Remedial Investigation/ Alternatives Analysis Report (RI/AAR) Work Plan

Phase IA Business Park Area
Lackawanna, New York
BCP Site No. C915218

April 2010 0071-009-350

Prepared For:

Tecumseh Redevelopment Inc.
Richfield, Ohio

Prepared By:

TurnKey Environmental Restoration, LLC

2558 Hamburg Turnpike, Suite 300, Buffalo, NY | phone: (716) 856-0635 | fax: (716) 856-0583

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TurnKey Environmental Restoration, LLC
2558 Hamburg Turnpike, Suite 300
Buffalo, NY 14218
(716)856-0635

RI/AAR WORK PLAN
Phase IA Business Park Area

CERTIFICATION:

Thomas H. Forbes, P.E. — Date: 4-8-10

License No.: 070950-1

Registration State: New York

SEAL:

RI/AAR WORK PLAN
Phase IA Business Park Area

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1.0 INTRODUCTION

1.1 Background

Tecumseh Redevelopment Inc. (Tecumseh) owns approximately 1,100 acres of land (property) 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 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 the property, along with other BSC assets, out of bankruptcy in 2003. The majority of Tecumseh's property is located in the City of Lackawanna (the City), with a portion 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.

A Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) of the entire former Bethlehem Steel Lackawanna Works was initiated by BSC under an Administrative Order issued by the United States Environmental Protection Agency (USEPA) in 1990. Tecumseh completed the RFI in October 2004 (Ref. 1). In August 2006, USEPA approved the RFI and terminated Bethlehem Steel's obligations under the 1990 Administrative Order. Tecumseh is presently negotiating 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. There were no SWMU identified in the Phase IA Business Park Area.

Redevelopment of the entire Tecumseh property is guided by a Master Redevelopment Plan (see Figure 3). Specifically, in April of 2005, Tecumseh signed a Memorandum of Understanding with Erie County and the City of Lackawanna to promote redevelopment of the former BSC Lackawanna property. The resultant Master Plan calls for a variety of site uses, including wind energy, passive recreation, and business development. At present, one parcel encompassing 29 acres along the Lake Erie shoreline has been redeveloped by BQ Energy, LLC under lease to Tecumseh. This parcel, referred to as the "Steel Winds Site," contains eight wind turbines and supporting power generation

equipment and infrastructure. The Steel Winds Site was investigated and underwent remedial measures through the NY State Brownfield Cleanup Program.

Tecumseh has separately applied for and received NYSDEC acceptance of three additional parcels into the NY State Brownfield Cleanup Program. The present status of each of these parcels is summarized below:

- **Phase I Business Park:** An Interim Remedial Measure (IRM) involving removal and on-site bioremediation of petroleum impacted soil/fill, and removal and off-site disposal of characteristically hazardous soil/fill began on the 102-acre Phase I Business Park Area in June 2009 and was substantially completed in July 2009.
- **Phase II Business Park:** A Brownfield Cleanup Agreement (BCA) has been issued to Tecumseh by the NYSDEC for this 173-acre parcel. An RI/AAR Work Plan was submitted to the NYSDEC in November 2008. Field activities will begin upon approval of the Work Plan.
- **Phase III Business Park:** Remedial Investigation activities on the 93.4-acre Phase III Business Park Area were initiated in August 2008.

1.2 Purpose and Scope

This Phase IA Business Park Area (BPA) Remedial Investigation/Alternatives Analysis Report (RI/AAR) Work Plan addresses the 9.8-acre Phase IA Business Park Area of the Tecumseh site. Tecumseh intends to investigate groundwater and soil/slag-fill for the purpose of characterizing the site and identifying/evaluating remedial alternatives. Accordingly, the RI/AAR Work Plan identifies the scope of the planned Remedial Investigation and the means by which it will be completed, including sampling and reporting requirements, as well as the identification and evaluation of remedial options for impacted soil/slag-fill and on-site groundwater.

This Work Plan proposes the following activities to delineate on-site soil/slag-fill and groundwater impacts at the Site:

- Analysis of representative soil/slag-fill samples from test pits to establish concentrations of Constituents of Potential Concern (COPCs) within the soil/slag-fill matrix.
- Visual/olfactory/PID characterization of surface and subsurface soil/slag-fill.

- Installation of on-site upgradient and downgradient groundwater monitoring wells.
- Collection and analysis of groundwater samples and groundwater potentiometric data from existing and newly installed monitoring wells on the Site.

A detailed description of the scope of work follows. A summary of the soil/slag-fill and groundwater data obtained during the RI and historical investigations on the Phase IA Business Park Site will be presented in the RI/AAR report.

1.3 Project Organization and Responsibilities

The Phase IA Business Park Area Site was accepted into the BCP as a non-responsible party (volunteer) per ECL§27-1405. TurnKey Environmental Restoration, LLC (TurnKey) in association with Benchmark Environmental Engineering & Science, PLLC (Benchmark) will manage the brownfield cleanup on behalf of Tecumseh. The NYSDEC Division of Environmental Remediation shall monitor the remedial actions to verify that the work is performed in accordance with the Brownfield Cleanup Agreement, the approved RI/AAR Work Plan, and NYSDEC DER-10 guidance.

2.0 ENVIRONMENTAL CONDITIONS

2.1 Historical Operations

The Phase IA Business Park Site formerly supported BSC's steel making operations. There are no SWMUs present on the Phase IA Business Park Site. Buildings and operations historically located on the Site are shown on Figure 2. As indicated, prior facilities within the Phase IA Business Park boundaries included:

- **Blowing Engine House No. 3** was used as a repair facility for locomotives and other motor-driven vehicles employed on the site.
- **Boiler House No. 3** supplied steam for plant process equipment and instrumentation.
- **Power House No. 1** served as a power generation station, incorporating steam-driven turbines, transformers, and other electrical equipment to provide nearly all power required at the BSC site. Historical plant schematics indicate that a 12,000-gallon fuel oil tank may have been present to the south of Power House No. 1. The basement of the Power House also had an oil & electric room located in the southern portion of the building.
- **Pump Station No. 1** supplied lake water for use in production activities. This building was demolished in 2008 with the foundation remaining in place.
- **The North Return Water Trench (NRWT)** is a man-made drainage channel along the eastern boundary of the Phase IA BPA. The NRWT begins near former Pumping Station No. 1 and flows north to the Union Ship Canal via an open channel and culverts. Historically, the trench collected treated wastewater and non-contact cooling water from BSC operations. This trench will not be investigated under the BCP.
- **The South Return Water Trench (SRWT)** is a man-made drainage channel along the southeastern boundary of the Phase IA BPA. The SRWT flows south to Smoke's Creek. This trench will not be investigated under the BCP.

2.2 Current Conditions

2.2.1 Site Topography, Physiography, and Drainage

The Phase IA Business Park Area Site is generally characterized as a flat area covered by sparse brush and low lying vegetation. The land surface is sparsely vegetated with voluntary indigenous shrubs, grasses, weeds, and emergent trees.

The United States Geological Survey Buffalo (SW), New York Quadrangle indicates that the surrounding area slopes gradually to the west toward Lake Erie (see Figure 1). Due to the granular nature of the slag/soil fill there is very little ponded stormwater or runoff as most of the precipitation seeps into the highly permeable slag/soil fill.

2.2.2 Site Structures and Vegetation

As previously stated, the 9.8-acre Site and surrounding property is composed of vacant land and structural remnants of the historical steel-making operations, including those described in Section 2.1. The land surface is generally flat and sparsely vegetated with shrubs and grasses. The approximate locations of the current and former structures/buildings are shown on Figure 2.

2.2.3 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 2 feet (east side) to 8 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 grade near the eastern perimeter of the adjacent Phase I Business Park 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. No groundwater monitoring wells exist on the Phase IA Business Park property, with the exception of RFI monitoring well B-1 as shown on Figure 2. Measurements taken in several monitoring wells on or near the adjacent Phase I Business Park Site indicate that the water table is 5 to 6 feet below grade within the soil/slag-fill unit. Groundwater elevation contour maps completed during investigation of the nearby Phase I Business Park Site indicate that shallow groundwater flows radially west/southwest across the Site towards the Gateway Metroport Ship Canal as well as northwestward toward the Buffalo Outer Harbor.

2.2.4 Utilities

The following utilities are present on or near the Site:

- Electric Utility: Overhead electric power lines on wooden utility poles, owned by Niagara Mohawk Power Corporation (NMPC), run north and south adjacent to the Site. The electric utilities are located just east of the Site boundary and along the former Power House No. 1 (see Figure 2), but are not located within the Site boundary. The former Power House No. 1 is part of the Site.

- Water: Erie County currently supplies potable water to the site. Lake Erie is not accessible from the Site without accessing other areas of the Tecumseh property or Gateway Trade Center.

- Sanitary Sewers: Abandoned sewer lines are suspected to be located within the Site boundaries and their exact locations are unknown. There are no future plans for these utilities in the event they are destroyed during investigation activities.

2.2.5 Wetlands and Floodplains

No state/federal wetlands or floodplains exist at the Site.

2.3 Previous Investigations

There are no SWMUs identified on the Phase IA property. While a complete Phase I Environmental Site Assessment (ESA) has not been specifically completed for this area, historical use of the Phase IA parcel suggests that similar recognized environmental conditions exist on this property as those observed on the adjacent 102-acre Phase I Business Park Site, which was subjected to a Remedial Investigation (RI) in 2006. The Phase I Business Parcel exhibited exceedances of restricted use (commercial) Soil Cleanup

Objectives (SCOs), per 6NYCRR Part 375, for several constituents, including polynuclear aromatic hydrocarbons (PAHs), arsenic, lead, and polychlorinated biphenyls (PCBs).

