 J	156	54.6
Magnesium	**--**	--	--	--	7070	--	--	--	--	--	--	--	--	--	9110 *	--	--
Manganese	**10000**	--	--	--	2220	--	--	--	--	--	--	--	--	--	**21200 J***	--	--
Nickel	**310**	--	--	--	14.6	--	--	--	--	--	--	--	--	--	19.2 EN	--	--
Potassium	**--**	--	--	--	1200	--	--	--	--	--	--	--	--	--	1180 *	--	--
Mercury	**2.8**	0.303	0.118	--	0.189	0.555	0.261	--	--	0.303	0.057	0.522	0.278	0.31 N	0.917 N	2 N	0.19 N
Silver	**1500**	--	--	--	ND	--	--	--	--	--	--	--	--	--	ND	--	--
Sodium	**--**	--	--	--	462	--	--	--	--	--	--	--	--	--	324 *	--	--
Vanadium	**--**	--	--	--	24.5	--	--	--	--	--	--	--	--	--	84.6 N*	--	--
Zinc	**10000**	--	--	--	323	--	--	--	--	--	--	--	--	--	284 EJ	--	--
Cyanide	**27**	ND	ND	--	--	ND	ND	--	--	ND	ND	ND	2	ND	--	ND	ND
General Chemistry																	
pH		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Flashpoint		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Parameter [1]	Commercial SCOs [2] (ppm)	BPA-3-TP-25 (3-7')	BPA-3-TP-26 (0-1')	BPA-3-TP-28 (0-2')	BPA-3-TP-30 (0-2')	BPA-3-TP-31 (0-2')	BPA-3-TP-32 (0-2')	BPA-3-TP-34 (0-4')	BPA-3-TP-36 (0-2')	BPA-3-TP-37 (0-2')	BPA-3-TP-38 (0-2')	BPA-3-TP-40 (0-2')	BPA-3-TP-42 (0-2')	BPA-3-TP-42 (waste)	BPA-3-TP-43 (0-2')	BPA-3-TP-45 (0-2')	BPA-3-TP-47 (0-2')	BPA-3-TP-48 (0-2')	BPA-3-TP-49 (0-2')	BPA-3-TP-50 (0-2')	BPA-3-TP-51 (0-2')	BPA-3-TP-51 (2-9')	BPA-3-TP-54 (Sat Soil)	BPA-3-TP-54 (0-2')
Volatile Organic Compounds (VOCs) - mg/kg [3]																								
Acetone	**500**	--	--	--	--	--	--	--	--	--	--	--	0.5	--	--	--	--	--	--	0.023 BJ	--	--	0.017 BJ	0.008 BJ
Benzene	**44**	--	--	--	--	--	ND	--	--	--	9E-04 J	--	ND	--	--	--	--	--	--	ND	--	--	ND	ND
2-Butanone (MEK)	**500**	--	--	--	--	--	--	--	--	--	--	--	0.032 J	--	--	--	--	--	--	ND	--	--	ND	ND
Carbon disulfide	**--**	--	--	--	--	--	--	--	--	--	--	--	ND	--	--	--	--	--	--	0.002 BJ	--	--	0.002 J	0.002 J
Ethylbenzene	**390**	--	--	--	--	--	ND	--	--	--	ND	--	ND	--	--	--	--	--	--	ND	--	--	ND	ND
Isopropylbenzene (Cumene)	**--**	--	--	--	--	--	ND	--	--	--	ND	--	0.012 J	--	--	--	--	--	--	ND	--	--	ND	ND
Methylcyclohexane	**--**	--	--	--	--	--	--	--	--	--	--	--	0.017 J	--	--	--	--	--	--	ND	--	--	ND	ND
Methylene chloride	**500**	--	--	--	--	--	--	--	--	--	--	--	0.057	--	--	--	--	--	--	0.013 BJ	--	--	0.019 J	0.015 B
Toluene	**500**	--	--	--	--	--	0.0004 J	--	--	--	ND	--	ND	--	--	--	--	--	--	ND	--	--	ND	ND
Total Xylene	**500**	--	--	--	--	--	ND	--	--	--	ND	--	0.021 J	--	--	--	--	--	--	ND	--	--	ND	ND
o-Xylenes	**500**	--	--	--	--	--	ND	--	--	--	ND	--	0.01 J	--	--	--	--	--	--	ND	--	--	ND	ND
m&p-Xylene	**500**	--	--	--	--	--	ND	--	--	--	ND	--	0.01 J	--	--	--	--	--	--	ND	--	--	ND	ND
n-Propylbenzene	**500**	--	--	--	--	--	ND	--	--	--	ND	--	0.016 J	--	--	--	--	--	--	ND	--	--	ND	ND
p-Cymene (p-isopropyltoluene)	**--**	--	--	--	--	--	ND	--	--	--	ND	--	0.094	--	--	--	--	--	--	ND	--	--	0.006 J	ND
1,2,4-Trimethylbenzene	**190**	--	--	--	--	--	ND	--	--	--	9E-04 J	--	0.68	--	--	--	--	--	--	ND	--	--	ND	ND
1,3,5-Trimethylbenzene	**190**	--	--	--	--	--	ND	--	--	--	ND	--	0.53	--	--	--	--	--	--	ND	--	--	ND	ND
sec-Butylbenzene	**500**	--	--	--	--	--	ND	--	--	--	ND	--	0.085	--	--	--	--	--	--	ND	--	--	ND	ND
tert-Butylbenzene	**500**	--	--	--	--	--	ND	--	--	--	ND	--	0.014 J	--	--	--	--	--	--	ND	--	--	ND	ND
Semi-Volatile Organic Compounds (SVOCs) - mg/kg [3]																								
Acenaphthene	**500**	0.32 J	0.22 J	ND	ND	1.8	0.037 J	0.099 J	ND	0.18 J	ND	ND	ND	ND	ND	0.1 J	0.048 J	0.44 J	0.082 J	ND	ND	ND	--	ND
Acenaphthylene	**500**	0.19 J	0.18 J	0.4 J	0.15 J	0.29 J	0.15 J	0.72 J	ND	4.7	0.16 J	ND	0.26 J	0.16 J	0.057 J	0.069 J	0.13 J	1.4	0.64 J	0.2 J	ND	0.16 J	--	ND
Acetophenone	**--**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.6	ND	ND	ND	ND	ND	ND	ND	ND	--	ND
Anthracene	**500**	0.8 J	0.51 J	0.57 J	0.17 J	7.3	0.17 J	0.82 J	ND	2.4	0.15 J	ND	0.19 J	0.11 J	0.047 J	0.28 J	0.1 J	1.7	0.52 J	0.3 J	0.16 J	0.17 J	--	ND
Benzo(a)anthracene	**5.6**	2.1	1.5 J	1.7 J	1.2 J	**18**	0.8 J	3.6	0.92 J	**12**	0.62 J	0.6 J	0.87 J	0.45 J	0.28 J	1.3	0.58 J	**9.2**	2.8	1	0.65 J	0.91 J	--	0.34 J
Benzo(b)fluoranthene	**5.6**	3.1	1.7 J	2.1 J	1.7 J	**20**	1.4	**5.9**	1.6 J	**17**	0.91 J	1.2	1.7	1.1	0.58 J	1.4	0.96	**9.6**	4	1.4	0.75 J	1.2	--	0.24 J
Benzo(k)fluoranthene	**56**	0.84 J	0.64 J	0.88 J	1 J	8.4	0.58 J	1.3 J	0.65 J	4.9	0.36 J	0.48 J	0.69 J	0.43 J	0.18 J	0.57 J	0.36 J	4.4	1.9	0.36 J	0.31 J	0.56 J	--	0.19 J
Benzo(g,h,i)perylene	**500**	0.7 J	1.3 J	1.7 J	0.96 J	4.8	0.44 J	1.7 J	0.85 J	12	0.33 J	0.66 J	0.81 J	0.36 J	0.26 J	0.92 J	0.64 J	4.5	2.2	0.85 J	0.48 J	0.92 J	--	0.28 J
Benzo(a)pyrene	**1**	**2**	**1.4 J**	**1.8 J**	**1.4 J**	**15**	0.89 J	**3.9**	**1.2 J**	**13**	0.71 J	1	**1.1**	0.67 J	0.34	**1.2**	0.77 J	**7.3**	**3.1**	0.91 J	0.63 J	1 J	--	0.22 J
Biphenyl	**--**	ND	ND	ND	ND	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.09 J	ND	ND	ND	ND	--	ND
bis(2-Ethylhexyl)phthalate	**--**	1.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	ND
4-Chloroaniline	**--**	0.72 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	ND
Carbazole	**--**	--	--	--	--	--	--	--	--	--	--	--	--	ND	--	--	--	--	--	0.1 J	--	--	--	--
Chrysene	**56**	2 B	1.6 BJ	2 BJ	1.4 BJ	15 B	0.87 BJ	3.5 B	1.4 BJ	10 B	0.66 BJ	0.8 BJ	1.1 B	0.6 BJ	0.5 BJ	1.2 B	0.6 BJ	7.8 B	2.8 B	1.1 B	1 BJ	0.8 BJ	--	0.56 BJ
Dibenzo(a,h)anthracene	**0.56**	0.22 J	ND	0.46 J	ND	**1.6**	0.12 J	0.56 J	0.27 J	**3 J**	0.1 J	0.069 J	0.22 J	0.12 J	0.084 J	0.25 J	0.15 J	**1.3**	**0.59 J**	0.25 J	ND	0.2 J	--	ND
Dibenzofuran	**--**	0.22 J	ND	ND	ND	1.2	0.039 J	0.2 J	ND	0.44 J	0.052 J	ND	0.048 J	0.043 J	ND	0.059 J	ND	0.71 J	0.086 J	0.12 J	ND	0.11 J	--	ND
Fluoranthene	**500**	4.4	2.1 J	3 J	1.5 J	26 D	1.5	6.4	1 J	19	1	0.65 J	1.4	0.76 J	0.71 J	2.5	0.84 J	17	4	2.3	0.87 J	1.5	--	0.35 J
Fluorene	**500**	0.3 J	0.17 J	ND	ND	2.1	0.046 J	0.27 J	ND	0.32 J	ND	ND	ND	ND	ND	0.11 J	ND	0.78 J	0.11 J	0.056 J	ND	0.075 J	--	ND
Indeno(1,2,3-cd)pyrene	**5.6**	0.7 J	1.1 J	1.4 J	0.92 J	5.1	0.43 J	1.6 J	0.79 J	**11**	0.35 J	0.56 J	0.73 J	0.35 J	0.22 J	0.76 J	0.54 J	4.4	2	0.74 J	0.41 J	0.9 J	--	0.21 J
Isophorone	**--**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.8	ND	ND	ND	ND	ND	ND	ND	ND	--	ND
2-Methylnaphthalene	**--**	0.36 J	ND	ND	ND	0.28 J	0.044 J	0.18 J	ND	0.53 J	0.24 J	ND	0.13 J	0.17 J	ND	ND	ND	0.33 J	0.044 J	0.05 J	ND	0.11 J	--	ND
Naphthalene	**500**	0.27 J	ND	ND	ND	0.36 J	ND	0.2 J	ND	0.63 J	0.14 J	ND	ND	0.16 J	0.036 J	ND	ND	0.74 J	0.11 J	0.16 J	ND	0.064 J	--	ND
N-Nitroso-di-n-propylamine	**--**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.076 J	--	ND
Phenanthrene	**500**	3	1.5 BJ	1.6 BJ	0.6 BJ	21	0.64 J	3	0.5 BJ	4.5 B	0.46 J	0.18 J	0.57 J	0.31 J	0.36 J	1.6	0.35 J	9.4	1.4	1.5	0.5 BJ	0.58 J	--	0.41 BJ
Pyrene	**500**	3.1	1.8 J	2.4 J	1.2 J	25	1.2	4.9	0.97 J	17	0.89 J	0.59 J	1.1	0.66 J	0.45 J	1.9	0.64 J	13	3.5	1.7	0.83 J	1.2	--	0.43 J
PCBs - mg/kg [3]																								
Aroclor 1248	**1**	--	ND	ND	--	--	--	--	--	--	--	--	--	ND	--	--	--	--	0.84	ND	--	--	ND	--
Aroclor 1254	**1**	--	ND	ND	--	--	--	--	--	--	--	--	--	ND	--	--	--	--	0.9	0.12	--	--	ND	--
Aroclor 1260	**1**	--	0.03	0.046	--	--	--	--	--	--	--	--	--	ND	--	--	--	--	0.43	0.019	--	--	ND	--
Aroclor 1262	**1**	--	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND	ND	--	--	ND	--
Inorganic Compounds - mg/kg																								
Aluminum	**--**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	12600	--	--	--	--
Arsenic	**16**	6.6 E	**45.4 E**	**130 E**	**21.6**	**44.5 E**	**27.6 E**	**64 E**	11.1	**53 E**	**32.3 E**	ND	**22.7**	--	6.5	11.1	10.8	**18.4**	11.2	7.2	**48.9**	--	--	4.7
Barium	**10000**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	73.2	--	--	--	--
Beryllium	**590**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.6	--	--	--	--
Cadmium	**9.3**	1.6 *	1	1.9	0.82	2.4 *	2 *	4 *	1.6	0.73	2.8 *	0.52	0.59	--	1.4	1.9	ND	0.38	0.5	ND	2.4 E	--	--	4.3 E
Calcium	**--**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	250000	--	--	--	--
Chromium [5]	**1900**	28.3 N*	95.4 EN	216 EN	56 EN	122 N*	482 N*	109 N*	118 EN	96.2 EN	53.5 N*	731 N	146 NJ	--	537 N	536 N	234	243	104	520	97.9	--	--	314
Cobalt	**--**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	3.8	--	--	--	--
Copper	**270**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	43	--	--	--	--
Iron	**--**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	116000	--	--	--	--
Lead	**1000**	80.7	156 EN*	178 EN*	89 EN	244	61.1	283	121 EN	94.3 EN*	209	15 *	**4550 J***	--	173 *	224 *	262	158	554	96.8 N	267 N	--	--	549 N
Magnesium	**--**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	30500	--	--	--	--
Manganese	**10000**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	**18900**	--	--	--	--
Nickel	**310**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	21.6	--	--	--	--
Potassium	**--**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	697	--	--	--	--
Mercury	**2.8**	57.1 N	0.081	0.077	0.136	0.14 N	0.057 N	2.5 N	0.055	0.083	0.093 N	ND	0.072	--	0.089	0.878	1.3	0.246	1.4	0.453	0.11	--	--	0.165
Silver	**1500**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND	--	--	--	--
Sodium	**--**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	279	--	--	--	--
Vanadium	**--**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	470	--	--	--	--
Zinc	**10000**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	100	--	--	--	--
Cyanide	**27**	2.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.2	ND	--	2.3	ND	ND	ND	ND	--	ND	--	--	ND
General Chemistry																								
pH		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Flashpoint		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	>176	--

Table 6b

SUMMARY OF SOIL ANALYTICAL DATA

Remedial Investigation/Alternatives Analysis Report
Phase III Business Park Area
Tecumseh Redevelopment Inc.
Lackawanna, New York