In April 2007, TurnKey field personnel collected three surface soil samples for analysis of base-neutral semi-volatile organic compounds (SVOCs), PCBs, and RCRA metals identified as 1A-SS-01 through 1A-SS-03 on Figure 2. The analytical results indicate concentrations of certain PAHs and metals above NYSDEC Part 375 restricted-commercial soil cleanup objectives (SCOs). PCBs were also detected at low concentrations. Analytical data from the April 2007 sampling are included in Appendix A and summarized on Table 1.

2.4 Constituents of Potential Concern (COPCs)

Based on the surface soil samples collected from the Site (see Table 1) and the analytical results obtained from the adjacent Phase I Business Park Area, the primary constituents of potential concern (COPCs) on the Site appear to be SVOCs (base-neutral fraction only) in surface soil/slag-fill. SVOCs are associated with greases, lubricating and hydraulic oils, and fuels associated with the operation of the steel mills, foundry, petroleum bulk storage, and other steel manufacturing operations historically conducted on the Site. Metals associated with steel manufacturing are also potentially ubiquitous in surface and shallow subsurface soil/slag-fill at the Site (see Table 1).

Other constituents that may be present in discrete locations of the Site include PCBs from former transformer use, and VOCs from the historical use of solvents and fuel storage. Accordingly, the COPC parameter list presented in Table 2 includes provisions for analysis of an "expanded" list of parameters presented in Table 3. The "expanded" list will be employed at a frequency of 1 per 10 samples per matrix to check for the presence of these and other constituents.

3.0 DATA OBJECTIVES

3.1 Acceptance or Performance Criteria

Acceptance or performance criteria specify the quality of data required to support decisions regarding remedial response activities. Acceptance or performance criteria are based on the data quality objectives. Specifically, the data quality and level of analytical documentation necessary for a given set of samples will vary depending on the intended use of the data.

As part of the RI process, site-specific remedial action objectives will be developed. Sampling data will be used to evaluate whether remedial alternatives can meet the objectives. The intended uses of these data dictate the data confidence levels. Two data confidence levels will be employed in the RI: screening level data and definitive level data. In general, screening level confidence will apply to field measurements, including photoionization detector (PID) measurements, groundwater elevation measurements, and field analyses (i.e., pH, temperature, specific conductivity, and turbidity). Definitive level confidence will apply to samples for chemical analysis.

The applicability of these levels of data will be further specified in the Quality Assurance Project Plan (QAPP). Sampling and analytical acceptance and performance criteria such as precision, accuracy, representativeness, comparability, completeness, and sensitivity, will also be defined in the QAPP.

3.2 Collection of Defensible Data

The RI scope of work is focused on providing defensible data to identify areas of the Site requiring remediation; defining chemical constituent migration pathways; qualitatively assessing human health and ecological risks; and performing the remedial alternatives evaluation. The investigation will include the collection and analysis of soil/slag-fill and groundwater samples to support remedial action objectives. Definitive level data quality will be required for chemical analysis of soil/slag-fill and groundwater samples.

Field team personnel will collect environmental samples in accordance with the rationale and protocols described in the Field Sampling Plan (FSP) presented in the QAPP. USEPA and NYSDEC-approved sample collection and handling techniques will be used.

Samples for chemical analysis will be analyzed in accordance with USEPA SW-846 methodology, to meet the definitive-level data requirements, by a New York State Department of Health Environmental Laboratory Accreditation Program (ELAP) CLP-certified laboratory. A full (Category B) deliverables package will be provided for all site characterization samples (i.e., excluding waste profile samples). Analytical results for site characterization samples will be evaluated by a third-party data validation expert in accordance with provisions described in the QAPP.

4.0 INVESTIGATION ACTIVITIES

Individual scopes of work developed for environmental media to be addressed during the Remedial Investigation are presented in the following sections. Figure 2 illustrates the proposed locations of the on-site RI activities. Table 4 summarizes the RI sampling and analytical program by media.

4.1 Underground Utility Clearance

Before any intrusive activity (e.g., excavation, Geoprobe®, drill rig), TurnKey will request a utility clearance from the Underground Facilities Protective Organization (or approved other); underground utilities will be identified and clearly marked. TurnKey will also review historic plant engineering drawings for on-site utility locations before initiating fieldwork.

4.2 Soil/Slag-Fill Investigation

4.2.1 Surface Soil

In addition to the three surface soil samples already collected (see Section 2.3), twelve additional grab surface soil/fill samples will be collected across the Site at the locations indicated on Figure 2. Collection of surface soil/fill samples will facilitate evaluation of potential health risks to current site receptors that may be exposed to soil/fill via direct contact, incidental ingestion or inhalation of airborne particulates.

For each surface soil/fill grab sample, a dedicated stainless steel hand trowel or stainless steel spoon will be used to collect a representative aliquot of soil in accordance with the following procedure(s):

- If an area is vegetated, then the surface soil sample will be collected from 0 to 2 inches below ground surface (bgs) following removal of the sod;

- If there is no soil present in an area slated for surface sample collection, the procedure for collection of a suitable sample will be to excavate an area 12 inches by 12 inches by 6 inches deep, screen the material to less than 1/8 inch, and submit the screened material for analysis. If there is not enough material for analysis, then the excavation will be expanded 3 inches in all four directions and

screened. The excavation will be expanded in this manner until sufficient sample volume is obtained.

Grab samples will be transferred to laboratory-supplied, precleaned sample containers for analysis of the parameters listed in Table 4 using USEPA SW-846 methodology. Representative samples will be described in the field by qualified TurnKey personnel using visual-manual observation in accordance with ASTM Method D2488, Standard Practice for Description and Identification of Soils (Visual-Manual Procedure), scanned for total volatile organic vapors with a calibrated MiniRAE 2000 PID equipped with a 10.6 eV lamp (or equivalent), and characterized for impacts via visual and/or olfactory observations. The depth of final samples will also be recorded.

4.2.2 Test Pit Excavation

Seventeen test pits will be excavated across the Phase IA Business Park Site to allow for visual/olfactory/PID assessment of subsurface conditions as well as to obtain representative samples for chemical characterization. As presented on Figure 2, test-pit locations have been preliminarily identified; however, locations may need to be modified and/or additional test pits may be excavated pending field findings.

In general, test pits will be excavated using a small excavator from ground surface to native soils or groundwater, whichever is encountered first. Test pit dimensions (i.e., depths and lengths) will vary depending on the vertical and horizontal extents of the soil/slag-fill horizon, depth to groundwater, or encountered impacts (test pits exhibiting evidence of significant impact will require further delineation as described in Section 4.2.4). Test pit walls and excavated soil/slag-fill will be examined by qualified TurnKey personnel and classified by visual-manual observation in accordance with ASTM Method D2488, Standard Practice for Description and Identification of Soils (Visual-Manual Procedure), and characterized for impacts via visual and/or olfactory observations. Excavated soil/slag-fill and the test pit atmosphere will be field-screened for the presence of VOCs using a field PID as a procedure for ensuring the health and safety of personnel at the Site and to identify potentially impacted soil/slag-fill samples for laboratory analysis. If field screening indicates potential VOC impact or olfactory evidence of impact, the test pit will also be subjected to headspace screening as discussed below.

The majority of the test pit samples will be biased toward the upper 2-foot interval, the depth where most exposure is likely to occur prior to and following redevelopment. At locations where field observations suggest greater potential impact with depth, the sample will be collected from the subsurface interval (i.e., 2 feet to native soil/groundwater depth). All test pit soil/slag-fill samples will be retrieved from the sidewall of the excavation using dedicated stainless steel sampling equipment. For deeper samples, the excavator bucket will be used to obtain the sample, with a representative subsurface soil/slag-fill sample collected from the center of the excavator bucket using a dedicated stainless steel hand trowel or spoon. Samples will be transferred to laboratory supplied, pre-cleaned sample containers for laboratory analysis as discussed below.

For test pits exhibiting elevated PID readings in the test pit atmosphere or in the excavated spoils, a second representative aliquot from each soil/slag-fill location will be transferred to a sealable plastic bag for discrete headspace determination. In general, representative soil/slag-fill samples will be collected, placed in a sealable plastic bag, and kept at or near room temperature (approximately 65-70°F) for a minimum of 15 minutes prior to PID measurement. Headspace determinations will be recorded on the appropriate field forms and Project Field Book. PID scan and/or headspace determination values greater than 20 parts per million (ppm) will require the collection of an additional sample for VOC analysis using USEPA SW-846 methodology. The chosen soil/slag-fill samples will be transferred directly into a laboratory supplied, pre-cleaned sample container for analysis of "full list" VOCs (TCL plus STARS List) by USEPA Method 8260B.

Following completion of each test pit, soil/slag-fill material will be returned to the excavation in the opposite order in which it was removed and compacted to match the existing grade. Only the number of test pits that can be adequately backfilled during a single workday will be excavated. No excavated test pit will be left open overnight.

4.2.3 Boring Advancement

In the event that test pit activities experience refusal at the surface due to the presence of concrete or other obstructions, an alternative location will be field-selected. However, if an alternative location cannot be accessed within reasonable proximity (25 feet) of the intended location, direct-push technology via a Geoprobe® drill rig equipped with a concrete core barrel will be implemented to obtain subsurface soil/slag-fill samples. Once

the surface obstruction is breached, each boring location will be advanced a minimum of 1-foot into native soil or first groundwater, whichever is encountered first, using a 1.5-inch diameter, 4-foot core sampler with dedicated PVC sleeve. Recovered samples will be described in the field by qualified TurnKey personnel using ASTM D2488 (Standard Practice for Description and Identification of Soils, Visual-Manual Procedure), scanned for total volatile organic vapors with a calibrated MiniRae 2000 PID equipped with a 10.6 eV lamp (or equivalent), and characterized for impacts via visual and/or olfactory observations. Similar to the test pit soil/slag-fill samples, headspace determinations will also be completed based on field screening observations.

Once the desired depth is reached, representative subsurface soil/slag-fill samples from each location will be collected from the PVC sleeve(s) using a dedicated stainless steel hand trowel or stainless steel spoon. Following sample collection, the Geoprobe® boreholes will be backfilled with the remaining soil cuttings and supplemented, as necessary, with bentonite powder.

4.2.4 Soil/Slag-Fill Sample Analysis

The planned soil/slag-fill analytical program is identified on Tables 4 and 5. As indicated, a minimum of 29 soil/slag-fill samples are slated for analysis. Depending on historical use, several of the soil/slag-fill samples will be analyzed for COPC metals, pH, PCBs, cyanide, and/or STARS-list VOCs[1]. An expanded analytical list (see Table 3) will be employed at a frequency of one per 10 samples.

Although some test pit locations may not be planned for analysis, representative samples will be collected from all test pit locations and the laboratory will be instructed to archive samples for potential analysis pending the outcome of the results for surrounding locations.

4.2.5 Grossly Impacted Soil/Slag-Fill

If grossly impacted soil/slag-fill samples are encountered, the impact will be determined in the field, to the degree feasible, in order to estimate the volume and extent.

[1] Samples with a headspace PID reading greater than 20 ppm will be analyzed for "full list" (i.e., NYSDEC STARS List plus USEPA Target Compound List) VOCs, and Target Compound List SVOCs.

This will involve expanding the test pit dimensions and/or stepping out from the source area with perimeter test pits, as necessary. In addition, representative samples of the grossly impacted soil/slag-fill will be subjected to waste profile analysis to determine whether it would require special handling (e.g., as hazardous waste) or treatment if disposed off-site. Waste profile analysis will include Toxicity Characteristic Leaching Procedure (TCLP) VOCs, SVOCs, and metals, as well as PCBs and flashpoint using USEPA SW-846 Methodology.

4.3 Groundwater Investigation

Based on previous investigations completed on the adjacent Phase I Business Park site, groundwater modeling indicates that shallow groundwater flows east to west, toward the Gateway Metroport Ship Canal and eventually Lake Erie. Groundwater elevation measurements taken in several monitoring wells on or near the Site indicate that the water table is 5 to 6 feet below ground surface (fbgs) within the soil/slag-fill unit. Due to a lack of site-specific groundwater data (i.e., groundwater quality and flow direction) for the Phase IA Business Park Area, a more detailed and site-specific assessment is required. Consequently, following completion of soil/slag-fill portion of the investigation, groundwater flow direction as well as upgradient and downgradient groundwater quality at the Site will be assessed using the following six locations: existing off-site upgradient monitoring wells B-2 and MW-16A; off-site upgradient piezometer P-45S; and three newly installed monitoring wells MWN-69A, MWN-70A, and MWN-71A (see Figure 2).

Based upon field reconnaissance, on-site well B-1 as well as off-site wells B-3 and ES1-2 have been destroyed. Although replacement of these wells is not anticipated, groundwater quality data collected during the RFI will be used to supplement collected groundwater data during this investigation. Appendix B contains the groundwater monitoring well installation logs for the existing and destroyed well locations.

4.3.1 Monitoring Well Installation

In addition to the existing upgradient and downgradient monitoring wells listed above, three new groundwater monitoring wells will be installed to further assess groundwater quality at the Site. The wells will be identified as MWN-69A, MWN-70A, and MWN-71A, consistent with the numbering scheme employed during the RFI. The location

of the new wells will be based on field observations recorded during the soil/slag-fill investigation. Specifically, well locations will be adjusted, if necessary, based on the presence of elevated PID readings or product. In the absence of such observations, the new wells will be installed at the approximate locations shown on Figure 2.

Each boring location will be advanced into the unconsolidated overburden soil/slag-fill to a depth of approximately 18 fbgs or a minimum of 10 feet below the first encountered groundwater, whichever is greater. Shallow overburden well borings will be advanced using 4.25-inch I.D. hollow stem augers (HSA). A 2-inch diameter, 2-foot long split spoon sampler will be advanced ahead of the auger string with a standard 140-pound hammer falling freely over a 30-inch fall until 24 inches have been penetrated or 50 blows applied. Recovered samples will be described in the field by qualified TurnKey personnel by visual-manual observation in accordance with ASTM Method D2488, Standard Practice for Description and Identification of Soils (Visual-Manual Procedure), scanned for total volatile organic vapors with a calibrated MiniRAE 2000 PID equipped with a 10.6 eV lamp (or equivalent), and characterized for impacts via visual and/or olfactory observations. All non-dedicated drilling tools and equipment will be decontaminated between boring locations using potable tap water and a phosphate-free detergent (i.e., Alconox).

In addition, PID scans will be supplemented with headspace determinations. In general, representative soil/slag-fill samples from each recovered interval will be collected, placed in a sealable plastic bag, and kept at or near room temperature (approximately 65-70°F) for a minimum of 15 minutes prior to PID measurement.

Subsequent to boring completion, each monitoring well will be constructed of 2-inch I.D. flush-joint Schedule 40 PVC solid riser and machine slotted screen (0.010-inch slot size). The monitoring well screen will be approximately 10 feet in length. Approximately 6-inches of silica sand will be placed at the bottom of each boring as a base for the well screen and as part of the sand pack. The well screen and attached riser will be placed within the borehole on top of the 6-inch sand layer and the remainder of the sand pack will be installed within the borehole annulus to a level of 2- to 3-feet above the top of the well screen. A bentonite seal 2- to 3-feet thick will be installed immediately above the sand layer. The bentonite seal will be constructed with 3/8-inch bentonite pellets or medium bentonite chips and allowed to hydrate sufficiently to mitigate the potential for downhole grout

contamination. Cement/bentonite grout will be installed via pressure tremie pipe injection to fill the remaining annulus to approximately 1 fbgs.

The top of the well riser pipe will extend approximately 3 feet above grade and will be fitted with a lockable J-plug and protected by a vented, 4-inch diameter protective steel casing. The steel casing will be installed to a depth of approximately 2-fbgs and anchored in a 2-foot by 2-foot concrete surface pad. Each steel protective casing will be fitted with a locking cap, keyed alike lock, and labeled with permanent markings for identification. The concrete surface pad will be placed around the protective steel casing to allow surface water to drain away from the well. Drill cuttings will be disposed onsite unless gross contamination (i.e., visible product) is encountered, in which case they will be placed in sealed NYSDOT-approved drums and labeled for subsequent characterization and disposal.

4.3.2 Well Development

All newly installed and existing monitoring wells will be developed in accordance with NYSDEC and TurnKey protocols. Each well will be left undisturbed for a minimum of 24 hours following installation before development activities begin to ensure that the cement/bentonite grout has set. Prior to development, the static water level and well depth will be measured. Development will be accomplished using a bottom-discharging bailer (either polyethylene or PVC) and a submersible pump via purge and surge methodologies. Development will be recorded on field forms and considered complete when the pH, specific conductivity and temperature have stabilized; and when the turbidity is below 50 Nephelometric Turbidity Units (NTU), or has stabilized above 50 NTU and a minimum of 10 well volumes have been removed. Stability is defined as variation between measurements of 10 percent or less and no overall upward or downward trend in the measurements. Water removed during development will be discharged to the ground surface no closer than 50 feet in any radial direction from the monitoring well unless visual non-aqueous phase liquid (NAPL) is present, in which case it will be drummed for characterization and disposal.

Field personnel will perform visual NAPL surveillance during development of each well. All data collected during well development will be recorded on TurnKey's Groundwater Well Development and Purge Logs. Well development procedures, including the field forms, and calibration and maintenance of field instruments used to measure stability parameters will be performed and/or completed in accordance with TurnKey's Field

Operating Procedures (FOPs) included with the Quality Assurance Project Plan (QAPP) discussed in Section 6.3.

4.3.3 Groundwater Elevation Measurements

Following installation, the location and elevation of the newly installed monitoring wells will be surveyed against a fixed benchmark and located on the Site plan. The top of the PVC casings will be referenced to existing Site vertical datum to provide a reference point for groundwater elevation measurements. Approximately 72 hours or more following completion of Site well development activities, depth to groundwater will be measured in all newly installed and existing monitoring wells from the top of each riser using an electric water level indicator to the nearest 0.01 feet. Depth to water measurements will be used to calculate the groundwater elevations at each location. A site-specific isopotential map will be prepared with the groundwater elevations, and will be used to determine the groundwater flow direction and hydraulic gradient at the Site.

4.3.4 In-Situ Hydraulic Conductivity Testing

In-situ permeability of the first water bearing zone screened by all newly installed monitoring wells will be determined using the variable-head test method ("rising head") by the method of Bouwer and Rice (1976). The hydraulic conductivity testing will be performed in accordance with TurnKey's FOPs presented in the QAPP.

4.3.5 Groundwater Sample Collection and Analysis

Prior to sampling the monitoring wells, static water levels will be measured and recorded as described above. Following water level measurement, TurnKey personnel will purge and sample each monitoring well in accordance with low-flow/minimal drawdown purge and sample collection procedures. Prior to sample collection, groundwater will be evacuated from each well at a low-flow rate (typically less than 0.1 L/min). Field measurements for pH, specific conductance, temperature, turbidity, and water level as well as visual and olfactory field observations will be periodically recorded and monitored for stabilization. Purging will be considered complete when pH, specific conductivity and temperature stabilize, and when turbidity measurements fall below 50 NTU, or become stable above 50 NTU. Stability is defined as variation between field measurements of 10

percent or less and no overall upward or downward trend in the measurements. Once the field parameters have stabilized, groundwater samples will be collected and analyzed for the parameters presented in Table 4. In the event that low-flow purging and sampling techniques cannot be accomplished, standard purging and sampling techniques will be implemented using a dedicated, disposable polyethylene bailer.