Parameter [1]	Commercial SCOs [2] (ppm)	Sample Location BPA-3-TP-56 (0-2')	BPA-3-TP-58 (0-2')	BPA-3-TP-59 (0-2')	BPA-3-TP-60 (0-2')	BPA-3-TP-62 (0-2')	BPA-3-TP-64 (0-2')	BPA-3-TP-65 (0-2')	BPA-3-TP-67 (0-4')	BPA-3-TP-69 (0-2')	BPA-3-TP-70 (0-2')	BPA-3-TP-71 (0-2')	BPA-3-TP-74 (2-8')	BPA-3-TP-75 (0-2')	BPA-3-TP-76 (2-7')	BPA-3-TP-77 (0-2')	BPA-3-TP-79 (0-2')	BPA-3-TP-80 (0-2')	BPA-3-TP-80 (2-7')	BPA-3-TP-81 (0-2')	BPA-3-TP-82 (0-2')	BPA-3-TP-83 (0-2')	BPA-3-TP-84 (0-2')	BPA-3-TP-85 (0-2')	BPA-3-TP-86 (0-2')	Surface Samples East Trench	Surface Samples Middle Trench	Surface Samples West Trench	Blind [5]	Blind 2 [5]	Blind 3 [5]	Blind 4 [5]
Volatile Organic Compounds (VOCs) - mg/kg [3]																																
Acetone	**500**	--	--	--	--	--	--	--	--	0.043 J	--	--	--	ND	--	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.02 BJ	--
Benzene	**44**	--	ND	--	--	--	--	--	--	ND	ND	--	--	ND	--	ND	--	--	--	--	--	0.021	ND	ND	ND	--	--	--	ND	--	ND	--
2-Butanone (MEK)	**500**	--	--	--	--	--	--	--	--	0.015 J	--	--	--	ND	--	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND	--
Carbon disulfide	**--**	--	--	--	--	--	--	--	--	0.003 J	--	--	--	0.002 J	--	0.002 J	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.003 J	--
Ethylbenzene	**390**	--	ND	--	--	--	--	--	--	ND	ND	--	--	ND	--	ND	--	--	--	--	--	ND	ND	ND	0.012	--	--	--	ND	--	ND	--
Isopropylbenzene (Cumene)	**--**	--	ND	--	--	--	--	--	--	ND	ND	--	--	ND	--	ND	--	--	--	--	--	ND	ND	ND	ND	--	--	--	ND	--	ND	--
Methylcyclohexane	**--**	--	--	--	--	--	--	--	--	ND	--	--	--	ND	--	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND	--
Methylene chloride	**500**	--	--	--	--	--	--	--	--	0.015 B	--	--	--	0.01 B	--	0.005 B	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.012 B	--
Toluene	**500**	--	ND	--	--	--	--	--	--	ND	ND	--	--	ND	--	ND	--	--	--	--	--	0.012	ND	0.0052 J	0.012	--	--	--	0.0005 J	--	ND	--
Total Xylene	**500**	--	ND	--	--	--	--	--	--	ND	ND	--	--	ND	--	ND	--	--	--	--	--	ND	ND	ND	0.093	--	--	--	ND	--	ND	--
o-Xylenes	**500**	--	ND	--	--	--	--	--	--	ND	ND	--	--	ND	--	ND	--	--	--	--	--	ND	ND	ND	0.019	--	--	--	ND	--	ND	--
m&p-Xylene	**500**	--	ND	--	--	--	--	--	--	ND	ND	--	--	ND	--	ND	--	--	--	--	--	ND	ND	ND	0.074 [1]	--	--	--	ND	--	ND	--
n-Propylbenzene	**500**	--	ND	--	--	--	--	--	--	ND	ND	--	--	ND	--	ND	--	--	--	--	--	ND	ND	ND	ND	--	--	--	ND	--	ND	--
p-Cymene (p-isopropyltoluene)	**--**	--	ND	--	--	--	--	--	--	ND	ND	--	--	ND	--	ND	--	--	--	--	--	ND	ND	ND	ND	--	--	--	ND	--	ND	--
1,2,4-Trimethylbenzene	**190**	--	ND	--	--	--	--	--	--	ND	ND	--	--	ND	--	ND	--	--	--	--	--	ND	ND	ND	0.013	--	--	--	ND	--	ND	--
1,3,5-Trimethylbenzene	**190**	--	ND	--	--	--	--	--	--	ND	ND	--	--	ND	--	ND	--	--	--	--	--	ND	ND	ND	ND	--	--	--	ND	--	ND	--
sec-Butylbenzene	**500**	--	ND	--	--	--	--	--	--	ND	ND	--	--	ND	--	ND	--	--	--	--	--	ND	ND	ND	ND	--	--	--	ND	--	ND	--
tert-Butylbenzene	**500**	--	ND	--	--	--	--	--	--	ND	ND	--	--	ND	--	ND	--	--	--	--	--	ND	ND	ND	ND	--	--	--	ND	--	ND	--
Semi-Volatile Organic Compounds (SVOCs) - mg/kg																																
Acenaphthene	**500**	ND	ND	ND	ND	ND	ND	ND	5.8	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.092 J	0.26 J	ND	ND	ND	ND	6.1	0.12 J	0.11 J	0.039 J	0.059 J	ND	ND
Acenaphthylene	**500**	0.85 J	1.8 J	0.29 J	0.22 J	0.29 J	ND	ND	0.3 J	0.22 J	0.22 J	0.5 J	ND	ND	ND	0.18 J	ND	0.61 J	ND	0.98	1.2	0.34 J	ND	0.26 J	0.25 J	1.1	0.92 J	1.5	0.12 J	0.08 J	0.24 J	0.63 J
Acetophenone	**--**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Anthracene	**500**	0.41 J	1.5 J	0.17 J	0.2 J	0.26 J	0.15 J	ND	11	0.27 J	0.38 J	0.48 J	ND	0.17 J	0.2 J	0.43 J	ND	0.7 J	ND	0.61	1.6	0.25 J	0.16 J	0.23 J	0.18 J	13	0.78 J	1.1	0.21 J	0.17 J	0.3 J	0.75 J
Benzo(a)anthracene	**5.6**	1.6 J	**5.9**	1.1 J	1.2	1.2 J	0.72 J	0.23 J	**21**	1.2 J	1.6 J	2.3 J	0.43 J	0.96 J	1 J	2.1 J	0.11 J	2.8 J	0.7 J	3.9	**9.2**	1.6 J	0.84 J	1.1 J	1.2 J	**16**	2.6	3	0.92 J	0.93 J	1.3	4.6
Benzo(b)fluoranthene	**5.6**	2.1 J	**7.1**	1.8 J	2	1.4 J	0.93 J	0.31 J	**20**	1.2 J	1.9 J	2.7 J	0.42 J	1 J	1.1 J	2.2 J	0.26 J	3.2 J	0.8 J	5.6	**11**	1.9 J	1.2 J	1.8 J	1.4 J	**25**	5.3	**6.3**	1.9	1.3	1.4 J	4.6
Benzo(k)fluoranthene	**56**	0.96 J	3.1 J	0.44 J	0.85 J	1 J	0.4 J	ND	5.2	0.59 J	0.86 J	1.2 J	0.24 J	0.52 J	0.43 J	0.96 J	0.077 J	1.1 J	0.39 J	1.6	4.4	0.88 J	0.47 J	0.85 J	0.54 J	11	2.6	2.6	0.47 J	0.47 J	0.59 J	2 J
Benzo(g,h,i)perylene	**500**	2 J	5.9	1.1 J	0.88 J	1.3 J	0.62 J	0.25 J	7.8	1 J	1.8 J	2.1 J	0.38 J	0.79 J	0.6 J	1.5 J	0.11 J	1.8 J	0.47 J	2.2	5.3	1.2 J	0.63 J	0.96 J	1 J	5.9	1.5	1.8	0.51 J	0.73 J	0.85 J	2.5 J
Benzo(a)pyrene	**1**	**1.9 J**	**6.4**	**1.2 J**	**1.3**	**1.4 J**	0.66 J	0.2 J	**15**	**1.2 J**	**1.6 J**	**2.3 J**	0.34 J	0.86 J	0.89 J	**1.9 J**	0.055 J	**2.8 J**	0.67 J	**4.1**	**9**	**1.8 J**	0.84 J	**1.2 J**	**1.2 J**	**19**	**4**	**4.3**	**1.1**	0.95 J	0.97	**3.8**
Biphenyl	**--**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.47 J	ND	ND	ND	ND	ND	ND
bis(2-Ethylhexyl)phthalate	**--**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Chloroaniline	**--**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbazole	**--**	--	--	--	--	--	--	--	--	ND	--	--	--	ND	--	0.22 J	--	--	--	--	--	--	--	--	--				--	--	0.13 J	--
Chrysene	**56**	2 BJ	5.8 B	1.6 BJ	1.2 B	1.6 BJ	1.2 BJ	0.5 BJ	18 B	1.4 BJ	1.8 BJ	2.6 BJ	0.82 BJ	1.3 BJ	1.1 BJ	2.2 BJ	0.3 BJ	3.1 BJ	1 BJ	3.8 B	8.6	1.8 BJ	1.2 BJ	1.8 BJ	1.3 BJ	15	2.8	3	0.99 B	1.2 B	1.3 B	4.2 B
Dibenzo(a,h)anthracene	**0.56**	0.46 J	**1.4 J**	0.31 J	0.2 J	0.35 J	0.19 J	ND	**3.1 J**	0.32 J	0.45 J	**0.62 J**	ND	0.28 J	0.2 J	0.5 J	ND	**0.6 J**	0.16 J	**0.68 J**	**1.6**	0.36 J	ND	0.3 J	ND	**1.8**	0.45 J	0.49 J	0.15 J	0.2 J	0.25 J	**0.77 J**
Dibenzofuran	**--**	ND	0.2 J	ND	ND	ND	ND	ND	3.3 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.1 J	0.16 J	ND	ND	ND	ND	4.6	0.085 J	0.23 J	0.04 J	ND	0.14 J	ND
Fluoranthene	**500**	2.7 J	11	1.5 J	2.9	2.3 J	0.76 J	0.22 J	45	1.8 J	2.6 J	3.8 J	0.58 J	1.3 J	1.6 J	3.1 J	0.22 J	5.1	1.1 J	7.2	16	2.3 J	1.2 J	1.7 J	1.4 J	12	7	8.5	1.7	1.8 J	2.8	7.8
Fluorene	**500**	ND	0.35 J	ND	0.04 J	ND	ND	ND	6.2	ND	ND	ND	ND	ND	ND	ND	ND	0.16 J	ND	0.19 J	0.34 J	ND	ND	ND	ND	8.2	0.15 J	0.44 J	0.047 J	0.059 J	0.08 J	ND
Indeno(1,2,3-cd)pyrene	**5.6**	1.6 J	5.2	1 J	0.8 J	1.1 J	0.51 J	0.19 J	**7.9**	0.94 J	1.4 J	1.8 J	0.32 J	0.71 J	0.65 J	1.4 J	0.11 J	1.9 J	0.45 J	2.3	5.2	1.2 J	0.53 J	0.94 J	0.92 J	**5.9**	1.5	1.7	0.49 J	0.6 J	0.78 J	2.3 J
Isophorone	**--**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Methylnaphthalene	**--**	ND	ND	ND	ND	ND	ND	ND	0.75 J	ND	ND	ND	ND	ND	ND	0.16 J	ND	ND	ND	0.076 J	0.097 J	ND	ND	ND	ND	3.1	0.087 J	0.13 J	0.046 J	ND	0.06 J	ND
Naphthalene	**500**	ND	ND	ND	0.044 J	ND	ND	ND	1.2 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.092 J	0.13 J	ND	ND	ND	ND	4.9	0.12 J	0.33 J	ND	0.038 J	0.17 J	ND
N-Nitroso-di-n-propylamine	**--**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	**500**	0.98 J	4.4	0.6 BJ	0.62 J	0.8 BJ	0.3 BJ	ND	41	1.2 J	1.4 J	1.6 J	0.38 J	0.58 J	0.6 J	1.8 J	0.089 J	2.5 J	1 J	2.6	5.3	0.76 BJ	0.66 BJ	0.74 BJ	0.62 BJ	7.1	2.5	4.2	0.72 J	0.9 J	2	2.8 J
Pyrene	**500**	2.5 J	9	1.4 J	2.6	1.9 J	0.74 J	0.24 J	29	1.7 J	2.4 J	3.4 J	0.5 J	1.3 J	1 J	2.6 J	0.11 J	4.1	0.94 J	5.4	13	1.9 J	1.1 J	1.6 J	1.3 J	22	3.8	4.3	1.2	1.4	2	6.8
PCBs - mg/kg [3]																																
Aroclor 1248	**1**	--	--	--	--	--	--	--	ND	ND	--	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	ND	ND	ND	--	--	ND	--
Aroclor 1254	**1**	--	--	--	--	--	--	--	0.31	0.07 J	--	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	0.12	ND	0.02 J	--	--	0.14	--
Aroclor 1260	**1**	--	--	--	--	--	--	--	0.1	0.11 J	--	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	0.023	0.0061 J	0.017 J	--	--	ND	--
Aroclor 1262	**1**	--	--	--	--	--	--	--	ND	ND	--	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND	--
Inorganic Compounds - mg/kg																																
Aluminum	**--**	--	--	--	--	--	--	--	--	7610	--	--	--	8310	--	8150	--	--	--	--	--	--	--	--	--	--	--	--	--	--	12300	--
Arsenic	**16**	**34**	9.1	**19.9**	9.7	**22.1**	6.3	**18.9**	**26 EN***	13 EN*	**33 EN***	**24.8 EN***	14.8 EN*	10 EN*	12.3 EN*	**63.2 EN***	**21 EN***	**25.6 EN***	**25.7 EN***	**48.5**	**79**	9.7 E	11.7 E	**16.8 E**	**33 E**	**24.3**	**143**	**29.1**	**25.8 E**	11.9	9.9	**18 EN***
Barium	**10000**	--	--	--	--	--	--	--	--	100	--	--	--	66.2	--	109	--	--	--	--	--	--	--	--	--	--	--	--	--	--	75.7	--
Beryllium	**590**	--	--	--	--	--	--	--	--	0.96	--	--	--	0.45	--	1.2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2.1	--
Cadmium	**9.3**	0.94	1.2	2.3 E	0.3	1.2 E	1.7 E	1.2 E	**20.8 N***	1.1 N*	3.8 N*	**10.8 N***	1 N*	0.71 N*	0.51 N*	2.8 N*	1.1 N*	1.7 N*	0.69 N*	0.5	1.6	0.42	0.3	2.2	2.8	0.52	1.2	0.59	1.2 *	3.2	ND	0.95 N*
Calcium	**--**	--	--	--	--	--	--	--	--	114000	--	--	--	43500	--	54500	--	--	--	--	--	--	--	--	--	--	--	--	--	--	237000	--
Chromium [5]	**1900**	48.4	93.8	453	96.6	304	270	585	159 N*	685 N*	115 N*	217 N*	60.7 N*	192 N*	10.2 N*	144 N*	54.6 N*	125 N*	141 N*	52.1	106	219 EN	517 EN	113 EN	92.9 EN	510	130	101	385 N*	254 N	424	65.9 N*
Cobalt	**--**	--	--	--	--	--	--	--	--	4.1	--	--	--	4.7	--	5.1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2.8	--
Copper	**270**	--	--	--	--	--	--	--	--	**302**	--	--	--	**406**	--	200	--	--	--	--	--	--	--	--	--	--	--	--	--	--	29.4	--
Iron	**--**	--	--	--	--	--	--	--	--	81600	--	--	--	50700	--	56900	--	--	--	--	--	--	--	--	--	--	--	--	--	--	111000	--
Lead	**1000**	39.1	59.9	**1120 N**	170	114 N	110 N	49.5 N	**1200 E***	113 E*	191 E*	862 E*	88.2 E*	78.7 E*	53.3 E*	302 E*	224 E*	763 E*	80.4 E*	119	201	58 EN*	165 EN*	417 EN*	446 EN*	119	139	132	81 EN*	960 *	60 N	140 E*
Magnesium	**--**	--	--	--	--	--	--	--	--	17500	--	--	--	8360	--	9600	--	--	--	--	--	--	--	--	--	--	--	--	--	--	28600	--
Manganese	**10000**	--	--	--	--	--	--	--	--	**28000**	--	--	--	6460	--	4910	--	--	--	--	--	--	--	--	--	--	--	--	--	--	**15500**	--
Nickel	**310**	--	--	--	--	--	--	--	--	25.4	--	--	--	18.1	--	22.6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	10.1	--
Potassium	**--**	--	--	--	--	--	--	--	--	457	--	--	--	740	--	741	--	--	--	--	--	--	--	--	--	--	--	--	--	--	625	--
Mercury	**2.8**	0.031	0.053	0.217	0.209	0.209	0.033	0.029	1.6	0.247	0.339	0.95	0.423	0.159	0.026	0.11	**4.8**	0.284	0.105	0.123	0.131	0.372	0.075	0.053	0.14	0.533	0.149	0.176	0.05	0.801	0.774	0.314
Silver	**1500**	--	--	--	--	--	--	--	--	0.61	--	--	--	ND	--	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND	--
Sodium	**--**	--	--	--	--	--	--	--	--	251	--	--	--	ND	--	249	--	--	--	--	--	--	--	--	--	--	--	--	--	--	367	--
Vanadium	**--**	--	--	--	--	--	--	--	--	410	--	--	--	97.1	--	69	--	--	--	--	--	--	--	--	--	--	--	--	--	--	347	--
Zinc	**10000**	--	--	--	--	--	--	--	--	98.3	--	--	--	144	--	357	--	--	--	--	--	--	--	--	--	--	--	--	--	--	62.5	--
Cyanide	**27**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.4	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.8	3.3 J	ND	1.1	25.6	1.2	ND	ND	--	ND
General Chemistry																																
pH		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	9.52	10.9	10.2	8.82	--	--	--	--	--	--	--
Flashpoint		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Notes:

1. Only those parameters detected at a minimum of 1 sample location presented in table; all other compounds non-detect.
2. Values per NYSDEC Part 375 Soil Cleanup Objectives (June 2006)
3. Sample results were reported by the laboratory in ug/kg and converted to mg/kg for comparison to SCOs.
4. The total Chromium SCO was determined by adding the hexavalent and trivalent Chromium SCOs.
5. Blind collected from BPA-3-TP-32, Blind 2 collected from BPA-3-TP-42, Blind 3 collected from BPA-3-TP-50, BPA-3-TP-50, Blind 4 collected from BPA-3-TP-

Definitions:

ND = Parameter not detected above laboratory detection limit.
NA = Sample not analyzed for parameter.
"--" = No SCO available.
J = Estimated value; result is less than the sample quantitation limit but greater than zero.
b = Analyte detected in associated blank as well as in the sample; possible external contamination.
B = Indicates a value greater than or equal to the instrument detection limit, but less than the quantitation limit.
* = Indicates the spike or duplicate analysis is not within the quality control limits.
D = All compounds were identified in an analysis at the secondary dilution factor.
N = Indicates spike sample recovery is not within the quality control limits.
P = Detected concentrations between the two GC columns is greater than 25%; lower value is reported & flagged
J = Estimated value; result is less than the sample quantitation limit but greater than zero.
E = Identifies compounds whose concentrations exceed the calibration range of the Instrument for that specific analysis.

BOLD = result exceeds SCO.

Table 7a

Summary of Soil Analytical Data

Remedial Investigation/Alternatives Analysis Report
Phase IIIA Business Park Area
Tecumseh Redevelopment Inc.
Lackawanna. New York