Prior to and immediately following collection of groundwater samples, field measurements for pH, specific conductance, temperature, turbidity, Eh, and water level as well as visual and olfactory field observations will be recorded. All collected groundwater samples will be placed in pre-cleaned, pre-preserved laboratory provided sample bottles, cooled to 4°C in the field, and transported under chain-of-custody command to an analytical laboratory for analysis as indicated in Table 4.

4.4 PCB Investigation

In March 2008, TurnKey personnel conducted an electrical transformer inventory of the four buildings within the Phase IA BPA (see Figure 2), including: Powerhouse No. 1, Steam Station No. 1/Boiler House No. 3, Pumping Station No. 1, and Blowing Engine House No. 3. Since that time, the Pumping Station No. 1 building has been demolished. A total of 63 transformers were located in and around these buildings, nine of which were sampled, determined to contain PCB concentrations less than 50 ppm, and subsequently removed for salvage. Two of those nine transformers were located inside and removed prior to the demolition of Pumping Station No. 1. All 63 transformers are summarized in Table 6. All remaining transformers within Business Park Phase IA will be cross-referenced with this table and photographed. This PCB investigation will be performed in general accordance with USEPA Part 761 – *Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions.*

In general accordance with Part 761 Subpart N (*Cleanup Site Characterization Sampling for PCB Remediation Waste*) and prior to removal, liquid samples (or wipe samples of the transformer reservoir or housing, in the absence of liquid) will be collected from each of the 54 remaining inactive transformers associated with the Phase IA BPA buildings and analyzed for PCBs. Based upon the analytical results, each transformer will be characterized into one of the three categories. The three categories listed below are defined by PCB analytical concentrations in accordance with USEPA Part 761.60 (*Disposal Requirements*).

- **Non-PCB Transformer**: Transformers exhibiting liquid PCB concentrations < 50 ppm or surface concentrations ≤ 10 ug/100 cm^2.

- **PCB-Contaminated**: Transformers exhibiting liquid PCB concentrations ≥ 50 ppm to < 500 ppm or surface concentrations > 10 ug/100 cm^2 to < 100 ug/100 cm^2.

- **PCB-Transformer**: Transformers exhibiting liquid PCB concentrations ≥ 500 ppm or surface concentrations ≥ 100 ug/100 cm^2.

. In addition, if the visual assessment indicates the presence of a spill, the "spill area" will be defined as all visible traces of the spill plus a buffer zone of 1 foot beyond the visible traces. Any surface or object within the visible traces area or on which visible traces of the spilled material are observed will be included in the spill area. The type of surface beneath the spill will also be determined as impervious or non-impervious: impervious solid surfaces include, but are not limited to, metal, glass, aluminum, enameled or laminated and non-impervious solid surfaces include, but are not limited to, soil/fill, wood, concrete, asphalt, and plasterboard. The affected area will then be sampled for TCL PCBs. Areas where suspected spills predominantly affect soil/fill will be sampled via conventional surface soil sampling methods. Remaining materials will be sampled via wipe sampling as described below.

In addition to the transformer areas, suspected large oil spill areas or areas of significant staining not associated with an existing or historic transformer will be noted and may require sampling for PCBs as requested by the NYSDEC.

If a spill is confirmed and decontamination is determined necessary, a work plan (outlining the cleaning process) and a sampling plan (to verify and document completed tasks outlined in the work plan have met cleanup objectives) will be prepared and submitted for Department approval. Verification of decontamination will be satisfied by the collection and analysis of wipe samples from areas where decontamination procedures have been completed as per USEPA Part 761.79.

Wipe samples, when necessary, will be collected to determine the presence and concentration of residual PCBs on transformers, nearby concrete, and/or brick surfaces. Wipe samples will be biased toward areas of staining; otherwise, sample locations will be randomly selected. Wipe sampling will be performed using laboratory-prepared wipes and

containers. Wipe samples will be analyzed for TCL PCBs (see Table 4). Wipe sample collection procedures and sample handling will be performed in accordance with USEPA *Wipe Sampling and Double Wash/Rinse Cleanup* (April 18, 1991) methodology as well as TurnKey's *Wipe Sample Collection Procedures* FOP included with the QAPP discussed in Section 6.3. In accordance with USEPA regulation §761.1(b)(3), wipe samples will be assessed according to the criteria presented earlier in this section.

At least 30 days prior to the beginning date of cleanup, if necessary, the USEPA Regional Administrator and the NYSDEC will be notified in writing where the cleanup will be conducted and will include all required information in accordance with Part 761(a)(3).

4.5 Barometric Condenser Cold Well Investigation

As part of historic operations at the Site, a barometric condenser, located on the northwestern side of the Power House, and barometric condenser cold well, located immediately north of the Power House, was used as an economical means of removing exhaust steam and other vapors from vacuum equipment. Although the condenser has been removed, the condenser cold well surface feature remains and it is not known whether it was properly decommissioned. Therefore an on-site assessment of the condenser cold well will be conducted. If the condenser is open to groundwater, one grab water sample will be collected and analyzed for TCL VOCs, TCL SVOCs, PCBs, TAL metals and Oil & Grease. The bottom of the condenser will also be sounded for the presence of soft sediment, which if present, will be sampled and analyzed for those same parameters (except Oil & Grease). Any further action regarding the decommissioning of the condenser cold well will be assessed in the Alternative Analysis Report.

4.6 Supplemental Soil Vapor Intrusion Investigation

If soil/fill or groundwater results collected in support of the Phase IA Business Park Area indicate concentrations of chlorinated Volatile Organic Compounds in excess of relevant standards, criteria and guidance (i.e., commercial Soil Cleanup Objectives per 6NYCRR Part 375 for soil/fill and NYSDEC Class GA Groundwater Quality Standards and Guidance Criteria for groundwater), all existing buildings not planned for demolition will be assessed for soil vapor intrusion in accordance with New York State Department of Health (NYSDOH) vapor intrusion guidance requirements. This will involve sub-slab, indoor air

and background air testing for VOCs in accordance with USEPA Method TO-15. A field Operating Procedure for the sampling work will be provided to the NYSDEC and NYSDOH for review prior to undertaking the investigation.

4.7 Field Specific Quality Assurance/Quality Control (QA/QC)

In addition to the soil/slag-fill and groundwater samples described above, site-specific field quality assurance/quality control (QA/QC) samples will be collected and analyzed to support the required third-party data usability assessment effort. Site-specific QA/QC samples will include matrix spikes, matrix spike duplicates, and blind duplicates. Trip blanks will accompany the aqueous VOC samples only. Dedicated sampling equipment will be used to minimize field decontamination time and avoid the need for equipment blanks. QA/QC field sampling requirements are summarized in the QAPP. A brief summary of each is presented below:

- **Trip Blanks** – A sufficient number of trip blanks for VOC analysis will be prepared by the laboratory and delivered to the sampling team prior to a sampling event. One sealed blank will be carried into the field per day along with the sample containers for each day that water matrix volatile organic samples are collected. Trip blanks will be transported and handled in the same manner as the actual samples. The results of the trip blank analysis will be reviewed to evaluate if the potential for sample contamination during transportation and handling exists. The trip blanks will be analyzed for "full list" VOCs (TCL plus STARS List) by USEPA Method 8260B.
- **Blind Duplicate** – One blind duplicate will be collected and analyzed per 20 samples collected for the parameters presented in Table 4 per matrix (i.e., groundwater, soil/slag-fill, etc.). The location of the sample collection point will not be disclosed to the analytical laboratory, therefore the field sample containers will be returned to the laboratory identified only as the "blind duplicate." The well or sample location will be recorded in the Project Field Book and on the respective Water Sample Collection Log and the results will be compared to review analytical precision.
- **Matrix Spike/Matrix Spike Duplicate (MS/MSD)** – A sufficient volume of sample will be collected at one sampling location per sampling event for MS/MSD analysis for the parameters presented in Table 4 per matrix (i.e., groundwater, soil/slag-fill, etc.). The laboratory will report the results of the MS/MSD analysis, which will be reviewed for sampling and analysis precision and accuracy.

The laboratory will be required to furnish an equivalent ASP Category B deliverables package to facilitate data evaluation and preparation of a DUSR by a third-party validation expert. Accordingly, the samples will be analyzed by an NYSDOH ELAP-approved laboratory certified to perform CLP work.

4.8 Contingency Sample Collection

The RI scope of work is based on historical site use and observed Site features. It is the intent of this RI to remain flexible to unanticipated conditions. Therefore, soil/slag-fill excavated from the test pits will be continuously screened with a calibrated MiniRAE 2000 PID equipped with a 10.6 eV lamp (or equivalent). Additional materials from each test pit that show evidence of impact (i.e., staining, sheening, visible product, and/or excessive odors) will be collected for sample analysis for parameters appropriate for the suspected impact. The investigation will attempt to delineate areas of visible impact by extending and/or performing additional test pits.