PARAMETER [1]	Unrestricted SCOs [2] (ppm)	Sample Location																										
		BPA-3A-TP-1 (0-2)	BPA-3A-TP-2 (0-2)	BPA-3A-TP-3 (2-6)	BPA-3A-TP-4 (0-2)	BPA-3A-TP-6 (0-2)	BPA-3A-TP-8 (5-8)	BPA-3A-TP-14 (4-6)	BPA-3A-TP-17 (3-6)	BPA-3A-TP-18	BPA-3A-TP-19	BPA-3A-TP-22 (0-2)	BPA-3A-TP-24 (0-2)	BPA-3A-TP-25 (3-5)	BPA-3A-TP-26 (0-2)	BPA-3A-TP-27 (0-2)	BPA-3A-TP-28 (0-2)	BPA-3A-TP-29 (0-2)	BPA-3A-TP-30 (2-5)	BPA-3A-TP-31 (3-5)	BPA-3A-TP-32 (0-2)	BPA-3A-TP-33 (0-2)	BPA-3A-TP-34 (0-2)	BPA-3A-TP-35 (0-2)	BPA-3A-TP-37 (0-2)	BPA-3A-TP-40 (0-2)	BPA-3A-TP-44 (7-8)	BPA-3A-TP-45 (0-2)
Volitile Organic Compounds (VOCs) (mg/kg) [3]																												
1,2,4-Trimethylbenzene	3.6	--	--	--	--	--	ND	ND	ND	ND	ND	--	--	ND	ND	ND	--	--	--	--	--	--	--	--	ND	--	1.8 D,W1,N1	--
1,3,5-Trimethylbenzene	8.4	--	--	--	--	--	ND	ND	ND	--	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	ND	--	0.41 D,W1,N1	--
2-Butanone (MEK)	0.12	--	--	--	--	--	0.51 W,D,J	ND	ND	--	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	ND	--	ND	--
p-Cymene	--	--	--	--	--	--	ND	ND	ND	ND	ND	--	--	ND	ND	ND	--	--	--	--	--	--	--	--	ND	--	0.33 D,W1,N1	--
Acetone	0.05	--	--	--	--	--	ND	ND	ND	--	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	ND	--	ND	--
Benzene	0.06	--	--	--	--	--	ND	ND	ND	ND	ND	--	--	ND	ND	ND	--	--	--	--	--	--	--	--	ND	--	0.93 D,W1,N1	--
Chlorobenzene	1.1	--	--	--	--	--	ND	ND	ND	--	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	ND	--	ND	--
Cyclohexane	--	--	--	--	--	--	ND	ND	ND	--	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	ND	--	0.69 D,W1,N1	--
Ethylbenzene	1	--	--	--	--	--	ND	ND	ND	ND	ND	--	--	ND	ND	ND	--	--	--	--	--	--	--	--	ND	--	0.19 D,W1,N1	--
Isopropylbenzene	--	--	--	--	--	--	ND	ND	ND	ND	ND	--	--	ND	ND	ND	--	--	--	--	--	--	--	--	ND	--	0.31 D,W1,N1	--
Methylcyclohexane	--	--	--	--	--	--	0.061 W,D,J	ND	ND	--	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	ND	--	1.7 D,W1,N1	--
Methylene chloride	0.05	--	--	--	--	--	0.066 W,D,J	0.048 B	0.041 B	--	0.055 B	--	--	--	--	--	--	--	--	--	--	--	--	--	ND	--	ND	--
m-Xylene & p-Xylene	0.26	--	--	--	--	--	ND	ND	ND	ND	ND	--	--	ND	ND	ND	--	--	--	--	--	--	--	--	ND	--	0.62 D,W1,N1	--
n-Butylbenzene	12	--	--	--	--	--	0.12 W,D,J	ND	ND	ND	ND	--	--	ND	ND	ND	--	--	--	--	--	--	--	--	ND	--	0.87 D,W1,N1	--
n-Propylbenzene	3.9	--	--	--	--	--	0.063 W,D,J	ND	ND	ND	ND	--	--	ND	ND	ND	--	--	--	--	--	--	--	--	ND	--	0.46 D,W1,N1	--
o-Xylene	0.26	--	--	--	--	--	ND	ND	ND	ND	ND	--	--	ND	ND	ND	--	--	--	--	--	--	--	--	ND	--	0.38 D,W1,N1	--
sec-Butylbenzene	11	--	--	--	--	--	ND	ND	ND	ND	ND	--	--	ND	ND	ND	--	--	--	--	--	--	--	--	ND	--	0.27 D,W1,N1	--
Toluene	0.7	--	--	--	--	--	ND	ND	ND	ND	ND	--	--	ND	ND	ND	--	--	--	--	--	--	--	--	0.00066 J	--	ND	--
Total Xylenes	0.26	--	--	--	--	--	ND	ND	ND	ND	ND	--	--	ND	ND	ND	--	--	--	--	--	--	--	--	ND	--	1 D,W1,N1	--
Semi-Volatile Organic Compounds (SVOCs) (mg\kg) [3]																												
2-Methylnaphthalene	--	ND	ND	ND	ND	ND	32 D	ND	ND	ND	ND	0.64 D,J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	65 T,D,J	ND
Acenaphthene	20	ND	ND	ND	ND	ND	ND	ND	2.3 D,J	ND	ND	1.8 D,J	ND	ND	ND	ND	ND	ND	ND	0.3 D,J	ND	ND	ND	3.2 D,J	ND	ND	ND	ND
Acenaphthylene	100	ND	ND	ND	ND	0.56 D,J	ND	5.8 D,J	ND	ND	ND	0.39 D,J	ND	ND	2.1 DJ	ND	2.4 D,J	1.3 D,J	ND	0.36 D,J	ND	0.73 D,J	ND		1.2 D,J	ND	ND	0.39
Anthracene	100	3.3 T,D,J	0.42 D,J	0.37 D,J	ND	0.81 D,J	ND	4 D,J	5.4 D	ND	ND	6.4 D	ND	ND	3.4 DJ	ND	ND	1.1 DJ	ND	0.91 D,J	2 D,J	0.85 D,J	3.2 D,J	7.6 D,J	0.41 D,J	ND	ND	0.74 D,J
Benzo(a)anthracene	1	7.7 T,D,J	1.6 D,J	1.8 D,J	4.1 T,D,J	2.5 D,J	0.4 D,J	29 D	9.9 D	0.018 J	1.2 D,J	10 D	0.8 D,J	0.17 D,J	15 D	0.38 D,J	3.2 D,J	6 D	ND	2.8 D	8.2 D,J	5.3 D	11 DJ	27 D	3.7 D,J	0.56 D,J	ND	2.8 D
Benzo(a)pyrene	1	6 T,D,J	1.5 D,J	2 D,J	4.4 T,D,J	2.2 D,J	0.29 D,J	29 D	8.1 D	0.018 J	1.4 D,J	8.1 D	0.85 D,J	0.16 D,J	13 D	0.34 D,J	6.2 D,J	6.2 D	ND	3.1 D	8.4 D,J	5.8 D	10 DJ	25 D	5.9 D	0.62 D,J	ND	2.9 D
Benzo(b)fluoranthene	1	6.6 T,D,J	1.8 D,J	2.5 D,J	5.3 T,D,J	4 D ID4	0.48 D,J	34 D	9.4 D	0.033 J	2.5 D,J	11 D	1.4 D,I4,J	0.22 D,J	14 D	0.43 D,J	6.1 D,J	7.2 D	ND	3.9 D	8.4 D,J	6.9 D	18 D,J,ID4	28 D	7.9 D	1.2 D,J	ND	3.4 D
Benzo(ghi)perylene	100	4.1 T,D,J	1 D,J	1.7 D,J	4.5 T,D,J	1.9 D,J	0.26 D,J	26 D	5.2 D	0.02 J	1.3 D,J	5.6 D	0.7 D,J	0.16 D,J	9.1 DJ	0.26 D,J	5.9 D,J	4.7 D	ND	3.1 D	5.5 D,J	4.3 D	ND	14 D,J	4.3 D	0.55 D,J	ND	2.1 D
Benzo(k)fluoranthene	0.8	3.9 T,D,J	0.66 D,J	0.84 D,J	3.2 T,D,J	ND	0.21 D,J	14 D	3.6 D,J	ND	0.82 D,J	3.9 D,J	ND	0.065 D,J	5.3 DJ	0.16 D,J	2.2 D,J	2.4 D,J	ND	1.4 D,J	5.4 D,J	3.9 D	ND	14 D,J	2.5 D,J	1.2 D,J	ND	1.4 D,J
Biphenyl	--	ND	ND	ND	ND	ND	3.1 D	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bis(2-ethylhexyl) phthalate	--	ND	ND	ND	ND	ND	0.62 D,J,B	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbazole	--	--	--	--	--	--	--	--	1.6 DJ	--	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	ND	--	ND	--
Chrysene	1	6.9 T,D,J	1.5 D,J	17 D,J	4.1 T,D,J	2.5 D,J	0.54 D,J	30 D	8.3 D	0.027 J	1.3 D,J	9.9 D	0.96 D,J	0.12 D,J	12 D	0.36 D,J	3.3 D,J	5.4 D	ND	2.9 D	7.8 D,J	5.2 D	12 D,J	24 D	3.8 D,J	0.62 D,J	ND	2.5 D
Dibenzo(a,h)anthracene	0.33	ND	0.28 D,J	0.44 D,J	ND	0.45 D,J	0.075 D,J	5.9 D,J	1.1 D,J	ND	ND	1.5 DJ	ND	ND	ND	ND	ND	ND	ND	ND	1.2 D,J	ND	ND	ND	1.4 D,J	ND	ND	0.67
Dibenzofuran	--	ND	ND	ND	ND	ND	ND	ND	0.98 D,J	ND	ND	1.9 DJ	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluoranthene	100	15 T,D,J	3.3 D,J	2.6 D,J	6.8 T,D,J	5.2 D	1.1 D	38 D	26 D	0.018 J	1.4 D,J	23 D	1.2 D,J	0.19 D,J	32 D	0.5 D,J	2.6 D,J	9.4 D	ND	6.6 D	18 D	9.5 D	26 D,J	58 D	3.6 D,J,B	0.84 D,J,B	18 T,D,J,B	5.1 D
Fluorene	30	ND	ND	ND	ND	ND	6.6 D	ND	2.1 D,J	ND	ND	2.9 D,J	ND	ND	1.1 DJ	ND	ND	ND	ND	0.23 D,J	ND	ND	ND	3 D,J	ND	ND	ND	0.23 D,J
Indeno(1,2,3-cd)pyrene	0.5	3.5 T,D,J	0.93 D,J	1.5 D,J	3.6 T,D,J	1.6 D,J	0.24 D,J	23 D	4.9 D	ND	1.3 D,J	5.8 D	0.66 D,J	0.14 D,J	8.1 DJ	0.21 D,J	4.2 D,J	4.4 D	ND	2.5 D	4.7 D,J	4 D	6.3 D,J	14 D,J	4.1 D	0.47 D,J	ND	1.9 D,J
Naphthalene	12	ND	ND	0.53 D,J	ND	ND	5.4 D	ND	ND	ND	ND	0.63 DJ	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.52 D,J	ND	ND	ND
Phenanthrene	100	13 T,D,J	2 D,J	1.6 D,J	3.3 T,D,J	2.5 DJ	16 D	9.3 D,J	21 D	0.021 J	ND	23 D	0.39 D,J	0.088 D,J	15 D	0.2 D,J	ND	3 D,J	ND	3.5 D	7.2 D,J	4.7 D	16 D,J	31 D	0.81 D,J,B	0.25 D,J,B	98 T,D,J,B	3
Pyrene	100	12 T,D,J	2.8 D,J	2.2 D,J	5.7 T,D,J	4.8 D	1.1 D	ND	20 D	0.014 J	1.3 D,J	16 D	1 D,J	0.17 D,J	26 D	0.43 D,J	3.4 D,J	8.1 D	0.089 D,J	5.3 D	14 D	7.8 D	20 D,J	42 D	3.6 D,J,B	0.67 D,J,B	93 T,D,J,B	4.1
Polychlorinated Biphenyls (PCBs) (mg\kg) [3]																												
Aroclor 1242	0.1	--	--	--	--	--	--	--	ND	--	ND	--	--	--	--	--	ND	0.037	ND	ND	0.13 D	--	--	--	ND	--	ND	--
Aroclor 1248	0.1	--	--	--	--	--	--	--	ND	--	ND	--	--	--	--	--	ND	ND	ND	ND	ND	--	--	--	ND	--	ND	--
Aroclor 1260	0.1	--	--	--	--	--	--	--	ND	--	ND	--	--	--	--	--	0.028 J	0.25	ND	0.25	1.5 D	--	--	--	ND	--	ND	--
Metals (mg\kg)																												
Aluminum, Total	--	--	--	--	--	--	--	--	7890 J	--	7410 J	--	--	--	--	--	--	--	--	--	--	--	--	--	5780 J	--	5500 J	--
Arsenic, Total	13	57.8	31.7	17.6	7.5	123	38.9	25.1	26.7	ND	10	79.3	19.3	10.9	25.5	6.1	21.7	10	5.4	24.5	18.7	132	15.4	20.6	121	38	9.7	45.4 J
Barium, Total	350	--	--	--	--	--	--	--	109 J	--	93.9 J	--	--	--	--	--	--	--	--	--	--	--	--	--	99.3 J	--	66.6 J	131 J
Beryllium, Total	7.2	--	--	--	--	--	--	--	0.708	--	1.07	--	--	--	--	--	--	--	--	--	--	--	--	--	1.14	--	0.722	--
Cadmium, Total	2.5	4.12	1.64	2.03	1.06	1.73	3.59	0.941	1.3	ND	0.999	5.98	2.43	ND	4.07	0.268	2.14	1.06	0.992	7.32	7.75	14.4	2.59	30.9	1.72	1.41	0.474	1.86
Calcium, Total	--	--	--	--	--	--	--	--	30100 J,B1,B	--	25300 J,B1,B	--	--	--	--	--	--	--	--	--	--	--	--	--	35300 J	--	48400 J	--
Chromium, Total [4]	31	148 J	372 J	234 J	91.2 J	52.8 J	22.6 J	125 J	75.8 J	18.1 J	20.7 J	125 J	29.9 J	30.8 J	34.9 J	56 J	19.7 J	108 J	195 J	33.4 J	125 J	203 J	49.2 J	145 J	17.9 J	590 J	192 J	101 J
Cobalt, Total	--	--	--	--	--	--	--	--	7 J	--	4.27 J	--	--	--	--	--	--	--	--	--	--	--	--	--	6.91 J	--	3.64 J	--
Copper, Total	50	--	--	--	--	--	--	--	72.1 J	--	39 J	--	--	--	--	--	--	--	--	--	--	--	--	--	29.6 J	--	36 J	--
Iron, Total	--	--	--	--	--	--	--	--	46700 J	--	20600 J	--	--	--	--	--	--	--	--	--	--	--	--	--	212000 D,J	--	47300 J	--
Lead, Total	63	316	229	232	251	130	176	44.7 J	118 J	ND	75.4 J	500 J	201 J	26 J	268	28.2	138	169	101	355	488	823	332	484	59	76.3 J	62.6 J	104 J
Magnesium, Total	--	--	--	--	--	--	--	--	3570 J	--	3360 J	--	--	--	--	--	--	--	--	--	--	--	--	--	2090 J	--	7160 J	--
Manganese, Total	1600	--	--	--	--	--	--	--	3740 B1,D,B	--	1580 B1,B	--	--	--	--	--	--	--	--	--	--	--	--	--	1930	--	7210 D	--
Nickel, Total	30	--	--	--	--	--	--	--	20.3 J	--	14.5 J	--	--	--	--	--	--	--	--	--	--	--	--	--	8.78 J	--	10.9 J	--
Potassium, Total	--	--	--	--	--	--	--	--	1330 J	--	520 J	--	--	--	--	--	--	--	--	--	--	--	--	--	591 J	--	454 J	--
Sodium, Total	--	--	--	--	--	--	--	--	515 J	--	241 J	--	--	--	--	--	--	--	--	--	--	--	--	--	165 J	--	ND	--
Thallium, Total	--	--	--	--	--	--	--	--	ND	--	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	14.1	--	ND	--
Vanadium, Total	--	--	--	--	--	--	--	--	52.6 J	--	21.5 J	--	--	--	--	--	--	--	--	--	--	--	--	--	49.1 J	--	67.6 J	--
Zinc, Total	109	--	--	--	--	--	--	--	307 J	--	185 J	--	--	--	--	--	--	--	--	--	--	--	--	--	93.6 J	--	109 J	--
Mercury, Total	0.18	1.31 D	0.0736	1.58 D	0.102	2.07 D	0.0717	0.11	2.78	ND	0.13	0.235	0.0467	0.0269	0.422	ND	0.0905	0.121	0.105	0.102	3.32 D	0.169	0.355	0.403	0.0254	0.0464	0.188	0.264
Cyanide	27	--	--	--	--	--	--	--	2.1 J	--	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	ND	--	ND	ND
General Chemistry Parameters																												
pH, Leachable		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Table 7a

Summary of Soil Analytical Data

Remedial Investigation/Alternatives Analysis Report
Phase IIIA Business Park Area
Tecumseh Redevelopment Inc.
Lackawanna. New York

PARAMETER [1]	Unrestricted SCOs [2] (ppm)	Sample Location																	
		BPA-3A-TP-46 (0-2)	BPA-3A-TP-47 (0-2)	BPA-3A-TP-48 (0-2)	BPA-3A-SS-49	BPA-3A-TP-49 (0-2)	BPA-3A-TP-49 (5-7)	BPA-3A-TP-50 (0-2)	BPA-3A-TP-51 (0-2)	BPA-3A-TP-52 (0-2)	BPA-3A-TP-53 (5-7)	BPA-3A-TP-54 (0-2)	BPA-3A-TP-55 (0-2)	BPA-3A-TP-56 (0-2)	BPA-3A-TP-57 (0-2)	BPA-3A-TP-58 (5-6)	Blind 1 [5]	Blind 2 [5]	Blind 3 [5]
Volitile Organic Compounds (VOCs) (m g/kg) [3]																			
1,2,4-Trimethylbenzene	3.6	--	--	--	--	--	--	ND	ND	0.0015 J	**360 W1**	0.0022 J	0.0034 J	0.0018 J	ND	ND	ND	--	0.0026 J
1,3,5-Trimethylbenzene	8.4	--	--	--	--	--	--	--	ND	--	**280 W1**	--	0.0094 J	--	--	--	--	--	0.00065 J
2-Butanone (MEK)	0.12	--	--	--	--	--	--	--	ND	--	ND	--	0.0077 J	--	--	--	--	--	0.0078 J
p-Cymene	--	--	--	--	--	--	--	ND	ND	ND	0.81 W1	ND	ND	ND	ND	ND	ND	--	ND
Acetone	0.05	--	--	--	--	--	--	--	ND	--	ND	--	**0.051 J**	--	--	--	--	--	0.048 J
Benzene	0.06	--	--	--	--	--	--	ND	ND	ND	**490 W1**	ND	ND	ND	ND	ND	ND	--	ND
Chlorobenzene	1.1	--	--	--	--	--	--	--	ND	--	0.09 W1,J	--	ND	--	--	--	--	--	ND
Cyclohexane	--	--	--	--	--	--	--	--	ND	--	0.37 W1	--	ND	--	--	--	--	--	ND
Ethylbenzene	1	--	--	--	--	--	--	ND	ND	ND	**100**	ND	ND	ND	ND	ND	ND	--	ND
Isopropylbenzene	--	--	--	--	--	--	--	ND	ND	ND	4.4 W1	ND	ND	ND	ND	ND	ND	--	ND
Methylcyclohexane	--	--	--	--	--	--	--	--	ND	--	2.2 W1	--	ND	--	--	--	--	--	ND
Methylene chloride	0.05	--	--	--	--	--	--	--	**6.3 B**	--	ND	--	ND	--	--	--	--	--	ND
m-Xylene & p-Xylene	0.26	--	--	--	--	--	--	ND	ND	0.0016 J	**820 W1**	0.0023 J	0.0032 J	0.002 J	ND	ND	ND	--	0.0026 J
n-Butylbenzene	12	--	--	--	--	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	ND
n-Propylbenzene	3.9	--	--	--	--	--	--	ND	ND	ND	1.6 W1	ND	ND	ND	ND	ND	ND	--	ND
o-Xylene	0.26	--	--	--	--	--	--	ND	ND	ND	**87 W1**	ND	0.00081	ND	ND	ND	ND	--	ND
sec-Butylbenzene	11	--	--	--	--	--	--	ND	ND	ND	0.82 W1	ND	ND	ND	ND	ND	ND	--	ND
Toluene	0.7	--	--	--	--	--	--	ND	ND	ND	**47 W1**	0.00094 J	ND	0.00085 J	ND	ND	ND	--	0.00066 J
Total Xylenes	0.26	--	--	--	--	--	--	ND	ND	0.0016 J	**910 W1**	0.0023 J	0.004 J	0.002 J	ND	ND	ND	--	0.0026 J
Semi-Volatile Organic Compounds (SVOCs) (mg\kg) [3]																			
2-Methylnaphthalene	--	ND	ND	ND	ND	ND	--	ND	0.8 D,J	ND	73 T,D	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthene	20	ND	ND	ND	ND	0.4 D,J	--	ND	ND	ND	**29 T,D**	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthylene	100	ND	ND	0.25 D,J	6 T,D,J	ND	--	0.46 D,J	0.33 D,J	0.28 D,J	7.9 T,D	ND	ND	ND	1.1 D,J	ND	ND	ND	ND
Anthracene	100	0.12 D,J	ND	0.29 D,J	ND	1.1 D,J	--	0.35 D,J	1.9 D,J	0.52 D,J	6.9 T,D	0.15 D,J	0.016 J	ND	1.1 D,J	0.026 J	ND	1.5 D,J	ND
Benzo(a)anthracene	1	**1.2 D,J**	**6.4 D,J**	**1.5 D,J**	**8.6 T,D,J**	**4.5 D**	--	**2 D,J**	**9.6 D**	**1.4 D,J**	**7.9 T,D,J**	1 D,J	0.29	**1.9 D,J**	**5.1 D**	0.065 J	0.14 D,J	**4.7 D,J**	0.12 J
Benzo(a)pyrene	1	**1.1 D,J**	**4.9 D,J**	**1.4 D,J**	ND	**4.2 D,J**	--	**2.2 D,J**	**7.8 D**	**1.2 D,J**	**4.2 T,D,J**	**1.1 D,J**	0.45	**2.9 D**	**4.5 D**	0.046 J	0.15 D,J	**4.3 D,J**	0.2 J
Benzo(b)fluoranthene	1	**1.4 D,J**	**7.9 D,J**	**1.9 D,J**	**12 T,D,J**	**6 D**	--	**2.6 D,J**	**10 D**	**1.4 D,J**	**5.9 T,D,J**	**1.6 D,J**	0.54	**3.4 D**	**5.8 D**	0.049 J	0.22 D,J	**5.9 D,J**	0.3
Benzo(ghi)perylene	100	0.73 D,J	4.7 D,J	1.1 D,J	5.8 T,D,J	4.5 D	--	1.8 D,J	5.5 D	0.83 D,J	2.4 T,D,J	0.99 D,J	0.46	2.9 D	3.2 D	0.031 J	0.18 D,J	4.6 D,J	0.22
Benzo(k)fluoranthene	0.8	0.55 D,J	**3.5 D,J**	0.71 D,J	**4.5 T,D,J**	**2.3 D,J**	--	**1.5 D,J**	**3.2 D,J**	0.47 D,J	**2.9 T,D,J**	0.58 D,J	0.23	**1.1 D,J**	**2 D**	0.029 J	0.062 D,J	**3.1 D,J**	0.058 J
Biphenyl	--	ND	ND	ND	ND	ND	--	ND	ND	ND	7.5 T,D,J	ND	ND	ND	ND	ND	ND	ND	ND
Bis(2-ethylhexyl) phthalate	--	ND	ND	ND	ND	ND	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbazole	--	--	--	--	--	--	--	--	0.54 D,J	--	ND	--	0.013 J	--	--	--	--	--	ND
Chrysene	1	**1.1 D,J**	**7.1 D,J**	**1.4 D,J**	**10 T,D,J**	**4.1 D,J**	--	**2.4 D,J**	**8.9 D**	**1.3 D,J**	**6.3 T,D,J**	**1.3 D,J**	0.34	**2.1 D**	**5.1 D**	0.074 J	0.15 D,J	**4.8 D,J**	0.18 J
Dibenzo(a,h)anthracene	0.33	ND	ND	0.29 D,J	ND	**1.2 D,J**	--	ND	**1.4 D,J**	0.25 D,J	ND	ND	0.092 J	**0.66 D,J**	**0.81 D,J**	ND	ND	ND	0.061 J
Dibenzofuran	--	ND	ND	ND	ND	ND	--	ND	0.71 D,J	0.2 D,J	15 T,D,J	ND	ND	ND	ND	ND	ND	ND	ND
Fluoranthene	100	1.8 D,J	11 D,J	2.3 D	17 T,D,J	6.7 D	--	3 D,J	16 D	3.3 D	22	1.3 D,J	0.38	2.1 D	13 D,B	0.11 J	0.18 D,J	7.9 D,J	0.2 J
Fluorene	30	ND	ND	ND	ND	0.49 D,J	--	ND	ND	0.27 D,J	ND	ND	ND	ND	0.27 D,J	ND	ND	ND	ND
Indeno(1,2,3-cd)pyrene	0.5	**0.61 D,J**	**4 D,J**	**1 D,J**	**5.8 T,D,J**	**3.9 D,J**	--	**1.5 D,J**	**4.6 D**	**0.72 D,J**	ND	**0.87 D,J**	0.35	**2.5 D**	**2.9**	0.026 J	0.14 D,J	**3.8 D,J**	0.18 J
Naphthalene	12	ND	ND	ND	ND	0.77 D,J	--	ND	ND	ND	**890 T,D,J,E**	ND	ND	ND	0.16 D,J	ND	ND	ND	ND
Phenanthrene	100	0.66 D,J	10 D,J	1.2 D,J	12 T,D,J	5.1 D	--	1.6 D,J	8.3 D	1.9 D,J	34 T,D	0.56 D,J	0.14 J	0.6 D,J	5 D,B	0.065 J	ND	6.8 D,J	0.084 J
Pyrene	100	1.5 D,J	7.9 D,J	1.9 D	11 T,D,J	5.8 D	--	2.5 D,J	12 D	2.8 D	15 T,D,J	1.4 D,J	0.34	1.9 D,J	9.7 D,B	0.097 J	0.15 D,J	6.9	0.17 J
Polychlorinated Biphenyls (PCBs) (mg\kg) [3]																			
Aroclor 1242	0.1	--	--	--	--	--	--	--	ND	--	--	--	ND	--	--	--	--	--	ND
Aroclor 1248	0.1	--	--	--	--	--	--	--	ND	--	--	--	0.015 J	--	--	--	--	--	0.015 J
Aroclor 1260	0.1	--	--	--	--	--	--	--	ND	--	--	--	0.018 J	--	--	--	--	--	0.018 J
Metals (mg\kg)																			
Aluminum, Total	--	--	--	--	--	--	16000 J	--	4120 J	--	2690 J	--	3270 J	--	--	--	--	--	3360 J
Arsenic, Total	13	**62.9 J**	**19.8 J**	**30 J**	**38.2 J**	**26.3 J**	8.3 J	9.4 J	11.2	**31.7 J**	**39.3**	**27.2 J**	7.4	12.5 J	**35.3**	2.3 J	13	**25 J**	4.6
Barium, Total	350	159 J	36.8 J	138 J	84.8 J	118 J	25.4 J	--	66.9 J	--	101 J	--	19.5 J	--	--	--	--	70.9	21 J
Beryllium, Total	7.2	--	--	--	--	--	0.994 J	--	0.569	--	0.731	--	0.366	--	--	--	--	--	0.359
Cadmium, Total	2.5	ND	ND	0.557	2.1	**4.13**	ND	ND	ND	0.491 J	0.44	**7.21 J**	0.914	**6.93 J**	ND	ND	ND	**5.87**	1.32
Calcium, Total	--	--	--	--	--	--	131000 J	--	38700 J	--	1850 J	--	261000	--	--	--	--	--	210000 D,J
Chromium, Total [4]	31	13.7 J	19.5 J	25.8 J	**48.4 J**	**42.1 J**	13.3 J	7.67 J	7.43 J	13.5 J	6.91 J	**356 J**	**178 J**	**260 J**	7.75 J	1.84 J	28.9 J	**56.2 J**	**256 J**
Cobalt, Total	--	--	--	--	--	--	3.72 J	--	3.84 J	--	6.02 J	--	4.85 J	--	--	--	--	--	4.48 J
Copper, Total	50	--	--	--	--	--	17.7 J	--	26.1 J	--	34.9 J	--	33.6 J	--	--	--	--	--	48 J
Iron, Total	--	--	--	--	--	--	25800 J	--	23400 J	--	43800 J	--	34200 J	--	--	--	--	--	45700 B1,J
Lead, Total	63	**158 J**	33.1 J	**78.5 J**	**151 J**	**289 J**	27.8 J	**75.1 J**	49.8 J	41.7 J	**218 J**	**438 J**	**101 J**	**605 J**	11.9 J	4.4 J	24.3 J	**314 J**	**101 J**
Magnesium, Total	--	--	--	--	--	--	271000 D,J	--	8250 J	--	654 J	--	151000 D,J	--	--	--	--	--	136000 D,J
Manganese, Total	1600	--	--	--	--	--	357 J	--	346	--	469	--	**6540 D**	--	--	--	--	--	**7090 D**
Nickel, Total	30	--	--	--	--	--	ND	--	9.15 J	--	14.9 J	--	**42.5 J**	--	--	--	--	--	**50 J**
Potassium, Total	--	--	--	--	--	--	161 J	--	722 J	--	500 J	--	242 J	--	--	--	--	--	220 J
Sodium, Total	--	--	--	--	--	--	ND	--	ND	--	222 J	--	193 J	--	--	--	--	--	ND
Thallium, Total	--	--	--	--	--	--	ND	--	ND	--	ND	--	ND	--	--	--	--	--	ND
Vanadium, Total	--	--	--	--	--	--	34.3 J	--	11.7 J	--	16.3 J	--	71.3 J	--	--	--	--	--	122
Zinc, Total	109	--	--	--	--	--	80.2 J	--	69.5 J	--	**158 J**	--	**218 J**	--	--	--	--	--	30 J
Mercury, Total	0.18	0.0721	**575 D**	**0.301**	**304 D**	**6.98 D**	ND	**0.772**	**0.334**	ND	0.0481	**1.16 D**	0.0817	**0.806**	ND	ND	0.0325	**8.23 D**	0.0897 J
Cyanide	27	ND	119 D,J	ND	**628 D,J**	**41**	--	--	ND	--	ND	--	1.6 J	--	--	--	--	**40.9 J**	ND
General Chemistry Parameters																			
pH, Leachable		--	--	--	--	--	10 HFT	--	--	--	--	--	--	--	--	--	--	--	--

Notes:
1. Only those parameters detected at a minimum of one sample location are presented in this table; all other compounds were reported as non-detect.
2. Values per NYSDEC draft Part 375 Soil Cleanup Objectives (June 2006)
3. Sample results were reported by the laboratory in ug/kg and converted to mg/kg for comparison to SCOs.
4. The total Chromium SCO was determined by adding the hexavalent and trivalent Chromium SCOs.
5. Blind 1 collected from BPA-3A-TP-25, Blind 2 collected from BPA-3A-TP-49, Blind 3 collected from BPA-3A-TP-55

Definitions:
ND = Parameter not detected above laboratory detection limit.
"--" = No SCO available/Sample not analyzed for parameter.
J = Estimated value; result is less than the sample quantitation limit but greater than zero.
B = Indicates a value greater than or equal to the instrument detection limit, but less than the quantitation limit.
D = All compounds were identified in an analyisis at the secondary dilution factor.
R = The data is unusable.

BOLD = result exceeds SCO.

Table 7b

Summary of Soil Analytical Data

Remedial Investigation/Alternatives Analysis Report
Phase IIIA Business Park Area
Tecumseh Redevelopment Inc.
Lackawanna, New York

PARAMETER [1]	Commercial SCOs [2] (ppm)	Sample Location BPA-3A-TP-1 (0-2)	BPA-3A-TP-2 (0-2)	BPA-3A-TP-3 (2-6)	BPA-3A-TP-4 (0-2)	BPA-3A-TP-6 (0-2)	BPA-3A-TP-8 (5-8)	BPA-3A-TP-14 (4-6)	BPA-3A-TP-17 (3-6)	BPA-3A-TP-18	BPA-3A-TP-19	BPA-3A-TP-22 (0-2)	BPA-3A-TP-24 (0-2)
Volitile Organic Compounds (VOCs) (mg/kg) [3]													
1,2,4-Trimethylbenzene	**190**	--	--	--	--	--	ND	ND	ND	ND	ND	--	--
1,3,5-Trimethylbenzene	**190**	--	--	--	--	--	ND	ND	ND	--	ND	--	--
2-Butanone (MEK)	**500**	--	--	--	--	--	0.51 W,D,J	ND	ND	--	ND	--	--
p-Cymene	**--**	--	--	--	--	--	ND	ND	ND	ND	ND	--	--
Acetone	**500**	--	--	--	--	--	ND	ND	ND	--	ND	--	--
Benzene	**44**	--	--	--	--	--	ND	ND	ND	ND	ND	--	--
Chlorobenzene	**500**	--	--	--	--	--	ND	ND	ND	--	ND	--	--
Cyclohexane	**--**	--	--	--	--	--	ND	ND	ND	--	ND	--	--
Ethylbenzene	**390**	--	--	--	--	--	ND	ND	ND	ND	ND	--	--
Isopropylbenzene	**--**	--	--	--	--	--	ND	ND	ND	ND	ND	--	--
Methylcyclohexane	**--**	--	--	--	--	--	0.061 W,D,J	ND	ND	--	ND	--	--
Methylene chloride	**500**	--	--	--	--	--	0.066 W,D,J	0.048 B	0.041 B	--	0.055 B	--	--
m-Xylene & p-Xylene	**500**	--	--	--	--	--	ND	ND	ND	ND	ND	--	--
n-Butylbenzene	**--**	--	--	--	--	--	0.12 W,D,J	ND	ND	ND	ND	--	--
n-Propylbenzene	**500**	--	--	--	--	--	0.063 W,D,J	ND	ND	ND	ND	--	--
o-Xylene	**500**	--	--	--	--	--	ND	ND	ND	ND	ND	--	--
sec-Butylbenzene	**500**	--	--	--	--	--	ND	ND	ND	ND	ND	--	--
Toluene	**500**	--	--	--	--	--	ND	ND	ND	ND	ND	--	--
Total Xylenes	**500**	--	--	--	--	--	ND	ND	ND	ND	ND	--	--
Semi-Volatile Organic Compounds (SVOCs) (mg\kg) [3]													
2-Methylnaphthalene	**--**	ND	ND	ND	ND	ND	32 D	ND	ND	ND	ND	0.64 D,J	ND
Acenaphthene	**500**	ND	ND	ND	ND	ND	ND	ND	2.3 D,J	ND	ND	1.8 D,J	ND
Acenaphthylene	**500**	ND	ND	ND	ND	0.56 D,J	ND	5.8 D,J	ND	ND	ND	0.39 D,J	ND
Anthracene	**100**	3.3 T,D,J	0.42 D,J	0.37 D,J	ND	0.81 D,J	ND	4 D,J	5.4 D	ND	ND	6.4 D	ND
Benzo(a)anthracene	**5.6**	**7.7 T,D,J**	1.6 D,J	1.8 D,J	4.1 T,D,J	2.5 D,J	0.4 D,J	**29 D**	**9.9 D**	0.018 J	1.2 D,J	**10 D**	0.8 D,J
Benzo(a)pyrene	**1**	**6 T,D,J**	**1.5 D,J**	**2 D,J**	**4.4 T,D,J**	**2.2 D,J**	0.29 D,J	**29 D**	**8.1 D**	0.018 J	**1.4 D,J**	**8.1 D**	0.85 D,J
Benzo(b)fluoranthene	**5.6**	**6.6 T,D,J**	1.8 D,J	2.5 D,J	5.3 T,D,J	4 D ID4	0.48 D,J	**34 D**	**9.4 D**	0.033 J	2.5 D,J	**11 D**	1.4 D,I4,J
Benzo(ghi)perylene	**500**	4.1 T,D,J	1 D,J	1.7 D,J	4.5 T,D,J	1.9 D,J	0.26 D,J	26 D	5.2 D	0.02 J	1.3 D,J	5.6 D	0.7 D,J
Benzo(k)fluoranthene	**56**	3.9 T,D,J	0.66 D,J	0.84 D,J	3.2 T,D,J	ND	0.21 D,J	14 D	3.6 D,J	ND	0.82 D,J	3.9 D,J	ND
Biphenyl	**--**	ND	ND	ND	ND	ND	3.1 D	ND	ND	ND	ND	ND	ND
Bis(2-ethylhexyl) phthalate	**--**	ND	ND	ND	ND	ND	0.62 D,J,B	ND	ND	ND	ND	ND	ND
Carbazole	**--**	--	--	--	--	--	--	--	1.6 DJ	--	ND	--	--
Chrysene	**56**	6.9 T,D,J	1.5 D,J	17 D,J	4.1 T,D,J	2.5 D,J	0.54 D,J	30 D	8.3 D	0.027 J	1.3 D,J	9.9 D	0.96 D,J
Dibenzo(a,h)anthracene	**0.56**	ND	0.28 D,J	0.44 D,J	ND	0.45 D,J	0.075 D,J	**5.9 D,J**	1.1 D,J	ND	ND	**1.5 DJ**	ND
Dibenzofuran	**--**	ND	ND	ND	ND	ND	ND	ND	0.98 D,J	ND	ND	1.9 DJ	ND
Fluoranthene	**500**	15 T,D,J	3.3 D,J	2.6 D,J	6.8 T,D,J	5.2 D	1.1 D	38 D	26 D	0.018 J	1.4 D,J	23 D	1.2 D,J
Fluorene	**500**	ND	ND	ND	ND	ND	6.6 D	ND	2.1 D,J	ND	ND	2.9 D,J	ND
Indeno(1,2,3-cd)pyrene	**5.6**	3.5 T,D,J	0.93 D,J	1.5 D,J	3.6 T,D,J	1.6 D,J	0.24 D,J	**23 D**	4.9 D	ND	1.3 D,J	**5.8 D**	0.66 D,J
Naphthalene	**500**	ND	ND	0.53 D,J	ND	ND	5.4 D	ND	ND	ND	ND	0.63 DJ	ND
Phenanthrene	**500**	13 T,D,J	2 D,J	1.6 D,J	3.3 T,D,J	2.5 DJ	16 D	9.3 D,J	21 D	0.021 J	ND	23 D	0.39 D,J
Pyrene	**500**	12 T,D,J	2.8 D,J	2.2 D,J	5.7 T,D,J	4.8 D	1.1 D	ND	20 D	0.014 J	1.3 D,J	16 D	1 D,J
Polychlorinated Biphenyls (PCBs) (mg\kg) [3]													
Aroclor 1242	**1**	--	--	--	--	--	--	--	ND	--	ND	--	--
Aroclor 1248	**1**	--	--	--	--	--	--	--	ND	--	ND	--	--
Aroclor 1260	**1**	--	--	--	--	--	--	--	ND	--	ND	--	--
Metals (mg\kg)													
Aluminum, Total	**--**	--	--	--	--	--	--	--	7890 J	--	7410 J	--	--
Arsenic, Total	**16**	**57.8**	**31.7**	**17.6**	7.5	**123**	**38.9**	**25.1**	**26.7**	ND	10	**79.3**	**19.3**
Barium, Total	**400**	--	--	--	--	--	--	--	109 J	--	93.9 J	--	--
Cadmium, Total	**9.3**	4.12	1.64	2.03	1.06	1.73	3.59	0.941	1.3	ND	0.999	5.98	2.43
Calcium, Total	**--**	--	--	--	--	--	--	--	30100 J,B1,B	--	25300 J,B1,B	--	--
Chromium, Total [4]	**1900**	148 J	372 J	234 J	91.2 J	52.8 J	22.6 J	125 J	75.8 J	18.1 J	20.7 J	125 J	29.9 J
Cobalt, Total	**--**	--	--	--	--	--	--	--	7 J	--	4.27 J	--	--
Copper, Total	**270**	--	--	--	--	--	--	--	72.1 J	--	39 J	--	--
Iron, Total	**--**	--	--	--	--	--	--	--	46700 J	--	20600 J	--	--
Lead, Total	**1000**	316	229	232	251	130	176	44.7 J	118 J	ND	75.4 J	500 J	201 J
Magnesium, Total	**--**	--	--	--	--	--	--	--	3570 J	--	3360 J	--	--
Manganese, Total	**10000**	--	--	--	--	--	--	--	3740 B1,D,B	--	1580 B1,B	--	--
Nickel, Total	**310**	--	--	--	--	--	--	--	20.3 J	--	14.5 J	--	--
Potassium, Total	**--**	--	--	--	--	--	--	--	1330 J	--	520 J	--	--
Sodium, Total	**--**	--	--	--	--	--	--	--	515 J	--	241 J	--	--
Thallium, Total	**--**	--	--	--	--	--	--	--	ND	--	ND	--	--
Vanadium, Total	**--**	--	--	--	--	--	--	--	52.6 J	--	21.5 J	--	--
Zinc, Total	**10000**	--	--	--	--	--	--	--	307 J	--	185 J	--	--
Mercury, Total	**2.8**	1.31 D	0.0736	1.58 D	0.102	2.07 D	0.0717	0.11	2.78	ND	0.13	0.235	0.0467
Cyanide	**27**	--	--	--	--	--	--	--	2.1 J	--	ND	--	--
General Chemistry Parameters													
pH, Leachable		--	--	--	--	--	--	--	--	--	--	--	--

PARAMETER [1]	BPA-3A-TP-25 (3-5)	BPA-3A-TP-26 (0-2)	BPA-3A-TP-27 (0-2)	BPA-3A-TP-28 (0-2)	BPA-3A-TP-29 (0-2)	BPA-3A-TP-30 (2-5)	BPA-3A-TP-31 (3-5)	BPA-3A-TP-32 (0-2)	BPA-3A-TP-33 (0-2)	BPA-3A-TP-34 (0-2)	BPA-3A-TP-35 (0-2)	BPA-3A-TP-37 (0-2)	BPA-3A-TP-40 (0-2)	BPA-3A-TP-44 (7-8)	BPA-3A-TP-45 (0-2)
Volitile Organic Compounds (VOCs) (mg/kg) [3]															
1,2,4-Trimethylbenzene	ND	ND	ND	--	--	--	--	--	--	--	--	ND	--	1.8 D,W1,N1	--
1,3,5-Trimethylbenzene	--	--	--	--	--	--	--	--	--	--	--	ND	--	0.41 D,W1,N1	--
2-Butanone (MEK)	--	--	--	--	--	--	--	--	--	--	--	ND	--	ND	--
p-Cymene	ND	ND	ND	--	--	--	--	--	--	--	--	ND	--	0.33 D,W1,N1	--
Acetone	--	--	--	--	--	--	--	--	--	--	--	ND	--	ND	--
Benzene	ND	ND	ND	--	--	--	--	--	--	--	--	ND	--	0.93 D,W1,N1	--
Chlorobenzene	--	--	--	--	--	--	--	--	--	--	--	ND	--	ND	--
Cyclohexane	--	--	--	--	--	--	--	--	--	--	--	ND	--	0.69 D,W1,N1	--
Ethylbenzene	ND	ND	ND	--	--	--	--	--	--	--	--	ND	--	0.19 D,W1,N1	--
Isopropylbenzene	ND	ND	ND	--	--	--	--	--	--	--	--	ND	--	0.31 D,W1,N1	--
Methylcyclohexane	--	--	--	--	--	--	--	--	--	--	--	ND	--	1.7 D,W1,N1	--
Methylene chloride	--	--	--	--	--	--	--	--	--	--	--	ND	--	ND	--
m-Xylene & p-Xylene	ND	ND	ND	--	--	--	--	--	--	--	--	ND	--	0.62 D,W1,N1	--
n-Butylbenzene	ND	ND	ND	--	--	--	--	--	--	--	--	ND	--	0.87 D,W1,N1	--
n-Propylbenzene	ND	ND	ND	--	--	--	--	--	--	--	--	ND	--	0.46 D,W1,N1	--
o-Xylene	ND	ND	ND	--	--	--	--	--	--	--	--	ND	--	0.38 D,W1,N1	--
sec-Butylbenzene	ND	ND	ND	--	--	--	--	--	--	--	--	ND	--	0.27 D,W1,N1	--
Toluene	ND	ND	ND	--	--	--	--	--	--	--	--	0.00066 J	--	ND	--
Total Xylenes	ND	ND	ND	--	--	--	--	--	--	--	--	ND	--	1 D,W1,N1	--
Semi-Volatile Organic Compounds (SVOCs) (mg\kg) [3]															
2-Methylnaphthalene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	65 T,D,J	ND
Acenaphthene	ND	ND	ND	ND	ND	ND	0.3 D,J	ND	ND	ND	3.2 D,J	ND	ND	ND	ND
Acenaphthylene	ND	2.1 DJ	ND	2.4 D,J	1.3 D,J	ND	0.36 D,J	ND	0.73 D,J	ND		1.2 D,J	ND	ND	0.39
Anthracene	ND	3.4 DJ	ND	ND	1.1 DJ	ND	0.91 D,J	2 D,J	0.85 D,J	3.2 D,J	7.6 D,J	0.41 D,J	ND	ND	0.74 D,J
Benzo(a)anthracene	0.17 D,J	**15 D**	0.38 D,J	3.2 D,J	**6 D**	ND	2.8 D	**8.2 D,J**	5.3 D	**11 DJ**	**27 D**	3.7 D,J	0.56 D,J	ND	2.8 D
Benzo(a)pyrene	0.16 D,J	**13 D**	0.34 D,J	**6.2 D,J**	**6.2 D**	ND	**3.1 D**	**8.4 D,J**	**5.8 D**	**10 DJ**	**25 D**	**5.9 D**	0.62 D,J	ND	**2.9 D**
Benzo(b)fluoranthene	0.22 D,J	**14 D**	0.43 D,J	**6.1 D,J**	**7.2 D**	ND	3.9 D	**8.4 D,J**	**6.9 D**	**18 D,J,ID4**	**28 D**	**7.9 D**	1.2 D,J	ND	3.4 D
Benzo(ghi)perylene	0.16 D,J	9.1 DJ	0.26 D,J	5.9 D,J	4.7 D	ND	3.1 D	5.5 D,J	4.3 D	ND	14 D,J	4.3 D	0.55 D,J	ND	2.1 D
Benzo(k)fluoranthene	0.065 D,J	5.3 DJ	0.16 D,J	2.2 D,J	2.4 D,J	ND	1.4 D,J	5.4 D,J	3.9 D	ND	14 D,J	2.5 D,J	1.2 D,J	ND	1.4 D,J
Biphenyl	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bis(2-ethylhexyl) phthalate	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbazole	--	--	--	--	--	--	--	--	--	--	--	ND	--	ND	--
Chrysene	0.12 D,J	12 D	0.36 D,J	3.3 D,J	5.4 D	ND	2.9 D	7.8 D,J	5.2 D	12 D,J	24 D	3.8 D,J	0.62 D,J	ND	2.5 D
Dibenzo(a,h)anthracene	ND	ND	ND	ND	ND	ND	ND	1.2 D,J	ND	ND	ND	**1.4 D,J**	ND	ND	**0.67**
Dibenzofuran	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluoranthene	0.19 D,J	32 D	0.5 D,J	2.6 D,J	9.4 D	ND	6.6 D	18 D	9.5 D	26 D,J	58 D	3.6 D,J,B	0.84 D,J,B	18 T,D,J,B	5.1 D
Fluorene	ND	1.1 DJ	ND	ND	ND	ND	0.23 D,J	ND	ND	ND	3 D,J	ND	ND	ND	0.23 D,J
Indeno(1,2,3-cd)pyrene	0.14 D,J	**8.1 DJ**	0.21 D,J	4.2 D,J	4.4 D	ND	2.5 D	4.7 D,J	4 D	**6.3 D,J**	**14 D,J**	4.1 D	0.47 D,J	ND	1.9 D,J
Naphthalene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.52 D,J	ND	ND	ND
Phenanthrene	0.088 D,J	15 D	0.2 D,J	ND	3 D,J	ND	3.5 D	7.2 D,J	4.7 D	16 D,J	31 D	0.81 D,J,B	0.25 D,J,B	98 T,D,J,B	3
Pyrene	0.17 D,J	26 D	0.43 D,J	3.4 D,J	8.1 D	0.089 D,J	5.3 D	14 D	7.8 D	20 D,J	42 D	3.6 D,J,B	0.67 D,J,B	93 T,D,J,B	4.1
Polychlorinated Biphenyls (PCBs) (mg\kg) [3]															
Aroclor 1242	--	--	--	ND	0.037	ND	ND	0.13 D	--	--	--	ND	--	ND	--
Aroclor 1248	--	--	--	ND	ND	ND	ND	ND	--	--	--	ND	--	ND	--
Aroclor 1260	--	--	--	0.028 J	0.25	ND	0.25	**1.5 D**	--	--	--	ND	--	ND	--
Metals (mg\kg)															
Aluminum, Total	--	--	--	--	--	--	--	--	--	--	--	5780 J	--	5500 J	--
Arsenic, Total	10.9	**25.5**	6.1	**21.7**	10	5.4	**24.5**	**18.7**	**132**	15.4	**20.6**	**121**	**38**	9.7	**45.4 J**
Barium, Total	--	--	--	--	--	--	--	--	--	--	--	99.3 J	--	66.6 J	131 J
Cadmium, Total	ND	4.07	0.268	2.14	1.06	0.992	7.32	7.75	**14.4**	2.59	**30.9**	1.72	1.41	0.474	1.86
Calcium, Total	--	--	--	--	--	--	--	--	--	--	--	35300 J	--	48400 J	--
Chromium, Total [4]	30.8 J	34.9 J	56 J	19.7 J	108 J	195 J	33.4 J	125 J	203 J	49.2 J	145 J	17.9 J	590 J	192 J	101 J
Cobalt, Total	--	--	--	--	--	--	--	--	--	--	--	6.91 J	--	3.64 J	--
Copper, Total	--	--	--	--	--	--	--	--	--	--	--	29.6 J	--	36 J	--
Iron, Total	--	--	--	--	--	--	--	--	--	--	--	212000 D,J	--	47300 J	--
Lead, Total	26 J	268	28.2	138	169	101	355	488	823	332	484	59	76.3 J	62.6 J	104 J
Magnesium, Total	--	--	--	--	--	--	--	--	--	--	--	2090 J	--	7160 J	--
Manganese, Total	--	--	--	--	--	--	--	--	--	--	--	1930	--	7210 D	--
Nickel, Total	--	--	--	--	--	--	--	--	--	--	--	8.78 J	--	10.9 J	--
Potassium, Total	--	--	--	--	--	--	--	--	--	--	--	591 J	--	454 J	--
Sodium, Total	--	--	--	--	--	--	--	--	--	--	--	165 J	--	ND	--
Thallium, Total	--	--	--	--	--	--	--	--	--	--	--	14.1	--	ND	--
Vanadium, Total	--	--	--	--	--	--	--	--	--	--	--	49.1 J	--	67.6 J	--
Zinc, Total	--	--	--	--	--	--	--	--	--	--	--	93.6 J	--	109 J	--
Mercury, Total	0.0269	0.422	ND	0.0905	0.121	0.105	0.102	**3.32 D**	0.169	0.355	0.403	0.0254	0.0464	0.188	0.264
Cyanide	--	--	--	--	--	--	--	--	--	--	--	ND	--	ND	ND
General Chemistry Parameters															
pH, Leachable	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Table 7b