4.9 Documentation

All investigation field activities will be documented in the Project Field Book. This logbook will provide a record of activities conducted at the Site. All entries will be signed and dated at the end of each day of fieldwork by the Field Team Leader. The field logbook will include, at a minimum, the following: date and time of all entries, names of all personnel on site, weather conditions (temperature, precipitation, etc.), location of activity, and description of activity. Sampling activities will be logged and photographed as necessary to document the activities at the site. TurnKey personnel will complete the following standard field forms:

- Chain of Custody Form
- Daily Drilling Report, (as necessary)
- Drilling Safety Checklist, (as necessary)
- Equipment Calibration Log
- Field Activity Daily Log (FADLs)
- Field Borehole/Geoprobe/Monitoring Well Installation Log, (as necessary)
- Groundwater Well Development Log
- Groundwater Well Inspection Form

- Groundwater Purge & Sample Collection Log – Low Flow
- Investigative-Derived Waste Container Log
- Photographic Log
- Real-Time Air Monitoring Log
- Sample Summary Collection Logs (groundwater and soil/slag-fill)
- Tailgate Safety Meeting Form
- Test Pit Excavation Log
- Underground/Overhead Utility Checklist for Sampling
- Variance Log (as necessary)
- Water Level Monitoring Record
- Well Completion Detail: Stick-up (Monitoring Well/Piezometer)
- Well Completion Detail: Stick-up (Temporary Well)

Examples of the field forms are provided in the QAPP under separate cover.

4.10 Site Mapping & Survey

The investigation locations identified in this Work Plan were selected based on historical site features and operations. Because few historical site features remain, X-Y coordinates for all proposed test pit locations will be determined and marked in the field using a Trimble GeoXT handheld GPS unit. Monitoring well locations and elevations will be measured by TurnKey's resident surveyor. All sample locations and remaining site monuments will be measured relative to a fixed benchmark and a base map will be prepared.

An isopotential map showing the general direction of groundwater flow will be prepared based on water level measurements relative to USGS vertical datum. The maps will be provided with the RI report.

5.0 REMEDIAL INVESTIGATION/ALTERNATIVES ANALYSIS REPORT

At the completion of the RI fieldwork, a comprehensive RI/AAR Report will be prepared to summarize the tasks described in the following sections.

5.1 Remedial Investigation Report

The RI section of the RI/AAR Report will include the following information and documentation, consistent with the NYSDEC's DER-10 Technical Guidance for Site Investigation and Remediation (Ref. 2).

- Introduction and background.
- A description of the site and the investigation areas.
- A description of the field procedures and methods used during the RI.
- A discussion of the nature and rationale for any significant variances from the scope of work described in this Work Plan.
- The data obtained during the RI and historical data considered by Benchmark to be of useable quality. This will include geochemical data, field measurements, etc.
- The results of an assessment of the achievement of RI acceptance/performance criteria as specified in the QAPP.
- Comparative criteria that may be used to calculate cleanup levels during the alternatives analysis report (AAR) process, such as NYSDEC Soil Cleanup Objectives and other pertinent regulatory standards or criteria.
- A discussion of contaminant fate and transport. This will provide a description of the hydrologic parameters of the Site, and an evaluation of the lateral and vertical movement of groundwater.
- Conclusions regarding the extent and character of environmental impact in the media being investigated.
- The conclusions of the qualitative exposure assessment and fish and wildlife impact analysis, including any recommendations for more detailed assessments, if applicable.
- Supporting materials for RI data. These will include boring logs, monitoring well construction diagrams, laboratory analytical reports, and similar information.

In addition, TurnKey will require third-party data review by a qualified, independent data validation expert. Specifically, a Data Usability Summary Report (DUSR) will be

prepared, with appropriate data qualifiers added to the results. The DUSR will follow NYSDEC format per the NYSDEC's September 1997 DUSR guidelines and draft DER-10 guidance. The DUSR and any necessary qualifications to the data will be appended to the RI report.

5.2 Alternative Analysis Report

The Alternative Analysis Report (AAR) will include a remedial alternatives evaluation for on-site groundwater and soil/slag-fill on portions of the Site if determined, based on the Remedial Investigation and reasonably anticipated future Site use, to exhibit elevated concentrations of constituents of concern. The AAR will meet the requirements identified in NYSDEC Standards, Criteria, and Guidance (SCGs) (e.g. Part 375 SCOs and GA Groundwater Quality Standards)

Based on the remedial action objectives (RAOs) and cleanup goals established for the Site, volumes and areas of media potentially requiring remediation will be calculated. General Response Actions will then be delineated to address each of the Site problem areas. These response actions will form the foundation for the development and screening of applicable remedial alternatives against the following criteria as described in 6NYCRR 375-1.8(f):

- Protection of Human Health and the Environment
- Compliance with Standards, Criteria, & Guidance (SCGs)
- Short-term Effectiveness & Impacts
- Long-term Effectiveness & Permanence
- Reduction of Toxicity, Mobility, or Volume
- Implementability
- Cost
- Land Use

In addition, the criteria of Community Acceptance will be considered based on public comments on the RI/AAR Report and proposed remedial action. Following the screening of alternatives, a comparative analysis will be performed against the above criteria. The comparative analysis will allow for better understanding of the relative advantages and disadvantages of each of the alternatives, and will facilitate recommendation of a remedial action.

6.0 INVESTIGATION SUPPORT DOCUMENTS

6.1 Site-Wide Health and Safety Plan (HASP)

A Health and Safety Plan (HASP) has been prepared in accordance with 40 CFR 300.150 of the NCP and 29 CFR 1910.120 for the entire Tecumseh property. The HASP will be enforced by TurnKey and any subcontractors engaged in RI field activities in accordance with the requirements of 29 CFR 1910.120. The HASP covers all on-site investigation activities. TurnKey's HASP is provided for informational purposes in Appendix C. Subcontractors will be required to develop and implement a HASP as or more stringent than TurnKey's HASP. Health and safety activities will be monitored throughout the Remedial Investigation. A member of the field team will be designated to serve as the on-site Health and Safety Officer throughout the field program. This person will report directly to the Project Manager and the Corporate Health and Safety Coordinator. The HASP will be subject to revision as necessary, based on new information that is discovered during the field investigation.

The HASP also includes a contingency plan that addresses potential site-specific emergencies, and a Community Air Monitoring Plan (CAMP) that describes required particulate and vapor monitoring to protect the neighboring community during intrusive site investigation activities. The HASP and CAMP will be modified/expanded as appropriate if significant site invasive activities are performed, such as those associated with a remedial alternative involving soil/slag-fill excavation. The CAMP is consistent with the requirements for community air monitoring at remediation sites as established by the New York State Department of Health (NYSDOH) and NYSDEC. Accordingly, it follows procedures and practices outlined under NYSDOH's Generic Community Air Monitoring Plan (dated June 20, 2000) and NYSDEC Technical Assistance and Guidance Memorandum (TAGM) 4031: Fugitive Dust Suppression and Particulate Monitoring Program at Inactive Hazardous Waste Sites.

6.2 Citizen Participation Plan (CP Plan)

In accordance with NYSDEC's Brownfield Cleanup Program guidance, a Citizen Participation Plan (CP Plan) is required for the Phase IA Business Park investigative

activities. The CP Plan, included as Appendix D, meets the requirements of Attachment 2 of the NYSDEC Technical Administrative Guidance Memorandum (TAGM) DER-97-4058 and NYSDEC's Draft DER-10 guidance. TurnKey will coordinate and lead community relations throughout the course of the project.

6.3 Quality Assurance Project Plan (QAPP)

A Quality Assurance Project Plan (QAPP) will be prepared as a stand-alone document (under separate cover) for the RI activities described herein. The QAPP dictates implementation of the investigation tasks delineated in this Work Plan. A Sampling and Analysis Plan (SAP) identifying methods for sample collection, decontamination, handling, and shipping, is provided as Section 4.0 of the QAPP. The RI project management methods, organizational structure, and schedule are also included in the QAPP.

The QAPP will assure the accuracy and precision of data collection during the site characterization and data interpretation periods. The QAPP identifies procedures for sample collection to mitigate the potential for cross-contamination, as well as analytical requirements necessary to assure compliance with USEPA SW-846 methodology. The QAPP has been prepared in accordance with USEPA's Requirements for Quality Assurance Project Plans for Environmental Data Operations (Ref. 3); the EPA Region II CERCLA Quality Assurance Manual (Ref. 4), and NYSDEC's December 2002 draft DER-10 Technical Guidance for Site Investigation and Remediation (Ref. 2).

7.0 PROJECT SCHEDULE AND SEQUENCE OF THE WORK

Figure 4 presents a tentative project schedule for the major tasks to be performed in support of the RI/AAR. As indicated, start of field activities is dependent on NYSDEC approval of the RI Work Plan.

8.0 REFERENCES

1. URS Consultants, Inc., *RCRA Facility Investigation (RFI) Report for the Former Bethlehem Steel Corporation Facility, Lackawanna, New York, Parts I through VII*, prepared for Bethlehem Steel Corporation, October 2004.

2. New York State Department of Environmental Conservation. *Draft DER-10; Technical Guidance for Site Investigation and Remediation.* December 2002.

3. U.S. Environmental Protection Agency. *Requirements for Quality Assurance Project Plans for Environmental Data Operations (EPA QA/R-5).* October 1998.