Summary of Soil Analytical Data

Remedial Investigation/Alternatives Analysis Report
Phase IIIA Business Park Area
Tecumseh Redevelopment Inc.
Lackawanna, New York

PARAMETER [1]	Commercial SCOs [2] (ppm)	Sample Location																	
		BPA-3A-TP-46 (0-2)	BPA-3A-TP-47 (0-2)	BPA-3A-TP-48 (0-2)	BPA-3A-SS-49	BPA-3A-TP-49 (0-2)	BPA-3A-TP-49 (5-7)	BPA-3A-TP-50 (0-2)	BPA-3A-TP-51 (0-2)	BPA-3A-TP-52 (0-2)	BPA-3A-TP-53 (5-7)	BPA-3A-TP-54 (0-2)	BPA-3A-TP-55 (0-2)	BPA-3A-TP-56 (0-2)	BPA-3A-TP-57 (0-2)	BPA-3A-TP-58 (5-6)	Blind 1	Blind 2	Blind 3
Volitile Organic Compounds (VOCs) (m g/kg) [3]																			
1,2,4-Trimethylbenzene	**190**	--	--	--	--	--	--	ND	ND	0.0015 J	**360 W1**	0.0022 J	0.0034 J	0.0018 J	ND	ND	ND	--	0.0026 J
1,3,5-Trimethylbenzene	**190**	--	--	--	--	--	--	--	ND	--	**280 W1**	--	0.0094 J	--	--	--	--	--	0.00065 J
2-Butanone (MEK)	**500**	--	--	--	--	--	--	--	ND	--	ND	--	0.0077 J	--	--	--	--	--	0.0078 J
p-Cymene	**--**	--	--	--	--	--	--	ND	ND	ND	0.81 W1	ND	ND	ND	ND	ND	ND	--	ND
Acetone	**500**	--	--	--	--	--	--	--	ND	--	ND	--	0.051 J	--	--	--	--	--	0.048 J
Benzene	**44**	--	--	--	--	--	--	ND	ND	ND	**490 W1**	ND	ND	ND	ND	ND	ND	--	ND
Chlorobenzene	**500**	--	--	--	--	--	--	--	ND	--	0.09 W1,J	--	ND	--	--	--	--	--	ND
Cyclohexane	**--**	--	--	--	--	--	--	--	ND	--	0.37 W1	--	ND	--	--	--	--	--	ND
Ethylbenzene	**390**	--	--	--	--	--	--	ND	ND	ND	100	ND	ND	ND	ND	ND	ND	--	ND
Isopropylbenzene	**--**	--	--	--	--	--	--	ND	ND	ND	4.4 W1	ND	ND	ND	ND	ND	ND	--	ND
Methylcyclohexane	**--**	--	--	--	--	--	--	--	ND	--	2.2 W1	--	ND	--	--	--	--	--	ND
Methylene chloride	**500**	--	--	--	--	--	--	--	6.3 B	--	ND	--	ND	--	--	--	--	--	ND
m-Xylene & p-Xylene	**500**	--	--	--	--	--	--	ND	ND	0.0016 J	**820 W1**	0.0023 J	0.0032 J	0.002 J	ND	ND	ND	--	0.0026 J
n-Butylbenzene	**--**	--	--	--	--	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	ND
n-Propylbenzene	**500**	--	--	--	--	--	--	ND	ND	ND	1.6 W1	ND	ND	ND	ND	ND	ND	--	ND
o-Xylene	**500**	--	--	--	--	--	--	ND	ND	ND	87 W1	ND	0.00081	ND	ND	ND	ND	--	ND
sec-Butylbenzene	**500**	--	--	--	--	--	--	ND	ND	ND	0.82 W1	ND	ND	ND	ND	ND	ND	--	ND
Toluene	**500**	--	--	--	--	--	--	ND	ND	ND	47 W1	0.00094 J	ND	0.00085 J	ND	ND	ND	--	0.00066 J
Total Xylenes	**500**	--	--	--	--	--	--	ND	ND	0.0016 J	**910 W1**	0.0023 J	0.004 J	0.002 J	ND	ND	ND	--	0.0026 J
Semi-Volatile Organic Compounds (SVOCs) (mg\kg) [3]																			
2-Methylnaphthalene	**--**	ND	ND	ND	ND	ND	--	ND	0.8 D,J	ND	73 T,D	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthene	**500**	ND	ND	ND	ND	0.4 D,J	--	ND	ND	ND	29 T,D	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthylene	**500**	ND	ND	0.25 D,J	6 T,D,J	ND	--	0.46 D,J	0.33 D,J	0.28 D,J	7.9 T,D	ND	ND	ND	1.1 D,J	ND	ND	ND	ND
Anthracene	**100**	0.12 D,J	ND	0.29 D,J	ND	1.1 D,J	--	0.35 D,J	1.9 D,J	0.52 D,J	6.9 T,D	0.15 D,J	0.016 J	ND	1.1 D,J	0.026 J	ND	1.5 D,J	ND
Benzo(a)anthracene	**5.6**	1.2 D,J	**6.4 D,J**	1.5 D,J	**8.6 T,D,J**	4.5 D	--	2 D,J	**9.6 D**	1.4 D,J	**7.9 T,D,J**	1 D,J	0.29	1.9 D,J	5.1 D	0.065 J	0.14 D,J	4.7 D,J	0.12 J
Benzo(a)pyrene	**1**	**1.1 D,J**	**4.9 D,J**	**1.4 D,J**	ND	**4.2 D,J**	--	**2.2 D,J**	**7.8 D**	**1.2 D,J**	**4.2 T,D,J**	**1.1 D,J**	0.45	**2.9 D**	**4.5 D**	0.046 J	0.15 D,J	**4.3 D,J**	0.2 J
Benzo(b)fluoranthene	**5.6**	1.4 D,J	**7.9 D,J**	1.9 D,J	**12 T,D,J**	**6 D**	--	2.6 D,J	**10 D**	1.4 D,J	**5.9 T,D,J**	1.6 D,J	0.54	3.4 D	**5.8 D**	0.049 J	0.22 D,J	**5.9 D,J**	0.3
Benzo(ghi)perylene	**500**	0.73 D,J	4.7 D,J	1.1 D,J	5.8 T,D,J	4.5 D	--	1.8 D,J	5.5 D	0.83 D,J	2.4 T,D,J	0.99 D,J	0.46	2.9 D	3.2 D	0.031 J	0.18 D,J	4.6 D,J	0.22
Benzo(k)fluoranthene	**56**	0.55 D,J	3.5 D,J	0.71 D,J	4.5 T,D,J	2.3 D,J	--	1.5 D,J	3.2 D,J	0.47 D,J	2.9 T,D,J	0.58 D,J	0.23	1.1 D,J	2 D	0.029 J	0.062 D,J	3.1 D,J	0.058 J
Biphenyl	**--**	ND	ND	ND	ND	ND	--	ND	ND	ND	7.5 T,D,J	ND	ND	ND	ND	ND	ND	ND	ND
Bis(2-ethylhexyl) phthalate	**--**	ND	ND	ND	ND	ND	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbazole	**--**	--	--	--	--	--	--	--	0.54 D,J	--	ND	--	0.013 J	--	--	--	--	--	ND
Chrysene	**56**	1.1 D,J	7.1 D,J	1.4 D,J	10 T,D,J	4.1 D,J	--	2.4 D,J	8.9 D	1.3 D,J	6.3 T,D,J	1.3 D,J	0.34	2.1 D	5.1 D	0.074 J	0.15 D,J	4.8 D,J	0.18 J
Dibenzo(a,h)anthracene	**0.56**	ND	ND	0.29 D,J	ND	**1.2 D,J**	--	ND	**1.4 D,J**	0.25 D,J	ND	ND	0.092 J	**0.66 D,J**	**0.81 D,J**	ND	ND	ND	0.061 J
Dibenzofuran	**--**	ND	ND	ND	ND	ND	--	ND	0.71 D,J	0.2 D,J	15 T,D,J	ND	ND	ND	ND	ND	ND	ND	ND
Fluoranthene	**500**	1.8 D,J	11 D,J	2.3 D	17 T,D,J	6.7 D	--	3 D,J	16 D	3.3 D	22	1.3 D,J	0.38	2.1 D	13 D,B	0.11 J	0.18 D,J	7.9 D,J	0.2 J
Fluorene	**500**	ND	ND	ND	ND	0.49 D,J	--	ND	ND	0.27 D,J	ND	ND	ND	ND	0.27 D,J	ND	ND	ND	ND
Indeno(1,2,3-cd)pyrene	**5.6**	0.61 D,J	4 D,J	1 D,J	**5.8 T,D,J**	3.9 D,J	--	1.5 D,J	4.6 D	0.72 D,J	ND	0.87 D,J	0.35	2.5 D	2.9	0.026 J	0.14 D,J	3.8 D,J	0.18 J
Naphthalene	**500**	ND	ND	ND	ND	0.77 D,J	--	ND	ND	ND	**890 T,D,J,E**	ND	ND	ND	0.16 D,J	ND	ND	ND	ND
Phenanthrene	**500**	0.66 D,J	10 D,J	1.2 D,J	12 T,D,J	5.1 D	--	1.6 D,J	8.3 D	1.9 D,J	34 T,D	0.56 D,J	0.14 J	0.6 D,J	5 D,B	0.065 J	ND	6.8 D,J	0.084 J
Pyrene	**500**	1.5 D,J	7.9 D,J	1.9 D	11 T,D,J	5.8 D	--	2.5 D,J	12 D	2.8 D	15 T,D,J	1.4 D,J	0.34	1.9 D,J	9.7 D,B	0.097 J	0.15 D,J	6.9	0.17 J
Polychlorinated Biphenyls (PCBs) (mg\kg) [3]																			
Aroclor 1242	**1**	--	--	--	--	--	--	--	ND	--	--	--	ND	--	--	--	--	--	ND
Aroclor 1248	**1**	--	--	--	--	--	--	--	ND	--	--	--	0.015 J	--	--	--	--	--	0.015 J
Aroclor 1260	**1**	--	--	--	--	--	--	--	ND	--	--	--	0.018 J	--	--	--	--	--	0.018 J
Metals (mg\kg)																			
Aluminum, Total	**--**	--	--	--	--	--	16000 J	--	4120 J	--	2690 J	--	3270 J	--	--	--	--	--	3360 J
Arsenic, Total	**16**	**62.9 J**	**19.8 J**	**30 J**	**38.2 J**	**26.3 J**	8.3 J	9.4 J	11.2	**31.7 J**	**39.3**	**27.2 J**	7.4	12.5 J	**35.3**	2.3 J	13	**25 J**	4.6
Barium, Total	**400**	159 J	36.8 J	138 J	84.8 J	118 J	25.4 J	--	66.9 J	--	101 J	--	19.5 J	--	--	--	--	70.9	21 J
Cadmium, Total	**9.3**	ND	ND	0.557	2.1	4.13	ND	ND	ND	0.491 J	0.44	7.21 J	0.914	6.93 J	ND	ND	ND	5.87	1.32
Calcium, Total	**--**	--	--	--	--	--	131000 J	--	38700 J	--	1850 J	--	261000	--	--	--	--	--	210000 D,J
Chromium, Total [4]	**1900**	13.7 J	19.5 J	25.8 J	48.4 J	42.1 J	13.3 J	7.67 J	7.43 J	13.5 J	6.91 J	356 J	178 J	260 J	7.75 J	1.84 J	28.9 J	56.2 J	256 J
Cobalt, Total	**--**	--	--	--	--	--	3.72 J	--	3.84 J	--	6.02 J	--	4.85 J	--	--	--	--	--	4.48 J
Copper, Total	**270**	--	--	--	--	--	17.7 J	--	26.1 J	--	34.9 J	--	33.6 J	--	--	--	--	--	48 J
Iron, Total	**--**	--	--	--	--	--	25800 J	--	23400 J	--	43800 J	--	34200 J	--	--	--	--	--	45700 B1,J
Lead, Total	**1000**	158 J	33.1 J	78.5 J	151 J	289 J	27.8 J	75.1 J	49.8 J	41.7 J	218 J	438 J	101 J	605 J	11.9 J	4.4 J	24.3 J	314 J	101 J
Magnesium, Total	**--**	--	--	--	--	--	271000 D,J	--	8250 J	--	654 J	--	151000 D,J	--	--	--	--	--	136000 D,J
Manganese, Total	**10000**	--	--	--	--	--	357 J	--	346	--	469	--	6540 D	--	--	--	--	--	7090 D
Nickel, Total	**310**	--	--	--	--	--	ND	--	9.15 J	--	14.9 J	--	42.5 J	--	--	--	--	--	50 J
Potassium, Total	**--**	--	--	--	--	--	161 J	--	722 J	--	500 J	--	242 J	--	--	--	--	--	220 J
Sodium, Total	**--**	--	--	--	--	--	ND	--	ND	--	222 J	--	193 J	--	--	--	--	--	ND
Thallium, Total	**--**	--	--	--	--	--	ND	--	ND	--	ND	--	ND	--	--	--	--	--	ND
Vanadium, Total	**--**	--	--	--	--	--	34.3 J	--	11.7 J	--	16.3 J	--	71.3 J	--	--	--	--	--	122
Zinc, Total	**10000**	--	--	--	--	--	80.2 J	--	69.5 J	--	158 J	--	218 J	--	--	--	--	--	30 J
Mercury, Total	**2.8**	0.0721	**575 D**	0.301	**304 D**	**6.98 D**	ND	0.772	0.334	ND	0.0481	1.16 D	0.0817	0.806	ND	ND	0.0325	**8.23 D**	0.0897 J
Cyanide	**27**	ND	**119 D,J**	ND	**628 D,J**	**41**	--	--	ND	--	ND	--	1.6 J	--	--	--	--	**40.9 J**	ND
General Chemistry Parameters																			
pH, Leachable		--	--	--	--	--	10 HFT	--	--	--	--	--	--	--	--	--	--	--	--

Notes:
1. Only those parameters detected at a minimum of one sample location are presented in this table; all other compounds were reported as non-detect.
2. Values per NYSDEC draft Part 375 Soil Cleanup Objectives (June 2006)
3. Sample results were reported by the laboratory in ug/kg and converted to mg/kg for comparison to SCOs.
4. The total Chromium SCO was determined by adding the hexavalent and trivalent Chromium SCOs.
5. Blind 1 collected from BPA-3A-TP-25, Blind 2 collected from BPA-3A-TP-49, Blind 3 collected from BPA-3A-TP-55

Definitions:
ND = Parameter not detected above laboratory detection limit.
"--" = No SCO available/Sample not analyzed for parameter.
J = Estimated value; result is less than the sample quantitation limit but greater than zero.
B = Indicates a value greater than or equal to the instrument detection limit, but less than the quantitation limit.
D = All compounds were identified in an analyisis at the secondary dilution factor.
R = The data is unusable.

BOLD = result exceeds SCO.

TABLE 8

SUMMARY OF GROUNDWATER ANALYTICAL DATA - PHASE III BPA

Remedial Investigation/Alternatives Analysis Report
Phase III Business Park Area
Tecumseh Redevelopment Inc.
Lackawanna, New York

PARAMETER[1]	GWQS [2]	MWN-56A		MWN-57A		MWN-10		MWN-58A		MWN-59A		MWN-60A		MWS-34A		MWS-33A		MWS-30A		MWS-35A		Blind Duplicate[4]		Trip Blank		Equipment Blank	
Field Measurements [3] :																											
Sample No.	--	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	NA	NA	NA	NA
pH (units)	6.5 - 8.5	8.14	8.13	7.25	7.31	**10.00**	**10.00**	7.71	7.71	7.55	7.60	8.28	8.29	7.07	7.16	6.73	**6.28**	7.69	7.74	**11.30**	**11.19**	**11.30**	**11.19**	NA	NA	NA	NA
Temperature (^oC)	NA	10.6	10.6	10.3	10.8	10.4	10.6	10.3	9.3	9.1	8.8	9.6	9.6	7.9	8.9	1.9	5.9	7.6	7.3	8.2	7.7	8.2	7.7	NA	NA	NA	NA
Sp. Conductance (uS)	NA	18610	18520	4192	4010	1873	1869	412.4	411.5	704.3	700.8	614.8	619.0	933.6	902.4	1031	947.7	834.7	836.7	544.6	482.4	544.6	482.4	NA	NA	NA	NA
Turbidity (NTU)	NA	11.20	8.08	34.10	22.80	3.44	2.88	31.30	22.60	24.40	11.10	5.57	4.54	25.80	19.50	43.20	38.20	13.00	6.84	37.50	22.70	37.50	22.70	NA	NA	NA	NA
DO (ppm)	NA	1.21	1.10	1.78	1.40	1.35	1.42	1.61	1.91	1.78	1.96	1.33	1.63	1.31	1.09	7.07	3.29	2.09	2.47	1.50	1.39	1.50	1.39	NA	NA	NA	NA
Eh (mV)	NA	-182	-173	-105	-109	-191	-195	-128	-120	-142	-142	-197	-189	-119	-118	-44	0	-36	-61	-169	--161	-169	--161	NA	NA	NA	NA
Total Inorganic Compounds (mg/L):																											
Aluminum - Total	--	--		--		--		--		--		--		--		--		--		1.5		1.48		--		ND	
Arsenic - Total	0.025	ND		ND		ND		0.0164		ND		ND		0.0168		ND		ND		0.016		0.0187		--		ND	
Barium - Total	1	--		--		--		--		--		--		--		--		--		0.0534		0.0533		--		ND	
Calcium - Total	--	--		--		--		--		--		--		--		--		--		83.5		84.4		--		ND	
Chromium - Total	0.05	ND		ND		ND		ND		ND		ND		ND		ND		ND		0.0102		0.0099		--		ND	
Iron - Total	0.3	--		--		--		--		--		--		--		--		--		**2.49**		**2.62**		--		ND	
Lead - Total	0.025	ND		0.0054		ND		ND		ND		ND		ND		ND		ND		0.0114		0.0113		--		ND	
Magnesium - Total	35*	--		--		--		--		--		--		--		--		--		2.41		2.49		--		ND	
Manganese - Total	0.3	--		--		--		--		--		--		--		--		--		0.21		0.194		--		ND	
Potassium - Total	--	--		--		--		--		--		--		--		--		--		15.8		15.9		--		ND	
Sodium - Total	20	--		--		--		--		--		--		--		--		--		10.6		10.6		--		ND	
Vanadium - Total	--	--		--		--		--		--		--		--		--		--		0.0079		0.0082		--		ND	
Zinc - Total	2*	--		--		--		--		--		--		--		--		--		0.017		0.0179		--		ND	
Volatile Organic Compounds (ug/L):																											
Acetone	50*	--		--		--		--		--		--		--		--		--		ND		11		--		ND	
Benzene	1	0.054 J		0.045 J		ND		ND		ND		0.034 J		0.035 J		ND		ND		ND		ND		0.041 J		ND	
Methyl-t-Butyl Ether (MTBE)	10	ND		0.15 J		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
m-Xylene & p-Xylene	10	ND		ND		ND		ND		ND		ND		0.085 J		ND		ND		ND		ND		0.09 J		ND	
Toluene	5	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		0.16 J		ND	
Xylenes, total	15	ND		ND		ND		ND		ND		ND		0.085 J		ND		ND		ND		ND		0.09 J		ND	
Semi-Volatile Organic Compounds (ug/L):																											
4-Nitroaniline	--	ND		ND		ND		ND		ND		ND		1.7 J		ND		ND		ND		ND		--		ND	
Acenaphthene	20	ND		1.6 J		ND		ND		ND		ND		ND		ND		ND		ND		ND		--		ND	
Acetophenone	--	ND		ND		ND		ND		ND		ND		0.96 J		ND		ND		ND		ND		--		ND	
Benzo(a)anthracene	0.002*	ND		ND		ND		ND		ND		ND		ND		ND		ND		0.22 J		ND		--		ND	
Benzo(a)pyrene	0.002*	ND		ND		ND		ND		ND		ND		ND		ND		ND		0.032 J		0.24 J		--		ND	
Benzo(b)fluoranthene	0.002*	ND		ND		ND		ND		ND		ND		ND		ND		ND		0.32 J		0.26 J		--		ND	
Benzo(ghi)perylene	--	ND		ND		ND		ND		ND		ND		ND		ND		ND		0.34 J		0.29 J		--		ND	
Diethyl phthalate	50*	ND		ND		ND		ND		ND		ND		0.25 J		ND		ND		0.27 J		ND		--		ND	
Di-n-butyl phthalate	50*	0.29 BJ		0.4 BJ		0.42 BJ		ND		0.3 BJ		ND		0.53 J		0.57 J		ND		0.29 J		0.29 J		--		ND	
Fluoranthene	50*	ND		0.68 J		ND		ND		ND		0.23 J		0.29 J		ND		ND		0.31 J		0.23 J		--		ND	
Fluorene	50*	ND		ND		ND		ND		ND		ND		0.5 J		ND		ND		ND		ND		--		ND	
Indeno(1,2,3-cd)pyrene	0.002*	ND		ND		ND		ND		ND		ND		ND		ND		ND		0.24 J		0.21 J		--		ND	

TABLE 8

SUMMARY OF GROUNDWATER ANALYTICAL DATA - PHASE III BPA

Remedial Investigation/Alternatives Analysis Report
Phase III Business Park Area
Tecumseh Redevelopment Inc.
Lackawanna, New York

PARAMETER[1]	GWQS [2]	MWN-56A	MWN-57A	MWN-10	MWN-58A	MWN-59A	MWN-60A	MWS-34A	MWS-33A	MWS-30A	MWS-35A	Blind Duplicate[4]	Trip Blank	Equipment Blank
Naphthalene	10*	ND	0.36 J	ND	ND	ND	ND	ND	0.21 J	ND	0.22 J	ND	--	ND
Phenanthrene	50*	ND	0.61 J	ND	ND	ND	0.74 J	0.47 J	ND	ND	0.33 J	0.33 J	--	ND
Phenol	1**	ND	ND	ND	ND	ND	ND	ND	ND	ND	**21**	**22**	--	ND
Pyrene	50*	ND	0.53 J	ND	ND	ND	0.21 J	ND	ND	ND	0.34 J	0.27 J	--	ND

Notes:
1. Only those compounds detected above the method detection limit at a minimum of one sample location are reported in this table.
2. NYSDEC Class "GA" Groundwater Quality Standards/GuIdance Values (GWQS/GV) as per 6 NYCRR Part 703.
3. Field measurements were collected immediately before and after groundwater sample collection.
4. Blind Duplicate sample collected from MWN-35A.