4. U.S. Environmental Protection Agency, Region II. *CERCLA Quality Assurance Manual, Revision I.* October 1989.

TABLES

TABLE 1

SUMMARY OF APRIL 2007 SURFACE SOIL DATA

RI/AAR Work Plan
Phase IA Business Park Area
Lackawanna, New York

Parameter[1]	Sample Location and Analysis			Part 375 Commercial SCOs
	BP1A-SS-01	BP1A-SS-02	BP1A-SS-03	
TCL SVOCs (mg/Kg)				
Acenaphthene	0.76 J	10 D	74	**500** [b]
Acenaphthylene	0.88 J	26 D	300 D	**500** [b]
Anthracene	1.7 J	15 D	110	**500** [b]
Benzo (a) anthracene	**8.9**	5.1	**69**	**5.6**
Benzo (b) fluoranthene	**15**	4.3	**46**	**5.6**
Benzo (k) fluoranthene	5 J	1.5	12	**56**
Benzo (g,h,i) perylene	9.2	1.8	18	**500** [b]
Benzo (a) pyrene	12	4.2	51	**1** [f]
Bis(2-ethylhexyl) phthalate	ND	0.2	ND	**-**
Chrysene	9.8	4.2	50	**56**
Dibenzo (a,h) anthracene	**2.3**	0.52	**5.3**	**0.56**
Dibenzofuran	0.51 J	2.8	34	**-**
Di-n-octyl phthalate	2 B	0.21 B	ND	**-**
Fluoranthene	13	16 D	110	**500** [b]
Fluorene	0.56 J	16 D	170 D	**500** [b]
Indeno (1,2,3-cd) pyrene	**7.8**	1.5	**16**	**5.6**
2 - Methylnaphthalene	0.53 J	61 D	800 D	**-**
Naphthalene	11 J	110 D	**1500 D**	**500** [b]
N-nitrosodiphenylamine	ND	ND	2.9 J	**-**
Phenanthrene	6.1	48 D	480 D	**500** [b]
Pyrene	11	22 D	110 J	**500** [b]
TCL PCBs (mg/Kg)				
Aroclor 1016	ND	ND	ND	**1**
Aroclor 1221	ND	ND	ND	**1**
Aroclor 1232	ND	ND	ND	**1**
Aroclor 1242	ND	ND	ND	**1**
Aroclor 1248	ND	ND	ND	**1**
Aroclor 1254	0.17 J	ND	ND	**1**
Aroclor 1260	ND	0.24 J	0.37	**1**
Metals (mg/Kg)				
Arsenic	8.6	**54.6**	13.8	**16** [f]
Barium	63.8	**6630**	80.4	**400**
Cadmium	1.6	6.3	3.4	**9.3**
Chromium	56.2	130	207	**1500**
Lead	676	373	1090	**1000**
Mercury	2.2	0.24	0.73	**2.8** [j]
Silver	ND	0.78	ND	**1500**

Notes:

1. Only those parameters detected at a min. of one sample location are presented in this table; all other compounds were reported as non-detect.

Definitions:

J = Estimated value; result is less than the sample quantitation limit but greater than zero.
B = Analyte is found in associated blank, as well as in the sample .
D = Identified in an analysis at the secondary dilution factor.
ND = parameter was analyzed for, but not detected
b = The SCOs for commercial use were capped at a maximum value of 500 ppm.
f = For constituents where the calculated SCO was lower than the rural soil background concentration as determined by the DEC/DOH rural soil survey, the rural soil background concentration is used as the Track 2 SCO value for this site.
j = This SCO is lower of the values for mercury (elemental) or mercury (inorganic salts).

BOLD = Above Part 375 Commercial SCOs.

TABLE 2

CONSTITUENTS OF POTENTIAL CONCERN (COPCs)

RI/AAR Work Plan
Phase IA Business Park Area
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*

COMPOUND	CAS #
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*
Total Metals	
(Method6010B)	
Arsenic	*7440-38-2*
Cadmium	*7440-43-9*
Chromium	*7440-47-3*
Lead	*7439-92-1*
Mercury *(Method 7470A(water) and 7471A(s*	*7439-97-6*
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 3

EXPANDED PARAMETER LIST

RI/AAR Work Plan
Phase IA Business Park Area
Lackawanna, New York

Collected 1 per 10 samples per matrix

COMPOUND	CAS #
TCL Volatile Organic Compounds	
(Method 8260B - full list)	
(plus STARS Method 8021 parameters)	
Acetone	67-64-1
Benzene	71-43-2
Bromoform	75-25-2
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
1,2,4-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 (Fre	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

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	
(Method6010B)	
Antimony	7440-38-2
Arsenic	7440-38-2
Barium	7440-39-3
Cadmium	7440-43-9
Chromium	7440-47-3
Lead	7439-92-1
Mercury (Method 7470A(water) and 7471A(solid))	7439-97-6
Nickel	7440-02-0
Potassium	7440-09-7
Selenium	7782-49-2
Silver	7440-22-4
Thallium	7440-28-0
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 4

ANALYTICAL PROGRAM QUALITY ASSURANCE/ QUALITY CONTROL SUMMARY

RI/AAR Work Plan
Phase IA Business Park Area
Lackawanna, New York

Matrix	Parameter [1]	No. Samples	Estimated Number of QC Samples[4]			
			Trip Blank [2]	MS [3]	MSD [3]	Blind Duplicate [3]
Soil/Fill - Subsurface	STARS VOCs [5]	4	NA	1	1	
	TCL VOCs[8]	2	NA	1	1	1
	TCL SVOCs (BN only)[6]	15	NA	1	1	
	TCL SVOCs (full list)[9]	2	NA	1	1	1
	TCL PCBs[11]	4	NA	1	1	1
	COPC Metals[7]	15	NA	1	1	
	TAL Metals + CN [10]	2	NA	1	1	1
Soil/Fill - Surface	TCL VOCs[8]	1	NA			
	TCL SVOCs (BN only)[6]	1	NA			
	TCL PCBs[11]	9	NA			
	COPC Metals[7]	4	NA			
	TAL Metals + CN [10]	1	NA	1	1	1
Groundwater	STARS VOCs [5]	5	1			
	TCL VOCs[8]	1	1	1	1	1
	TCL SVOCs (BN only)[6]	5	NA			
	TCL SVOCs (full list)[9]	1	NA	1	1	1
	TCL PCBs[11]	6	NA	1	1	1
	COPC Metals[7]	5	NA			
	TAL Metals + CN [10]	1	NA	1	1	1
Transformer Liquid	TCL PCBs[11]	TBD	NA			
Wipe - Surface	TCL PCBs[11]	TBD	NA			

Notes:

1. All analyses will be performed via SW-846 methodologies with Category B equivalent deliverables package.
2. Trip blanks will be submitted to the laboratory each day groundwater volatile organic samples are collected.
3. Blind duplicate and MS/MSD samples will be collected at a frequency of 1 per 20 samples collected.
4. Equipment blanks will be collected each day non-dedicated equipment is used; dedicated sampling equipment will be used for soil/fill and groundwater sample collection.
5. VOCs include: STARS List VOCs via Method 8021.
6. SVOCs include: TCL SVOCs via Method 8270C, base-neutrals (BN) only.
7. Metals include: arsenic (6010B), cadmium (6010B), chromium (6010B), lead (6010B), mercury (7470A for water; 7471A for soil).
8. Full TCL list of VOCs via Method 8260B, plus the STARS List VOCs via Method 8021; total number of samples to be determined.
9. Full TCL list of SVOCs via Method 8270C, including base-neutrals and acid extractables.
10. TAL Metals plus cyanide.
11. PCBs include the full TCL list of PCBs via Method 8082.

Acronyms:

BN = base neutral SVOC compounds
MS = matrix spike
MSD = matrix spike duplicate
NA = Not Applicable
STARS = Spill Technology And Remediation Series; NYSDEC
TBD = to be determined

TABLE 5

SOIL/FILL ANALYTICAL PROGRAM SUMMARY

RI/AAR Work Plan
Phase IA Business Park Area
Lackawanna, New York

Investigation Location	Rationale	Estimated Number of Samples	STARS List VOCs	Full List VOCs 1	SVOCs (BN only)	TCL SVOCs	PCBs	COPC Metals	TAL Metals & CN
Subsurface Soil/Fill Locations (Test Pits)									
BP1A-TP-1	General Coverage: No known or suspected impact	1	TBD	TBD	1			1	
BP1A-TP-2		1	TBD	TBD	1			1	
BP1A-TP-3		1	TBD	TBD	1			1	
BP1A-TP-4		1	TBD	TBD	1			1	
BP1A-TP-5	Blowing Engine House No. 3	1		1		1	1		1
BP1A-TP-6	Former Pumping Station No. 1	1	TBD	TBD	1			1	
BP1A-TP-7	General Coverage: No known or suspected impact	1	TBD	TBD	1			1	
BP1A-TP-8	Steam Station No. 1/Boiler House No. 3	1	TBD	TBD	1			1	
BP1A-TP-9	12,000-gallon Fuel Oil Tank	1		1		1	1		1
BP1A-TP-10		1	1		1			1	
BP1A-TP-11	Gas Mixing House	1	1		1			1	
BP1A-TP-12		1	1		1			1	
BP1A-TP-13	Substation 7F (3 transformers)	1	TBD	TBD	1		1	1	
BP1A-TP-14		1	TBD	TBD	1		1	1	
BP1A-TP-15	Power House No. 1 (Equipment Shop)	1	1		1			1	
BP1A-TP-16	General Coverage: No known or suspected impact	1	TBD	TBD	1			1	
BP1A-TP-17		1	TBD	TBD	1			1	
Surface Soil/Fill Locations									
BP1A-SS-04	Inside Former Blowing Engine House No. 3	1					1		
BP1A-SS-05		1					1		
BP1A-SS-06		1					1		
BP1A-SS-07		1					1		
BP1A-SS-08		1					1		
BP1A-SS-09	Former exhaust stack area	1						1	
BP1A-SS-10		1						1	
BP1A-SS-11	Former ash hopper area	1			1			1	
BP1A-SS-12	Former barometric condenser cold well area	1					1		
BP1A-SS-13		1		1			1		1
BP1A-SS-14	Former substation No. 15 & dust collection silo area	1					1	1	
BP1A-SS-15		1					1		
Test Pit Totals:		**17**	**4**	**2**	**15**	**2**	**4**	**15**	**2**
Surface Soil Totals:		**12**	**0**	**1**	**1**	**0**	**9**	**4**	**1**

Notes:

1. Full List VOCs = TCL VOCs plus STARS List VOCs via Method 8021B.
2. All samples to be collected from 0-2 fbgs interval unless field observations indicate greater impact with depth. A minimum of one per 10 samples shall be collected from 2 fbgs to bottom depth.
3. All locations shall be sampled and archived by the laboratory for potential analysis / reanalysis.

Acronyms:

VOCs = volatile organic compounds
SVOCs = semi-volatile organic compounds
TCL = Target Compound List
TAL = Target Analyte List
BN = Base Neutrals
PCBs = Polychlorinated Biphenyls
STARS = Spill Technology And Remediation Series; NYSDEC
CN = cyanide
COPCs = Constituents of Potential Concern
TBD = To Be Determined, based on PID measurement and visual and/or olfactory observations.
SWMU = Solid Waste Management Unit
SS = surface soil
TP = Test Pit
TP = Test Pit

TABLE 6

SUMMARY OF ELECTRICAL TRANSFORMERS

RI/AAR Work Plan
Phase IA Business Park Area
Lackawanna, New York

Building & Location	TurnKey I.D. Number	Serial Number (if legible or present)	Gallons of Oil in Transformer	Gallons of Oil in Switch (if present)	Power Rating (KVA)	Comments
POWERHOUSE NO. 1						**43 transformers**
inside, north end of building	T-1	--	9	na	10	converted 25 Hz to 60 Hz
inside, east wall, north end	T-2	5T45201	10	na	15	converted to 120/240 volt
	T-3	--	10	na	15	converted 25 Hz to 60 Hz
inside, east wall, north end near middle, 15' off floor on wall	T-4	--	10	na	10	
	T-5	--	20	na	15	converted 25 Hz to 60 Hz
	T-6	--	20	na	15	converted 25 Hz to 60 Hz
	T-7	--	20	na	15	converted 25 Hz to 60 Hz
	T-8	21317-11	20	na	15	converted 25 Hz to 60 Hz
inside, north end of building, on floor, disconnected	T-9	--	15	na	10	<50 ppm PCB label
	T-10	296863	13	na	10	<50 ppm PCB label
	T-11	820437	15	na	10	<50 ppm PCB label
inside, middle of building, east wall 15' off floor on wall	T-12	--	10	na	10	
	T-13	--	10	na	10	
	T-14	--	10	na	10	
	T-15	--	non-oil	na	10	square box
	T-16	--	10	na	10	rectangular box
	T-17	--	20	na	10	
	T-18	--	20	na	10	
	T-19	--	20	na	10	octagonal
inside, middle of building, east side on floor	T-20	21320-2	16	na	15	orange color
inside, south of office, middle of building 15' off floor on wall	T-21	--	20	na	10	octagonal
	T-22	--	20	na	10	octagonal
	T-23	--	20	na	10	octagonal
inside, middle of building, on top of shower room	T-24	--	10	na	10	
outside, middle of building east wall	T-25	--	20	na	--	"#43 bank", <50 ppm PCB label
	T-26	710795	1000	na	1000	retested < 50 ppm - removed for slavage
	T-27	710794	1000	na	1000	retested < 50 ppm - removed for slavage
	T-28	710796	1000	na	1000	retested < 50 ppm - removed for slavage
inside, south end of building, east wall on top of battery backup room	T-29	--	15	na	10	
	T-30	--	20	na	10	
	T-31	--	20	na	10	
	T-32	--	20	na	10	
	T-33	--	25	na	15	converted 25 Hz to 60 Hz
	T-34	--	25	na	15	converted 25 Hz to 60 Hz
	T-35	--	25	na	15	converted 25 Hz to 60 Hz
inside, N end of building, W wall, 15' off floor, S end of control room	T-36	--	15	na	25	
inside, southwest corner of building, 15' off floor behind piping	T-37	--	10	na	10	
inside, south end of building, east wall	T-38	12049	400	na	1500	retested < 50 ppm - removed for slavage
	T-39	5009 911	316	na	1500	retested < 50 ppm - removed for slavage
outside, middle of building, west side, fenced area, coverd w/ roof	T-40	E-687152	685	30	2800	retested < 50 ppm - removed for slavage
	T-41	E-687121	685	30	2800	retested < 50 ppm - removed for slavage
outside, 100' south of previous 2 transformers, fenced	T-42	--	Unknown	Unknown	13800 volts	active, could not access I.D. plate
outside, south end of building, within piping	T-43	--	10	na	10	
STEAM STATION NO. 1 and BOILER HOUSE NO. 3						**14 transformers**
inside, 2nd floor, middle of building	T-44	--	25	na	15	
	T-45	--	25	na	15	
	T-46	--	25	na	15	
outside, north end near yellow garage door, east side	T-47	119236	23	na	25	converted 25 Hz to 60 Hz, leaked
	T-48	--	23	na	25	converted 25 Hz to 60 Hz, leaked
outside, 50' south from above location, eastside of building	T-49	--	25	na	15	
	T-50	--	25	na	15	
	T-51	--	25	na	15	

TABLE 6

SUMMARY OF ELECTRICAL TRANSFORMERS

RI/AAR Work Plan
Phase IA Business Park Area
Lackawanna, New York

Building & Location	TurnKey I.D. Number	Serial Number (if legible or present)	Gallons of Oil in Transformer	Gallons of Oil in Switch (if present)	Power Rating (KVA)	Comments
outside, 150' south from previous location, east side of building	T-52	59L16627	25	na	25	
	T-53	59L16618	25	na	25	
	T-54	--	25	na	25	
	T-55	--	25	na	25	
	T-56	--	25	na	25	
	T-57	--	25	na	25	
PUMPING STATION NO. 1 - former Pump House No. 2						**2 transformers**
inside, center of building, east side	T-58	--	15	na	6600 volts	building demolished, retested < 50 ppm - removed for slavage
	T-59	--	15	na	6600 volts	building demolished, retested < 50 ppm - removed for slavage
BLOWING ENGINE HOUSE NO. 3						**4 transformers**
inside, 20' off floor on east wall	T-60	--	10	na	10	
	T-61	--	20	na	15	
inside, 75' south of previous location, 20' off floor on wall	T-62	--	25	na	15	
inside, south end of building on ground	T-63	5228469	30	na	25	orange color, <50 ppm PCB label

Total Gallons Remaining (approx.): **984** **0**

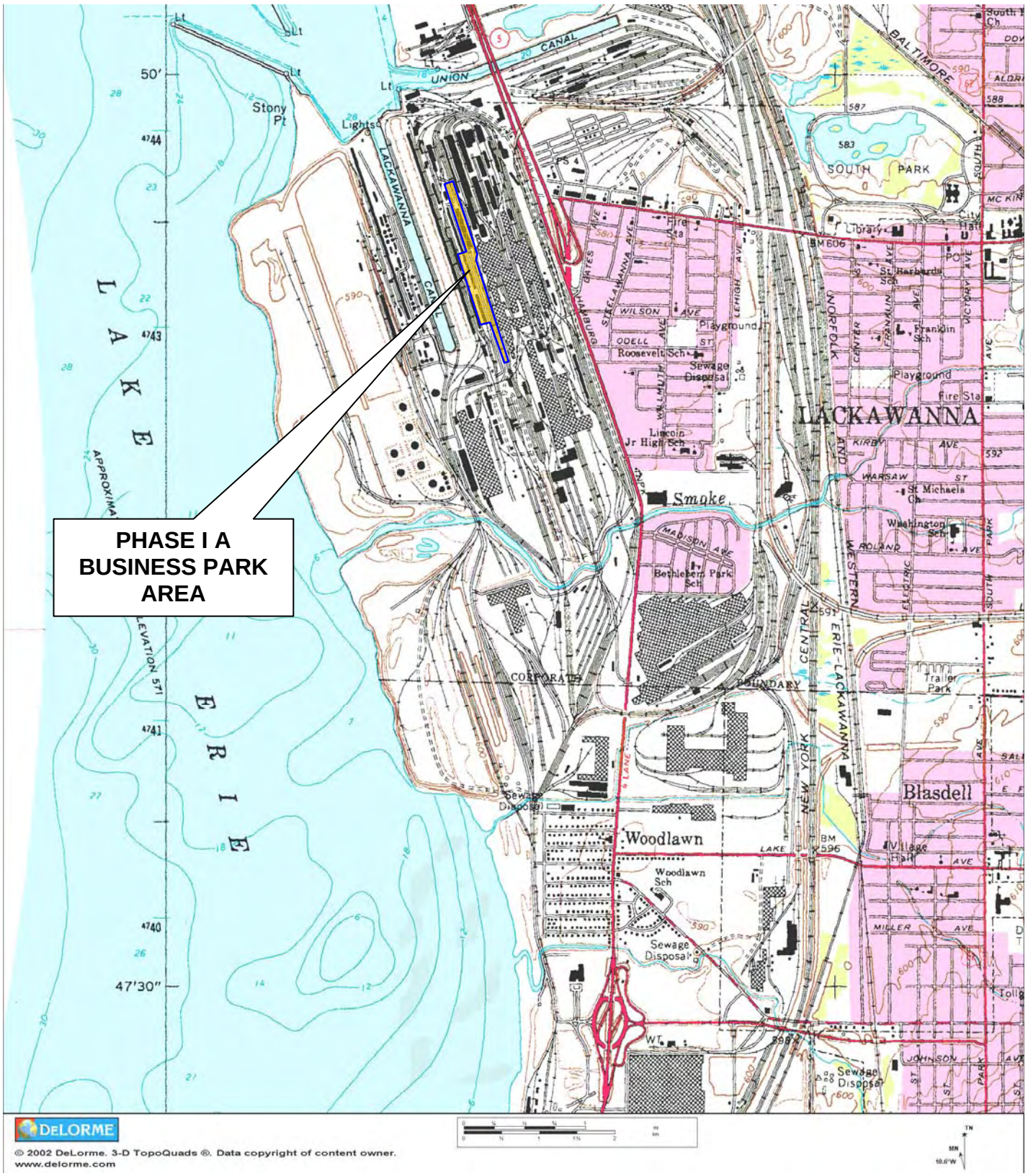
Total Pounds (approx. 8 lbs/gal.): **7,872**