Definitions:

J = Estimated Value; result is less than the sample quantitation limit but greater than zero.
B = Indicates a value greater than or equal to the instrument detection limit, but less than the quantitation limit.
NA = Not available
ND = Indicates parameter was not detected above laboratory reporting limit.
* = The Guidance Value was used where a Standard has not been established.
** = The general standard of 1.0 ug/L for phenolic compounds was used.

BOLD = Result exceeds the GWQS/GV.

TABLE 9

SUMMARY OF GROUNDWATER ANALYTICAL DATA - PHASE IIIA BPA

Remedial Investigation/Alternatives Analysis Report
Phase IIIA Business Park Area
Tecumseh Redevelopment Inc.
Lackawanna, New York

PARAMETER[1]	GWQS[2]	MWS-04		MWS-31A		MWN-61A		MWN-62D		MWN-19B		MWN-19A		MWN-30A		Blind Duplicate[3]		Trip Blank		Equipment Blank	
Field Measurements[4]:																					
Sample No.	--	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	NA	NA	NA	NA
pH (units)	6.5 - 8.5	**9.57**	**9.90**	**9.37**	**9.41**	7.67	7.65	**6.47**	6.51	**5.89**	**5.81**	6.55	**6.49**	7.74	7.75	6.55	**6.49**	NA	NA	NA	NA
Temperature (^oC)	NA	10.5	10.1	8.7	9.0	9.5	9.4	10.4	9.2	12.0	11.5	10.8	9.2	10.0	8.7	10.8	9.2	NA	NA	NA	NA
Sp. Conductance (uS)	NA	506.5	537.5	539.2	547	625.9	623.8	1633	1625	1077	1050	1187	1205	1619	1674	1187	1205	NA	NA	NA	NA
Turbidity (NTU)	NA	33.50	25	>1000	361	21	11.20	47.20	13.30	128.00	91.40	14.60	7.91	56.40	83.90	14.60	7.91	NA	NA	NA	NA
Eh (mV)	NA	-121	-149	-64	-63	-145	-136	-85	-92	-51	-0	-98	-100	-269	-258	-98	-100	NA	NA	NA	NA
Total Inorganic Compounds (mg/L):																					
Aluminum - Total	--	-		-		-		-		-		ND		-		ND		NA		ND	
Arsenic - Total	0.025	0.0225		**0.0334**		ND		ND		0.0141		ND		ND		ND		NA		ND	
Barium - Total	1	-		-		-		-		-		0.204		-		0.208		NA		ND	
Cadmium - Total	0.005	ND		ND		ND		ND		ND		ND		ND		ND		NA		ND	
Calcium - Total	--	-		-		-		-		-		87.1		-		88.9		NA		ND	
Chromium - Total	0.05	ND		0.0147		ND		ND		ND		ND		0.0598		ND		NA		ND	
Iron - Total	0.3	-		-		-		-		-		**13.1**		-		**13.3**		NA		ND	
Lead - Total	0.025	ND		0.0213		ND		ND		ND		ND		ND		ND		NA		ND	
Magnesium - Total	35*	-		-		-		-		-		24.7		-		25.1		NA		ND	
Manganese - Total	0.3	-		-		-		-		-		**0.523**		-		**0.533**		NA		ND	
Potassium - Total	--	-		-		-		-		-		5.9 J		-		6.03 J		NA		ND	
Sodium - Total	20	-		-		-		-		-		**117**		-		**120**		NA		ND	
Vanadium - Total	--	-		-		-		-		-		ND		-		ND		NA		ND	
Zinc - Total	2*	-		-		-		-		-		ND		-		ND		NA		0.0116	
Mercury - Total	0.0007	ND		ND		ND		ND		ND		ND		ND		ND		NA		ND	
Cyanide - Total	0.2	-		-		-		-		-		0.0217		-		0.0278		NA		ND	
Soluble Inorganic Compounds (mg/L):																					
Arsenic - Total	0.025	NA		0.0208		NA		NA		ND		NA		ND		NA		NA		NA	
Volatile Organic Compounds (ug/L):																					
1,2,4-Trimethylbenzene	5	0.76 D,J,NJ		ND		ND		0.94 NJ		ND D		**22**		**190 D,NJ**		**23**		ND		ND	
1,3,5 - Trimethylbenzene	5	ND		ND		ND		0.34 NJ		ND D		**9.5**		ND		**10**		ND		ND	
Benzene	1	ND UJ		ND		ND		ND		ND D		**990 D**		**7600 D,NJ**		**1100 D**		0.56 J		ND	
Chlorobenzene	5	-		-		-		-		-		ND		-		0.42 J		ND		ND	
Cyclohexane	--	-		-		-		-		-		0.96 J		-		1.1		ND		ND	
Ethylbenzene	5	ND UJ		ND		ND		0.17 J,NJ		ND D		**9.9**		**170 D,NJ**		**10**		ND		ND	
Isopropylbenzene	5	ND UJ		ND		ND		ND		ND D		2		ND		2.3		ND		ND	
Methyl-t-Butyl Ether (MTBE)	10	ND UJ		ND		ND		0.33 J,NJ		ND D		0.5 J		ND		0.54 J		ND		ND	
Methylcyclohexane	--	-		-		-		-		-		0.61 J		-		0.65 J		ND		ND	
m-Xylene & p-Xylene	10	1.2 D,J,NJ		ND		7 D,J,NJ		1 NJ		ND D		**36**		**220 D,NJ**		**37**		ND		ND	
o-Xylene	5	ND		ND		ND		0.3 NJ		ND D		**11**		**200 D,NJ**		**12**		ND		ND	
Toluene	5	1.1 D,J,NJ		ND		**6 D,J,NJ**		0.23 NJ		ND D		2.3		**130 D,NJ**		2.4		ND		ND	
Xylenes, total	15	1.2 D,J,NJ		ND		7 D,J,NJ		0.13 NJ		ND D		**47**		**420 D,NJ**		**48**		ND		ND	

TABLE 9

SUMMARY OF GROUNDWATER ANALYTICAL DATA - PHASE IIIA BPA

Remedial Investigation/Alternatives Analysis Report
Phase IIIA Business Park Area
Tecumseh Redevelopment Inc.
Lackawanna, New York

PARAMETER[1]	GWQS[2]	MWS-04	MWS-31A	MWN-61A	MWN-62D	MWN-19B	MWN-19A	MWN-30A	Blind Duplicate[3]	Trip Blank	Equipment Blank
Semi-Volatile Organic Compounds (ug/L):											
2-Methylnaphthalene	--	1.8 J	ND	63 D	ND	ND	ND	110 D,J	ND	NA	ND
3-3'-Dichlorobenzidine	5	ND L4 UJ	ND L4 UJ	ND L4 UJ	ND L4 UJ	ND L4 UJ	ND L4 UJ	ND L4 UJ	ND L4 UJ	ND L4	ND L4 UJ
4-Nitroaniline	--	ND L4	ND L4 UJ	ND L4 UJ	ND L4 UJ	ND L4 UJ	ND L4	ND L4 UJ	ND L4 UJ	ND L4	ND L4 UJ
Acenaphthene	20	0.58 J	ND	18 D,J	ND	ND	1.5 J	17 D,J	1.5 J	NA	ND
Acenaphthylene	--	2.3 J	ND	18 D,J	ND	ND	ND	35 D,J	0.41 J	NA	ND
Acetophenone	--	ND	ND	ND	ND	ND	1.5 J	ND	1.7 J	NA	ND
Anthracene	50	ND	ND	7.2 D,J	ND	ND	ND	ND	ND	NA	ND
Benzo(a)anthracene	0.002*	ND	ND	**2 D,J**	ND	ND	ND	**18 D,J**	ND	NA	ND
Biphenyl	5	ND	ND	**13 D,J**	ND	ND	ND	ND	ND	NA	ND
Bis(2-ethylhexyl) phthalate	5	2.3 J	2.5 J	ND	ND	**6.7**	ND	ND	1.8 J	NA	ND
Carbazole	--	9.1	ND	37 D	ND	ND	ND	ND	ND	NA	ND
Chrysene	0.002	ND	**0.33 J**	ND	ND	ND	ND	**16 D,J**	ND	NA	ND
Dibenzofuran	--	1.8 J	ND	39 D,J	ND	ND	ND	42 D,J	ND	NA	ND
Fluoranthene	50*	ND	ND	12 D,J	ND	ND	ND	44 D,J	ND	NA	ND
Fluorene	50*	2.6 J	ND	37 D	ND	ND	ND	ND	ND	NA	ND
Naphthalene	10*	**34**	ND	**290 D**	ND	ND	ND	**2200 D,J**	ND	NA	1.3 J
Phenanthrene	50*	2.6 J	ND	**62 D**	ND	0.54 J	ND	**110 D,J**	ND	NA	ND
Phenol	1**	ND	ND	ND	ND	ND	**32**	ND	**33**	NA	ND
Pyrene	50*	ND	ND	7.4 D,J	ND	ND	ND	18 D,J	ND	NA	ND
TOTAL SVOCs (ppm)		*0.057*	*0.003*	*0.606*	*0.000*	*0.007*	*0.035*	***2.6***	*0.038*	NA	

Notes:
1. Only those compounds detected above the method detection limit at a minimum of one sample location are reported in this table.
2. NYSDEC Class "GA" Groundwater Quality Standards/Guldance Values (GWQS/GV) as per 6 NYCRR Part 703.
3. Blind Duplicate and Matrix Spike/Matrix SpikeDuplicate (MS/MSD) analysis performed on groundwater sample collected from MWN-19A.
4. Field measurements were collected immediately before and after groundwater sample collection.

Definitions:
J = Estimated Value; result is less than the sample quantitation limit but greater than zero.
D = Sample required dillution due foaming or high concentration of target analyte(s).
B = Indicates a value greater than or equal to the instrument detection limit, but less than the quantitation limit.
NA = Not available
ND = Indicates parameter was not detected above laboratory reporting limit.
ND L4 = Poor recovery of laboratory control sample and or laboratory control sample dup, recovery was below the acceptance limits. A low bias to sample results required SVOCs to be re-analyzed.
* = The Guidance Value was used where a Standard has not been established.
** = The general standard of 1.0 ug/L for phenolic compounds was used.

BOLD = Result exceeds the GWQS/GV.

TABLE 10

SUMMARY OF SUPPLEMENTAL ARSENIC ANALYTICAL DATA

Remedial Investigation/Alternatives Analysis Report
Phase III Business Park Area - Brownfield Cleanup Program
Tecumseh Redevelopment Inc.

Original Sample ID	Supplemental Sample IDs [1]	Arsenic Result (ppm)	VQ
BPA-3A-TP-6 (0-2)		**123**	
	TP6R (0-2)	19.5	J
	TP6N10 (0-2)	36.2	J
	TP6S10 (0-2)	60.6	J
	TP6E10 (0-2)	58.1	J
	TP6W10 (0-2)	**168**	J
	TP6W20 (0-2)	**206**	J
BPA-3-TP-28 (0-2)		**130 E**	
	TP28R (0-2)	108	J
	TP28N10 (0-2)	26.1	J
	TP28S10 (0-2)	94.2	J
	TP28E10 (0-2)	91	J
	TP28W10 (0-2)	**161**	J
	TP28W20 (0-2)	74.4	J
BPA-3A-TP-33 (0-2)		**132**	
	TP33R (0-2)	17.8	J
	TP33N10 (0-2)	9.7	J
	TP33S10 (0-2)	66.9	J
	TP33E10 (0-2)	13.6	J
	TP33W10 (0-2)	73.6	J
BPA-3A-TP-37 (0-2)		**121**	
	TP37R (0-2)	47.4	J
	TP37N10 (0-2)	24.3	J
	TP37S10 (0-2)	12.9	J
	TP37E10 (0-2)	29.2	J
	TP37W10 (0-2)	39.9	J

Notes:

1. "R" designation refers to a re-sample collected adjacent to original test pit location to confirm 0-2' depth interval.

Acronyms:

NA = Not analyzed for parameter

NS = Not sampled

J = Estimated value (laboratory qualifier)

D = Analyzed at dilution

VQ = "Validation Qualifier" J = The analyte was postively identified; the associated numerical 'value is an approximate concentration of the analyte in the sample.

BOLD = Value exceeds arsenic site-specific SCO of 118 ppm.

TABLE 11
POTENTIAL CHEMICAL-SPECIFIC ARARs

PHASE III BUSINESS PARK SITE
ALTERNATIVES ANALYSIS REPORT

Standard, Requirement, Criteria or Limitation	Citation or Reference	Description/Comments
Groundwater:		
RCRA Groundwater Protection Standards and Maximum Concentration Limits	40 CFR 264, Subpart F	Establishes criteria for groundwater consumption. Groundwater is/will not be used for potable purposes. Potentially relevant for off-site groundwater quality.
NYSDEC Surface Water and Groundwater Quality Standards and Groundwater Effluent Limitations	6NYCRR Parts 701- 703	Establishes groundwater and surface water quality criteria. Applicable to on-site and off-site groundwater quality, and runoff/groundwater migration. Establishes criteria for groundwater consumption.
Ambient Water Quality Standards and Guidance Values	TOGS 1.1.1, October 1993	Establishes groundwater and surface water quality standards and guidance values. Applicable to on-site and off-site groundwater quality
Air:		
New York State Air Quality Classifications and Standards	6NYCRR Parts 256 and 257	Establishes air quality standards protective of public health. Potentially applicable to disruptive activities.
National Primary and Secondary Ambient Air Quality Standards (NAAQS)	40 CFR Part 50	Establishes primary and secondary ambient air quality standards to protect public health and welfare. Potentially applicable to disruptive activities.
New York State DOH Soil Vapor Intrusion Guidance	New York State Department of Health, Oct. 2006	Establishes sub-slab and indoor air thresholds for sites impacted by VOCs. Potentially relevant.
Soil:		
NYSDEC Environmental Remedial Programs	6NYCRR Part 375	Establishes procedures for inactive haz. waste site remedy selection & identifies Soil Cleanup Objectives based on human health, ecological protection, and groundwater protection. Applicable to site soil/fill.
NYSDEC Technical Assistance and Guidance Memorandum 4046	NYSDEC TAGM HWR-94-4046, November 1993	Presents recommended soil cleanup objectives based on protection of health under a residential use condition, background levels, and protection of groundwater. Potentially relevant.
USEPA Preliminary Remediation Goals	EPA Region IX, Oct. 2002, updated per EPA Toxicity Guidance Memo (12/12/04)	Presents residential and non-residential soil cleanup goals based on human health criteria and groundwater protection. Potentially relevant.
USEPA Soil Screening Guidance	Technical Background Document and Users Guide, May 1996 revisions	Presents a framework for developing risk-based, soil screening levels for protection of human health. Provides a tiered approach to site evaluation and screening level development for Superfund sites. Potentially relevant.
Other:		
USEPA Integrated Risk Information System (IRIS)	www.epa.gov/iris	Database of human health effects that may result from exposure to various substances found in the environment.

TABLE 12
POTENTIAL LOCATION-SPECIFIC ARARs

PHASE III BUSINESS PARK SITE
ALTERNATIVES ANALYSIS REPORT

Standard, Requirement, Criteria or Limitation	Citation or Reference	Description/Comments
Other:		
National Historic Preservation Act	16 CFR Part 470	Requires avoiding impacts on cultural resources having historical significance. Potentially applicable to remedial alternatives involving soil/fill disruption.
NYSDEC Environmental Remedial Programs	6NYCRR Part 375	Requires consideration of future land use in remedy selection and soil cleanup criteria. Applicable to site soil/fill.

TABLE 13
POTENTIAL ACTION-SPECIFIC ARARs

PHASE III BUSINESS PARK SITE
ALTERNATIVES ANALYSIS REPORT

Standard, Requirement, Criteria or Limitation	Citation or Reference	Description/Comments
Groundwater:		
Clean Water Act, National Pretreatment Standards	40 CFR 403.5	General pretreatment regulations for discharge to POTWs – potentially applicable for soil excavation alternatives involving temporary discharges of storm water or perched groundwater to sanitary sewer.
Air:		
NYSDEC Guidance for Fugitive Dust Suppression and Particulate Monitoring at Inactive Hazardous Waste Sites.	NYSDEC TAGM 4031	Establishes guidance for community air monitoring and controls to monitor and mitigate fugitive dusts during intrusive activities at NY State inactive hazardous waste sites – applicable to disruptive activities.
OSHA General Industry Air Contaminants Standard	29 CFR 1910.1000	Establishes Permissible Exposure Limits for workers exposed to airborne contaminants. Applicable to disruptive activities.
Solid, Hazardous, and Non-Hazardous Waste:		
NYSDEC Inactive Hazardous Waste Disposal Sites	6NYCRR Part 375	Establishes procedures for inactive hazardous waste disposal site identification, classification, and investigation activities, as well as remedy selection and interim remedial actions. To be considered.
NY State Solid Waste Transfer Permits	6NYCRR Part 364	Establishes procedures to protect the environment from mishandling and mismanagement of all regulated waste transported from a site of generation to the site of ultimate treatment, storage, or disposal. Potentially applicable for alternatives involving off-site disposal.
DOT Rules for Hazardous Materials Transport	(49 CFR 107, 171.1 - 171.5).	Establishes requirements for shipping of hazardous materials. Potentially applicable for alternatives involving off-site disposal
Occupational Safety and Health Act (29 USC 651 *et seq.*)	29 CFR Part 1910 and 1926	Describes procedures for maintaining worker safety. Applicable to site construction activities.
NYSDEC Land Disposal Restrictions	6NYCRR Part 376	Identifies hazardous wastes that are restricted from land disposal and defines those limited circumstances under which an otherwise prohibited waste may be land disposed. Applicable to soil/fill disposal alternatives
Asbestos:		
NESHAPS	40 CFR 61 Subpart M	Establishes criteria for asbestos demolition and inactive waste disposal sites

TurnKey Environmental Restoration, LLC

TABLE 14

SOIL/FILL ALTERNATIVE 2:
EXCAVATION OF IMPACTED SOIL/FILL TO UNRESTRICTED SCOs

Remedial Investigation / Alternative Analysis Report
Phase III Business Park Area
Tecumseh Redevelopment Inc.
Lackawanna, New York

Item	Quantity	Units	Unit Cost	Total Cost
Impacted Soil/Fill Removal				
Clearing & Grubbing	149	Acres	$ 4,000	$ 596,000
Soil/Fill Excavation & Dewatering (to 8 fbgs)	1923093	CY	$ 8	$ 15,384,747
Transportation and Disposal at TSDF	3269259	TON	$ 35	$ 114,424,053
Rail Relocation	1	LS	$ 2,000,000	$ 2,000,000
Verification Sampling	1	LS	$ 50,000	$ 50,000
Subtotal:				**$ 132,454,800**
Site Restoration				
Part 375[1] Compliant Backfill, Place & Compact	1802900	CY	$ 15	$ 27,043,500
6" Topsoil	120193	CY	$ 20	$ 2,403,867
Seeding	149	Acres	$ 2,500	$ 372,500
Subtotal:				**$ 29,819,867**
Subtotal Capital Cost				**$ 162,274,667**
Contractor Mobilization/Demobilization				$ 100,000
Health and Safety/Air Monitoring				$ 150,000
Engineering/Contingency (10%)				$ 16,227,467
Total Capital Cost				**$ 178,752,130**

Total Present Worth (PW): Capital Cost + OM&M PW	**$178,752,000**

Notes:
1. Per 6NYCRR 375-6.7(d)(ii)(b)