TOTAL TRANSFORMERS:	**63**
Total transformers removed:	**9**
Total transformers remaining:	**54**

Color Code:
= transformer has been tested and slavaged

FIGURES

FIGURE 1



TurnKey Environmental Restoration, LLC

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

PROJECT NO.: 0071-009-350

DATE: JULY 2009

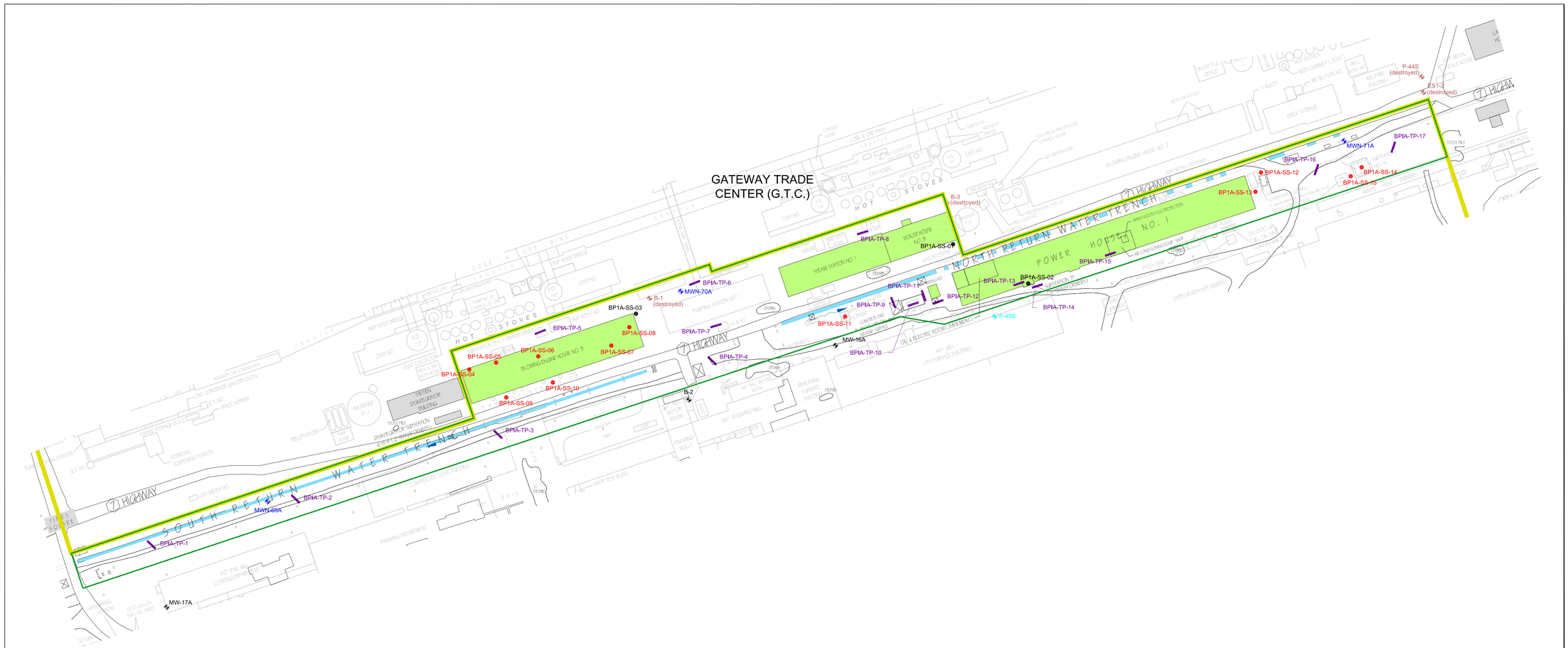
DRAFTED BY: BCH

SITE LOCATION AND VICINITY MAP

RI/AAR WORK PLAN

PHASE IA BUSINESS PARK AREA
LACKAWANNA, NEW YORK

PREPARED FOR
TECUMSEH REDEVELOPMENT INC.



LEGEND:

- TECUMSEH PROPERTY BOUNDARY
- PHASE IA BPA PROPERTY BOUNDARY (see Note 1)
- EXISTING ON-SITE BUILDING / STRUCTURE
- EXISTING SITE FEATURE (concrete, foundation, ruins, etc.)
- DEMOLISHED BUILDING AND HISTORICAL FEATURE (see Notes 2 & 3)
- EXISTING OFF-SITE BUILDING / STRUCTURE
- UTILITY POLE
- MWN-46A, MW-8A, B-1, or ES1-2 — EXISTING OFF-SITE MONITORING WELL
- P-45S — EXISTING OFF-SITE PIEZOMETER
- BP1A-SS-01 — PHASE IA BPA SURFACE SOIL SAMPLE [APRIL 2007] (3)
- MWN-69A — PROPOSED PHASE IA BPA MONITORING WELL (3)
- BP1A-SS-04 — PROPOSED PHASE IA BPA SURFACE SOIL SAMPLE (12)
- BPIA-TP-3 — PROPOSED PHASE IA BPA TEST PIT (17)

NOTES:

1. The north and south return water trenches are excluded from the Phase IA BPA site.
2. Building locations are based on historical surveys and maps, all locations should be considered approximate.
3. All buildings known to exist on site since 1944 are shown, some buildings were expanded or demolished following 1944, maximum building extents are shown.

N

120' 0' 120' 240'

SCALE: 1 INCH = 120 FEET
SCALE IN FEET
(approximate)

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

JOB NO.: 0071-009-350

REVISIONS

NO.	BY	DATE	REMARKS

SEAL

DRAWN BY: BCH
DATE: AUGUST 2009
CHECKED BY:
APPROVED BY:

PROPOSED SAMPLE LOCATIONS

RI/AAR WORK PLAN
PHASE IA BUSINESS PARK AREA
LACKAWANNA, NEW YORK

PREPARED FOR
TECUMSEH REDEVELOPMENT INC.

FIGURE 2

N

LAKE FRONT
ACCESS & GREENWAY

LAKE ERIE

STEEL WINDS 1 FACILITY
BCP SITE NO. C915505
(± 29.01 ACRES)

WIND ENERGY, GOLF COURSE AND/OR
PASSIVE RECREATION
(± 139.25 ACRES)

HEAVY INDUSTRIAL, INTERMODAL,
AND/OR GREEN ENERGY DEVELOPMENT
(± 245.96 ACRES)

STEEL WINDS 1A
FACILITY
(±9.33 ACRES)

U.S. HARBOR LINE, ESTABLISHED 1965

CITY OF LACKAWANNA
CITY OF BUFFALO

BUFFALO
HARBOR

PASSIVE
RECREATION
(CAMUs)
(± 73.81 ACRES)

STEEL WINDS 2
NON-BCP
(± 34.86 ACRES)

MEDIUM
INDUSTRIAL
(± 53.39 ACRES)

STEEL WINDS 2
NON-BCP
(± 40.71 ACRES)

STEEL WINDS 2
BCP
(± 17.39 ACRES)

STEEL WINDS 2
BCP
(± 38.11 ACRES)

PHASE IA - BUSINESS
PARK (±9.81 ACRES)

GATEWAY TRADE
CENTER (G.T.C.)

GATEWAY METROPORT SHIP CANAL

PHASE III -
BUSINESS PARK
BCP SITE NO. C915199
(± 93.31 ACRES)

PHASE I -
BUSINESS PARK
BCP SITE NO. C915197
(±101.85 ACRES)

PHASE II -
BUSINESS PARK
BCP SITE NO. C915198
(± 144.11 ACRES)

SOUTH BUFFALO
RAILROAD COMPANY

BUFFALO
SPECIALTY
STEEL

SOUTH BUFFALO
RAILROAD COMPANY

VILLAGE OF HAMBURG
CITY OF BLASDELL

VILLAGE OF BLASDELL
CITY OF LACKAWANNA

LEGEND:

- TECUMSEH PROPERTY BOUNDARY
- EXISTING BUILDING / STRUCTURE
- RAILROAD TRACK

NOTES:

1. Building locations are based on historical surveys and maps, all locations should be considered approximate.

500' 0' 500' 1000'

SCALE: 1 INCH = 500 FEET
SCALE IN FEET
(approximate)

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

JOB NO.: 0071-009-350

REVISIONS

NO.	BY	DATE	REMARKS

SEAL

DRAWN BY: BCH
DATE: AUGUST 2009
CHECKED BY:
APPROVED BY:

REDEVELOPMENT MASTER PLAN

RI/AAR WORK PLAN

PHASE IA BUSINESS PARK AREA

LACKAWANNA, NEW YORK

PREPARED FOR

TECUMSEH REDEVELOPMENT INC.

FIGURE 3

FIGURE 4
PROJECT SCHEDULE
ARCELORMITTAL TECUMSEH REDEVELOPMENT, INC.
PHASE IA BUSINESS PARK
RI/AAR WORK PLAN

ID	Task Name	2010
		Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
1	Submit Revised RI Work Plan	
2	NYSDEC RI Work Plan Review/Revisions	
3	Advertise RI Work Plan, Distribute Fact Sheet	
4	Public Comment Period	
5	Test Pit Investigation/ Soil Sampling & Analysis	
6	Groundwater Well Installation & Development	
7	Groundwater Well Sampling & Analysis	
8	PCB Sampling & Analysis	
9	Soil & Groundwater Data Review & Validation	
10	Data Summary/Interpretation	
11	Prepare RI/AAR Report	
12	NYSDEC RI/AAR Review/Revisions	
13	RI/AAR Report Fact Sheet Issued	
14	Public Comment Period	
15	Finalize RI/AAR Report