TABLE 15

SOIL/FILL ALTERNATIVE 3:
HOTSPOT REMOVAL & PLACEMENT OF A SOIL COVER SYSTEM PRIOR TO REDEVELOPMENT

Remedial Investigation / Alternative Analysis Report
Phase III Business Park Area
Tecumseh Redevelopment Inc.
Lackawanna, New York

Item	Quantity	Units	Unit Cost	Total Cost
Institutional Controls				
Develop Site Management Plan, Easement, Survey	1	LS	$ 25,000	$ 25,000
Subtotal:				**$ 25,000**
Soil Excavation/Offsite Disposal- Hotspot A				
Soil/Fill Excavation	20	CY	$ 8	$ 160
Waste Profile	1	LS	$ 3,000	$ 3,000
Transport & Offsite Pb Stabilization/Disposal	34	Tons	$ 225	$ 7,650
Verification Sampling	6	Ea	$ 50	$ 300
Slag Backfill (furnish, place, compact)	34	Tons	$ 10	$ 340
Subtotal:				**$ 11,450**
Soil Excavation/Offsite Disposal- Hotspot B				
Soil/Fill Excavation	2500	CY	$ 8	$ 20,000
Waste Profile	1	LS	$ 3,000	$ 3,000
Transport & Offsite Disposal (non-haz)	4250	Tons	$ 40	$ 170,000
Verification Sampling	20	Ea	$ 100	$ 2,000
Slag Backfill (furnish, place, compact)	4250	Tons	$ 10	$ 42,500
Subtotal:				**$ 237,500**
Soil Excavation/Offsite Disposal- Hotspot C				
Soil/Fill Excavation	250	CY	$ 8	$ 2,000
Waste Profile	1	LS	$ 3,000	$ 3,000
Transport & Offsite Disposal (non-haz)	425	Tons	$ 40	$ 17,000
Verification Sampling	10	Ea	$ 100	$ 1,000
Slag Backfill (furnish, place, compact)	425	Tons	$ 10	$ 4,250
Subtotal:				**$ 27,250**
Soil Excavation/Onsite Biotreatment - Hotspot D				
Soil/Fill Excavation & Dewatering	23200	CY	$ 12	$ 278,400
Onsite Hauling to/from biopad	5800	CY	$ 5	$ 29,000
Biotilling/fertilizing	8	Events	$ 2,000	$ 16,000
Verification Sampling	40	Ea	$ 175	$ 7,000
Slag Backfill (furnish, place, compact)	9860	Tons	$ 10	$ 98,600
Subtotal:				**$ 429,000**
Soil/Fill Excavation, Off-Site Disposal				
Hotspots E through H (Arsenic)				
Soil/Fill Excavation	250	CY	$ 8	$ 2,000
Waste Profile	1	LS	$ 3,000	$ 3,000
Transport & Off-site Stabilization/Disposal	425	TON	$ 225	$ 95,625
Slag Backfill (furnish, place, compact)	425	TON	$ 10	$ 4,250
Subtotal:				**$ 104,875**
Soil Cover System				
Clearing & Grubbing	149	Acres	$ 4,000	$ 596,000
6" Part 375 [2] Compliant Cover, Place & Compact	120193	CY	$ 15	$ 1,802,900
6" Topsoil	120193	CY	$ 20	$ 2,403,867
Seeding	149	Acres	$ 2,500	$ 372,500
Subtotal:				**$ 5,175,267**
Subtotal Remedial Cost				**$ 6,010,342**
Contractor Mobilization/Demobilization (5%)				$ 300,517
Health and Safety (2%)				$ 120,207
Engineering/Contingency				$ 150,000
Total Capital Remediation Cost				**$ 6,581,066**
Environmental-Based Redevelopment Costs				
Clear/Remove & Transport Existing Cover Soil[3]	192309	CY	$ 5	$ 961,547
Off-site Transportation and Staging Offsite	192309	CY	$ 10	$ 1,923,093
Air Monitoring during Intrusive Work	1	LS	$ 15,000	$ 15,000
Subtotal:				**$ 2,899,640**
TOTAL CAPITAL COSTS				**$ 9,480,706**
Annual Operation Maintenance & Monitoring (OM&M):				
Site Maintenance and Mowing	2	Yr	$ 9,000	$ 18,000
Groundwater Sampling / Reporting	2	Yr	$ 7,500	$ 15,000
Annual Certification	1	Yr	$ 3,000	$ 3,000
Total Annual OM&M Cost				**$ 36,000**
Number of Years (n):				30
Interest Rate (i):				3%
p/A value:				19.6004
OM&M Present Worth (PW):				**$ 705,614**
Total Present Worth (PW): Capital Cost + OM&M PW				**$ 10,186,000**

Notes:
1. Includes 5-feet of overlying soil/fill at Hotspot "C"
2. Per 6NYCRR 375-6.7(d)(ii)(b)
3. Assumes 20% of vegetated cover remains in place

TABLE 16

SOIL/FILL ALTERNATIVE 4:
HOTSPOT REMOVAL & DEFERRED SOIL COVER SYSTEM DURING REDEVELOPMENT

Remedial Investigation / Alternative Analysis Report
Phase III Business Park Area
Tecumseh Redevelopment Inc.
Lackawanna, New York

Item	Quantity	Units	Unit Cost	Total Cost
Institutional Controls				
Develop Site Management Plan, Easement, Survey	1	LS	$ 25,000	$ 25,000
Subtotal:				**$ 25,000**
Soil Excavation/Offsite Disposal- Hotspot A				
Soil/Fill Excavation	20	CY	$ 8	$ 160
Waste Profile	1	LS	$ 3,000	$ 3,000
Transport & Offsite Pb Stabilization/Disposal	34	Tons	$ 225	$ 7,650
Verification Sampling	6	Ea	$ 50	$ 300
Slag Backfill (furnish, place, compact)	34	Tons	$ 10	$ 340
Subtotal:				**$ 11,450**
Soil Excavation/Offsite Disposal- Hotspot B				
Soil/Fill Excavation	2500	CY	$ 8	$ 20,000
Waste Profile	1	LS	$ 3,000	$ 3,000
Transport & Offsite Disposal (non-haz)	4250	Tons	$ 40	$ 170,000
Verification Sampling	20	Ea	$ 100	$ 2,000
Slag Backfill (furnish, place, compact)	4250	Tons	$ 10	$ 42,500
Subtotal:				**$ 237,500**
Soil Excavation/Offsite Disposal- Hotspot C				
Soil/Fill Excavation	250	CY	$ 8	$ 2,000
Waste Profile	1	LS	$ 3,000	$ 3,000
Transport & Offsite Disposal (non-haz)	425	Tons	$ 40	$ 17,000
Verification Sampling	10	Ea	$ 100	$ 1,000
Slag Backfill (furnish, place, compact)	425	Tons	$ 10	$ 4,250
Subtotal:				**$ 27,250**
Soil Excavation/Onsite Biotreatment - Hotspot D				
Soil/Fill Excavation & Dewatering	23200	CY	$ 12	$ 278,400
Onsite Hauling to/from biopad	5800	CY	$ 5	$ 29,000
Biotilling/fertilizing	8	Events	$ 2,000	$ 16,000
Verification Sampling	40	Ea	$ 175	$ 7,000
Slag Backfill (furnish, place, compact)	9860	Tons	$ 10	$ 98,600
Subtotal:				**$ 429,000**
Soil/Fill Excavation, Off-Site Disposal				
Hotspots E through H (Arsenic)				
Soil/Fill Excavation	250	CY	$ 8	$ 2,000
Waste Profile	1	LS	$ 3,000	$ 3,000
Transport & Off-site Stabilization/Disposal	425	TON	$ 225	$ 95,625
Slag Backfill (furnish, place, compact)	425	TON	$ 10	$ 4,250
Subtotal:				**$ 104,875**
Soil Cover System[2]				
Clearing & Grubbing	149	Acres	$ 4,000	$ 596,000
6" Part 375 [3] Compliant Cover, Place & Compact	24039	CY	$ 15	$ 360,580
6" Topsoil	24039	CY	$ 20	$ 480,773
Seeding	30	Acres	$ 2,500	$ 74,500
Subtotal:				**$ 1,511,853**
Subtotal Remedial Cost				**$ 2,346,928**
Contractor Mobilization/Demobilization (5%)				$ 117,346
Health and Safety (2%)				$ 46,939
Engineering/Contingency				$ 150,000
Total Capital Remediation Cost				**$ 2,661,213**
Environmental-Based Redevelopment Costs				
Air Monitoring during Intrusive Work	1	LS	$ 15,000	$ 15,000
Subtotal:				**$ 15,000**
TOTAL CAPITAL COSTS				**$ 2,676,213**
Annual Operation Maintenance & Monitoring (OM&M):				
Site Maintenance and Mowing	2	Yr	$ 9,000	$ 18,000
Groundwater Sampling / Reporting	2	Yr	$ 7,500	$ 15,000
Annual Certification	1	Yr	$ 3,000	$ 3,000
Total Annual OM&M Cost				**$ 36,000**
Number of Years (n):				30
Interest Rate (i):				3%
p/A value:				19.6004
OM&M Present Worth (PW):				**$ 705,614**
Total Present Worth (PW): Capital Cost + OM&M PW				**$ 3,382,000**

Notes:
1. Includes 5-feet of overlying soil/fill at Hotspot "C"
2. Assumed to cover 20% of the Site (remainder covered by building, pavement, etc.)
3. Per 6NYCRR 375-6.7(d)(ii)(b)

TABLE 17

GROUNDWATER ALTERNATIVE:
AUGMENTATION OF THE CMS BENZOL YARD PUMP & TREAT SYSTEM

Remedial Investigation / Alternative Analysis Report
Phase III Business Park Area
Tecumseh Redevelopment Inc.
Lackawanna, New York

Item	Quantity	Units	Unit Cost	Total Cost
Pump & Treat Enhancements				
4 Additional Collection Wells & Infrastructure[1]	1	LS	$ 147,000.00	$ 147,000
Subtotal:				**$ 147,000**
Contractor Mobilization/Demobilization (5%)				$ 7,350
Health and Safety/Air Monitoring (2%)				$ 2,940
Engineering/Contingency (10%)				$ 14,700
Total Capital Cost				**$ 171,990**
Annual Operation Maintenance & Monitoring (OM&M):				
Groundwater Sampling / Reporting[2]	2	Events	$ 4,000.00	$ 8,000
Total Annual OM&M Cost				**$ 8,000**
Number of Years (n):				30
Interest Rate (i):				3%
p/A value:				19.6004
OM&M Present Worth (PW):				**$ 156,803**

Total Present Worth (PW): Capital Cost + OM&M PW	**$ 180,000**

Notes:

1. Enhancements to Benzol Yard pump and treat per December 2011 Corrective Measures Study report
2. Assumes other long term OM&M/Site Management remains with Soil/Fill Alternatives

TABLE 18

GROUNDWATER ALTERNATIVE:
IN SITU TREATMENT

Remedial Investigation / Alternative Analysis Report
Phase III Business Park Area
Tecumseh Redevelopment Inc.
Lackawanna, New York

Item	Quantity	Units	Unit Cost	Total Cost
In-Situ Groundwater Treatment				
Additional Investigation and Monitoring Points				
Install new overburden wells (2) in injection area	24	HR	$ 85.00	$ 2,040
Driller, Materials	2	EA	$ 2,200.00	$ 4,400
Development, sampling for aerobic/anaerobic ind	12	Hr	$ 85.00	$ 1,020
Analytical	2	Ea	$ 450.00	$ 900
Subtotal:				**$ 8,360**
Biological Amendment Injection				
Injection Oversight Fieldwork	60	HR	$ 85.00	$ 5,100
Injection Project Management	12	HR	$ 135.00	$ 1,620
Contractor (direct push injection)	6	DY	$ 2,200.00	$ 13,200
Sulfate or oxygen enhancement material	7,500	LB	$ 4.00	$ 30,000
Amendment shipping and handling	1	LS	$ 550.00	$ 550
Miscellaneous supplies/PPE	1	LS	$ 400.00	$ 400
Subtotal:				**$ 50,870**
Post-Remedial Groundwater Monitoring				
Groundwater Monitoring and Reporting	4	Events	$ 4,000	$ 16,000
Subtotal:				**$ 16,000**
Subtotal Capital Cost				**$ 75,230**
Contractor Mobilization/Demobilization (5%)				$ 3,762
Health and Safety/Air Monitoring (2%)				$ 1,505
Engineering/Contingency (10%)				$ 7,523
Total Capital Cost				**$ 88,020**

Total Present Worth (PW): Capital Cost + OM&M PW[1]	**$ 88,000**

Notes:
1. Assumes long term OM&M/Site Management remains with Soil/Fill Alternatives

TABLE 19

ASBESTOS WASTE ALTERNATIVE 1:
ASBESTOS EXCAVATION WITH OFF-SITE DISPOSAL

Remedial Investigation / Alternative Analysis Report
Phase III Business Park Area
Tecumseh Redevelopment Inc.
Lackawanna, New York

Item	Quantity	Units	Unit Cost	Total Cost
Excavation and Disposal of Asbestos Waste				
Permits	1	LS	$ 3,000	$ 3,000
Excavate, Size-Reduce & Wet Asbestos Waste[1]	50	Day	$ 4,000	$ 200,000
Transportation and Disposal at TSDF	6240	Ton	$ 100	$ 624,000
Third Party Asbestos Air Monitoring	50	Day	$ 800	$ 40,000
Subtotal:				**$ 867,000**
Restoration				
Slag Backfill (furnish, place, compact)[2]	10400	Ton	$ 10	$ 104,000
Subtotal:				**$ 104,000**
Subtotal Capital Cost				**$ 971,000**
Contractor Mobilization/Demobilization (5%)				$ 48,550
Health and Safety (5%)				$ 48,550
Engineering/Contingency (10%)				$ 97,100
Total Capital Cost				**$ 1,165,200**

Total Present Worth (PW): Capital Cost + OM&M PW[3]	**$ 1,165,000**

Notes:
1. Assumes bulkier debris, 1.2 ton per CY
2. Assumes 2 ton per CY
3. Assumes OM&M remains with soil/fill alternatives

TURNKEY ENVIRONMENTAL RESTORATION, LLC

TABLE 20

ASBESTOS WASTE ALTERNATIVE 2:
RESTRICTED USE WITH NO FURTHER DEVELOPMENT

Remedial Investigation / Alternative Analysis Report
Phase III Business Park Area
Tecumseh Redevelopment Inc.
Lackawanna, New York

Item	Quantity	Units	Unit Cost	Total Cost
Institutional Controls				
Prepare Foundation Metes & Bounds Survey	1	LS	$ 4,000	$ 4,000
Prepare Location-Specific Restrictions for Easeme	1	LS	$ 1,000	$ 1,000
Subtotal:				**$ 5,000**
Slag Cover				
Slag Backfill (furnish, place, compact)[2]	13867	TON	$ 10	$ 138,667
Subtotal:				**$ 138,667**
Subtotal Capital Cost				**$ 143,667**
Engineering/Contingency (10%)				$ 14,367
Total Capital Cost				**$ 158,030**

Total Present Worth (PW): Capital Cost + OM&M PW[1]	**$ 158,000**

Notes:
1. Assumes OM&M remains with Soil/Fill Alternatives
2. Assumes 2 ton per CY

TABLE 21

ASBESTOS WASTE ALTERNATIVE 3:
RESTRICTED USE AS ON-SITE SOIL/FILL BIOTREATMENT PAD

Remedial Investigation / Alternative Analysis Report
Phase III Business Park Area
Tecumseh Redevelopment Inc.
Lackawanna, New York

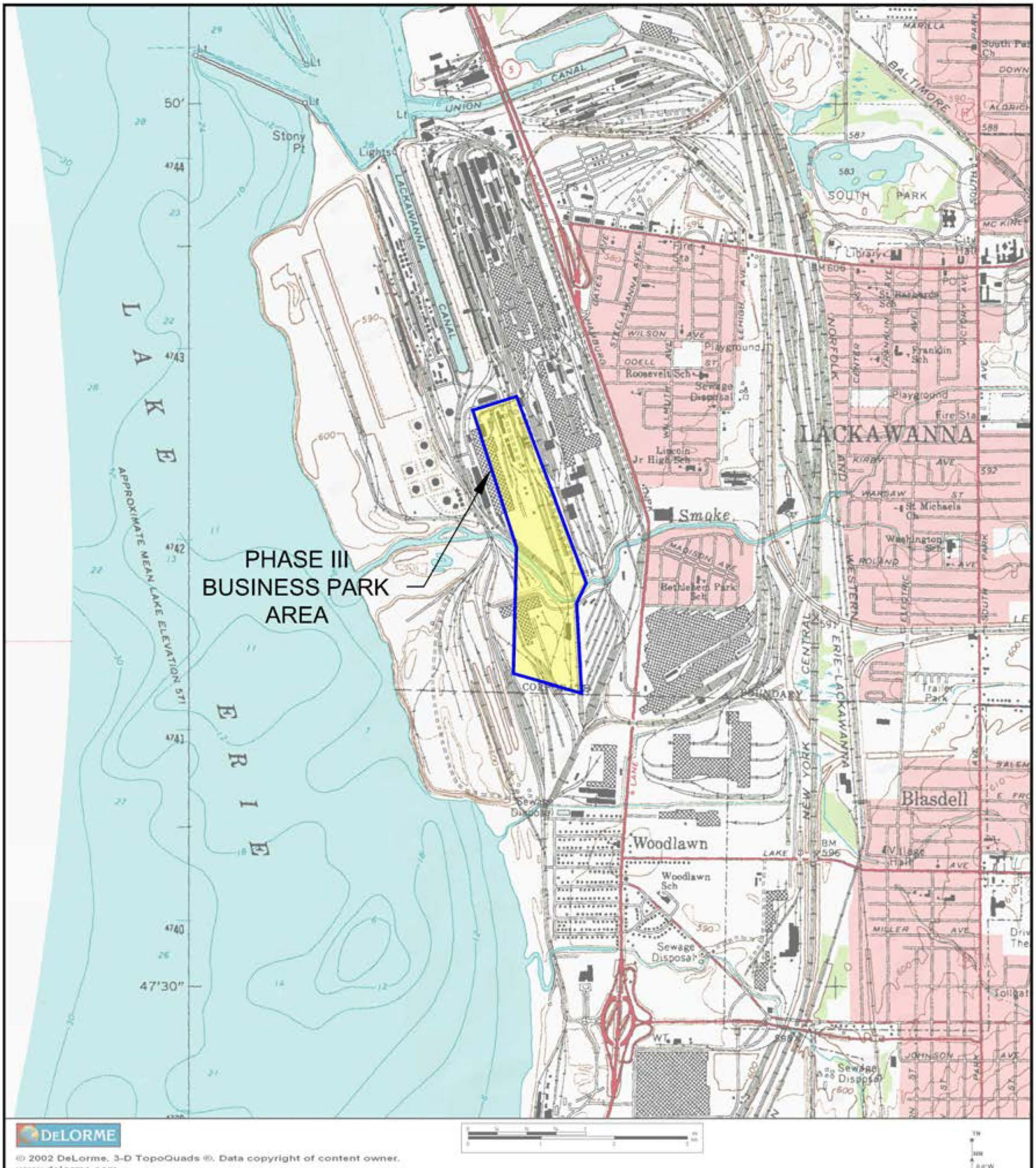
Item	Quantity	Units	Unit Cost	Total Cost
Institutional Controls				
Prepare Foundation Metes & Bounds Survey	1	LS	$ 4,000	$ 4,000
Prepare Location-Specific Restrictions for Easeme	1	LS	$ 1,000	$ 1,000
Subtotal:				**$ 5,000**
Biotreatment Area Construction				
Subgrade Preparation (clearing/ filling gaps, etc)	1	LS	$ 5,000	$ 5,000
Demarcation Layer	93600	SF	$ 0.20	$ 18,720
1' Wood Chips or Sand, Delivered and Placed	3467	CY	$ 20	$ 69,333
Slag Backfill (furnish, place, compact)[2]	6933	TON	$ 10	$ 69,333
Fencing, Installed with double gate & signs	1510	LF	$ 25	$ 37,750
Subtotal:				**$ 200,137**
Subtotal Capital Cost				**$ 205,137**
Contractor Mobilization/Demobilization (5%)				$ 10,257
Health and Safety/Air Monitoring (2%)				$ 4,103
Engineering/Contingency (10%)				$ 20,514
Total Capital Cost				**$ 240,010**

Total Present Worth (PW): Capital Cost + OM&M PW[1]	**$ 240,000**

Notes:
1. Assumes OM&M remains with Soil/Fill Alternatives
2. Assumes 2 ton per CY

FIGURES

FIGURE 1



TURNKEY ENVIRONMENTAL RESTORATION, LLC

2558 HAMBURG TURNPIKE
SUITE 300
BUFFALO, NY 14218
(716) 856-0635

PROJECT NO.: 0071-009-320

DATE: SEPTEMBER 2011

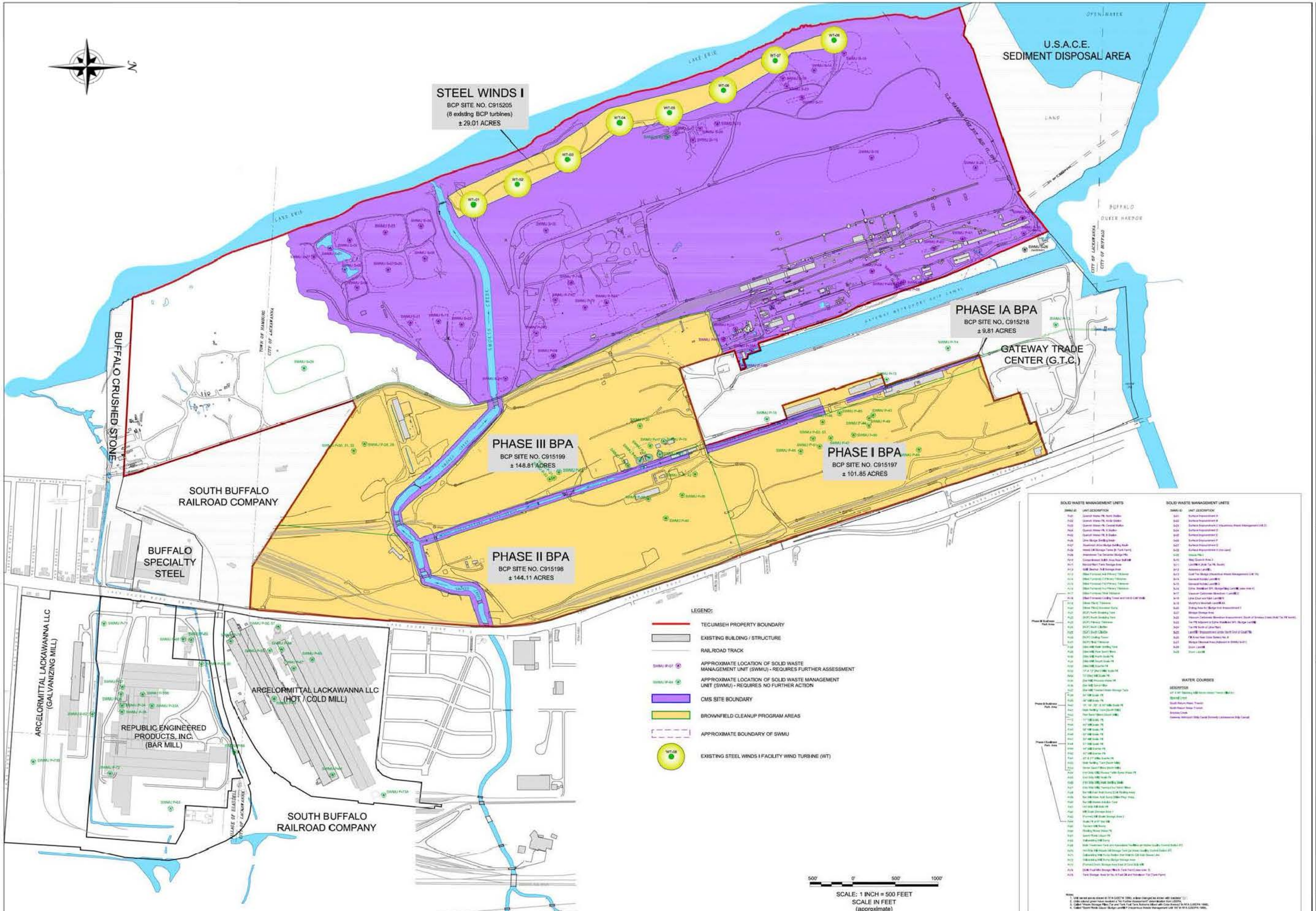
DRAFTED BY: JCT

SITE LOCATION & VICINITY MAP

RI/AA REPORT

PHASE III BUSINESS PARK AREA
LACKAWANNA, NEW YORK

PREPARED FOR
TECUMSEH REDEVELOPMENT, INC.



REVISIONS

NO.	BY	DATE	REMARKS

TURNKEY ENVIRONMENTAL RESTORATION, LLC

2558 HAMBURG TURNPIKE
SUITE 300
BUFFALO, NY 14218
(716) 856-0635

JOB NO.: 0071-009-320

SEAL

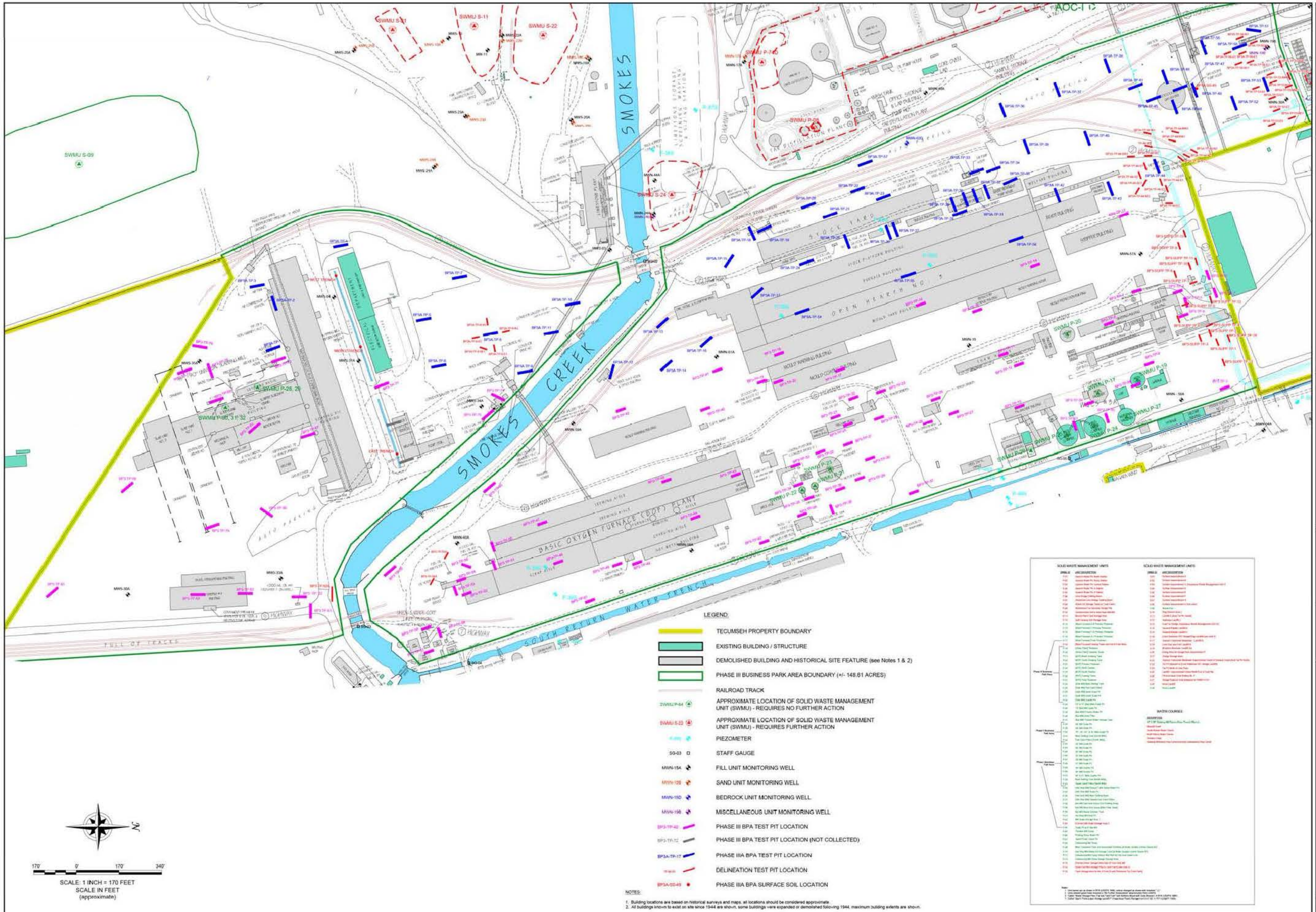
DRAWN BY: BCH
DATE: SEPTEMBER 2010
CHECKED BY:
APPROVED BY:

SITE PLAN

REMEDIAL INVESTIGATION / ALTERNATIVES ANALYSIS REPORT
PHASE III BUSINESS PARK AREA
LACKAWANNA, NEW YORK

PREPARED FOR
TECUMSEH REDEVELOPMENT INC.

FIGURE 2



TURNKEY ENVIRONMENTAL RESTORATION, LLC

2558 HAMBURG TURNPIKE
SUITE 300
BUFFALO, NY 14218
(716) 856-0635

JOB NO.: 0071-009-320

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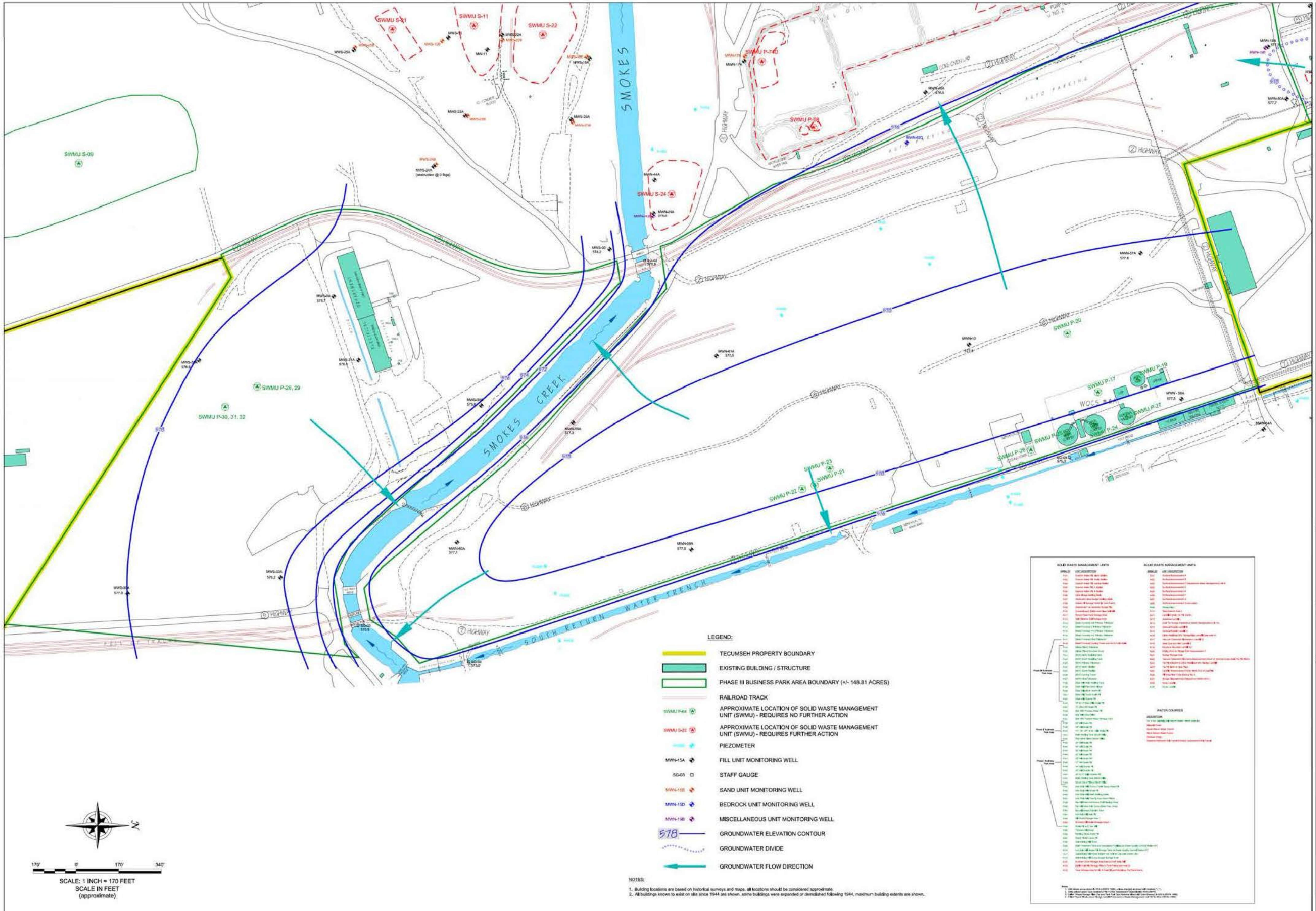
SAMPLE LOCATIONS

REMEDIAL INVESTIGATION / ALTERNATIVES ANALYSIS REPORT
PHASE III BUSINESS PARK AREA
LACKAWANNA, NEW YORK

PREPARED FOR
TECUMSEH REDEVELOPMENT INC.

FIGURE 3



TurnKey Environmental Restoration, LLC

2558 HAMBURG TURNPIKE
SUITE 300
BUFFALO, NY 14218
(716) 856-0635

JOB NO.: 0071-009-320

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SHALLOW GROUNDWATER ISOPOTENTIAL MAP FOR 01/29/10

REMEDIAL INVESTIGATION / ALTERNATIVES ANALYSIS REPORT

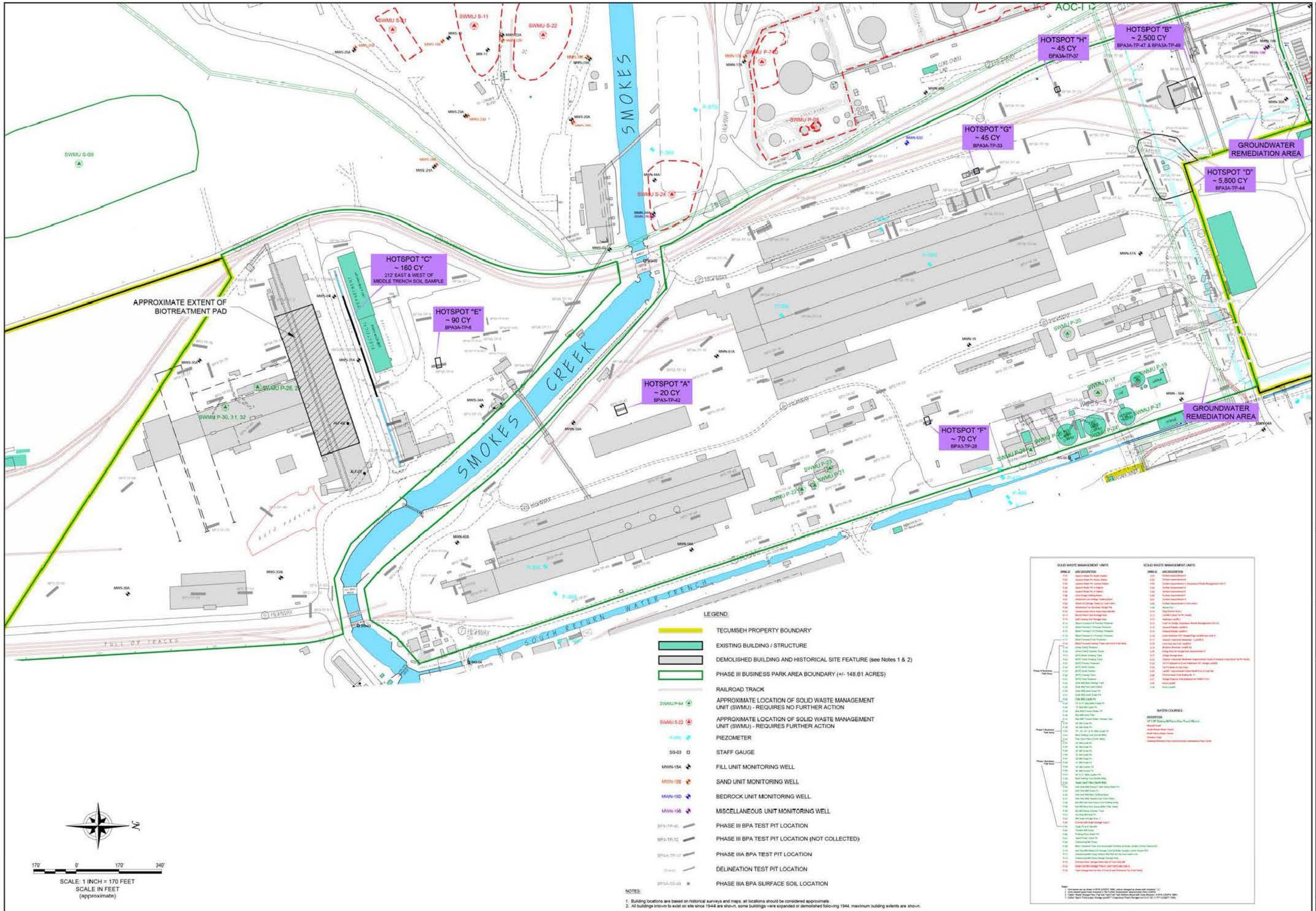
PHASE III BUSINESS PARK AREA

LACKAWANNA, NEW YORK

PREPARED FOR

TECUMSEH REDEVELOPMENT INC.

FIGURE 4



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HOTSPOT AREAS TO BE REMEDIATED

REMEDIAL INVESTIGATION / ALTERNATIVES ANALYSIS REPORT
PHASE III BUSINESS PARK AREA
LACKAWANNA, NEW YORK

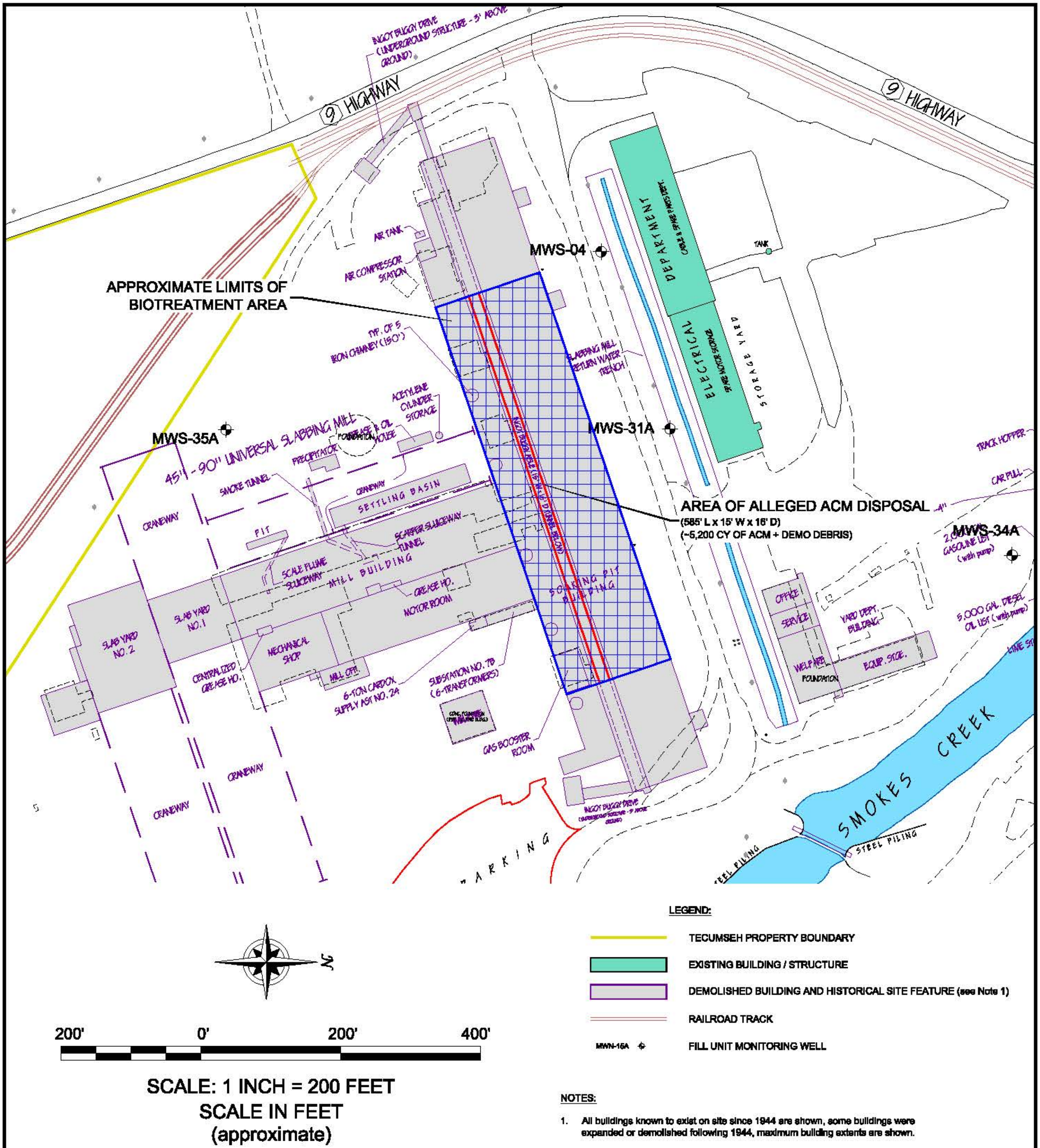
PREPARED FOR
TECUMSEH REDEVELOPMENT INC.

TURNKEY ENVIRONMENTAL RESTORATION, LLC
2558 HAMBURG TURNPIKE
SUITE 300
BUFFALO, NY 14218
(716) 856-0635

JOB NO.: 0071-009-320

FIGURE 5

FIGURE 6



NOTES:

1. All buildings known to exist on site since 1944 are shown, some buildings were expanded or demolished following 1944, maximum building extents are shown.

TurnKey Environmental Restoration, LLC
2558 HAMBURG TURNPIKE
SUITE 300
BUFFALO, NY 14218
(716) 856-0635

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DATE: JUNE 2012

DRAFTED BY: BCH

LOCATION OF BIOTREATMENT PAD OVER SOAKING PIT BUILDING FOUNDATION

REMEDIAL INVESTIGATION/ALTERNATIVES ANALYSIS REPORT

PHASE III BUSINESS PARK AREA
LACKAWANNA, NEW YORK

PREPARED FOR
TECUMSEH REDEVELOPMENT INC.