

Interim Corrective Measures (ICM)
Work Plan
SWMU P-76
Former Coke Oven Gas Lines

*Tecumseh Redevelopment Site
Lackawanna, New York*

April 2014

0071-013-125

Prepared for:

Tecumseh Redevelopment, Inc.

Prepared by:



In Association with:



**INTERIM CORRECTIVE MEASURES (ICM)
WORK PLAN
FOR
SWMU P-76
FORMER COKE OVEN GAS LINES**

**TECUMSEH REDEVELOPMENT INC.
LACKAWANNA, NEW YORK**

April 2014

0071-013-125

Prepared for:

TECUMSEH REDEVELOPMENT INC.

Prepared by:



In association with:



CERTIFICATION

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

Thomas H. Forbes

Thomas H. Forbes, P.E.

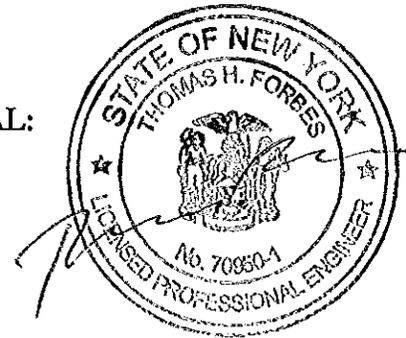
5-28-14

Date

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Registration State: New York

SEAL:



**ICM WORK PLAN FOR SWMU P-76
FORMER COKE OVEN GAS LINES**

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FORMER COKE OVEN GAS LINES**

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Appendix A Analytical Results – Prior Waste Characterization

Appendix B Site Health and Safety Plan and Community Air Monitoring Plan

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1.0 INTRODUCTION

This document presents the proposed scope of work for the decommissioning and remediation of abandoned, underground former coke oven gas lines located within the Corrective Measures Study (CMS) area of the Tecumseh Redevelopment Site in Lackawanna, New York (see Figures 1 and 2).

The lines, which are primarily comprised of buried 30-inch diameter cast iron piping, were identified on the Site in the spring of 2013 during infrastructure improvements undertaken in support of redevelopment work by Welded Tube USA on former Tecumseh property outside of the CMS area. In the summer of 2013, Welded Tube USA removed the portion of the gas line that traversed its property. In addition, an approximate 300-foot long section of the gas line was concurrently removed from the CMS buffer zone located along the northern bank of the South Return Water Trench to the southern limit of a new potable water line crossing. The gas line removal work completed to date is documented in the November 2013 Final Engineering Report for the Welded Tube USA parcel (Ref. 1).

Based upon the presence of elevated levels of naphthalene and benzene¹ in condensate residuals within the lines, the New York State Department of Environmental Conservation (NYSDEC) determined that the residuals represent source material per 6NYCRR Part 375-1.2 and as such must be removed from the remainder of the Site to the extent feasible. Within the CMS area the remaining underground lines were deemed a Solid Waste Management Unit (i.e., SWMU, specifically designated for this Site as SWMU P-76), subject to corrective action under the June 2009 CMS Order on Consent.

1.1 Purpose and Scope

This ICM Work Plan includes the planned approach for decommissioning of the abandoned coke oven gas line across portions of the Tecumseh property regulated under the RCRA Corrective Action Program. It has been prepared in accordance with Section 5.3b of NYSDEC's May 2010 DER-10 Technical Guidance for Site Investigation and Remediation (Ref. 2), and as such addresses the following items::

¹ Analysis of the semi-solid residuals within the piping indicated that the material did not exceed characteristic hazardous waste criteria per 40 CFR Part 261. Analytical results are presented in Appendix A.

- A description of the remedial actions to be undertaken as part of the ICM and the basis for the actions (Section 2.0).
- The location and description of any temporary construction facilities (Section 2.2.1).
- Dust, storm water, and erosion control measures required for minimizing potential releases of slag/fill outside the work zone during construction (Sections 2.2.2 and 2.2.3).
- Health, safety, and community air monitoring procedures (Sections 2.1.3 and 3.0).
- Equipment decontamination and site restoration requirements (Sections 2.2.4).
- Project documentation requirements and anticipated construction schedule (Sections 4.0 and 5.0).
- A summary of drawings and information to be provided as part of the Construction Completion Report (Section 4.3).

1.2 Project Organization and Responsibilities

TurnKey in association with Benchmark Environmental Engineering & Science, PLLC (TurnKey-Benchmark) will perform the work on a design-build basis with subcontract assistance from Zoladz Construction Company, Inc. which will provide equipment and personnel for: the cleaning and decommissioning of the gas line; the removal and transportation of impacted semi-solid residual material; removal of the cleaned pipe, where accessible; and site restoration activities. TurnKey-Benchmark will provide environmental oversight, community air monitoring and documentation of the remedial implementation. The NYSDEC Division of Environmental Remediation will monitor the remedial actions to verify that the work is performed in accordance with this ICM Work Plan.

2.0 IRM/ICM TECHNICAL APPROACH

2.1 Pre-Mobilization Tasks

2.1.1 Pre-Construction Meeting

A project coordination meeting will be held with key representatives of the project team before the commencement of the pipe decommissioning work. Attendees at the meeting will include TurnKey-Benchmark's Project Manager and the remediation subcontractor's Project Manager and Superintendent. NYSDEC Project Managers for the RCRA Corrective Action program activities on the Tecumseh Lackawanna property will also be notified and invited to attend. Agenda items will include:

- Construction schedule.
- Work sequencing.
- Designation of responsibilities, contact personnel, and pager/phone numbers.
- Project documentation requirements.
- Staging of equipment.
- Transportation routes/site egress.
- Health and safety requirements.
- Temporary controls (dust suppression, storm water management).
- Work hours.
- Site security.

TurnKey-Benchmark will prepare meeting minutes for distribution to attendees following the meeting.

2.1.2 Progress Meetings

Progress meetings will be conducted on a regular basis throughout the construction period. Progress meetings will be attended by TurnKey-Benchmark personnel and key subcontractors. NYSDEC and NY State Department of Health (NYSDOH) will be notified and have access to all progress meetings.

2.1.3 Health and Safety Plan Development

The April 2010 Site Health and Safety Plan (HASP) for the ATP SWMU Group Program (Appendix B), prepared in accordance with the requirements of 40 CFR 300.150 of the NCP and 29 CFR 1910.120 and previously approved by the NYSDEC for the ATP containment cell construction and SWMU S-24 consolidation work, will be used for the ICM activities. TurnKey-Benchmark will be responsible for site control and for the health and safety of its authorized site workers. All contractors and other parties involved in onsite construction will be required to develop a HASP as or more stringent than the above-referenced HASP. The HASP will be subject to revision, as necessary, based on new information that is discovered during the ICM.

TurnKey-Benchmark will also be responsible for the performance of community air monitoring during intrusive activities involving subgrade disturbance as discussed in Section 3.0 of this Work Plan.

2.2 Temporary Facilities and Controls

2.2.1 Temporary Construction Facilities

The former Water Quality Control Station 3A garage will serve as field office for the personnel involved in the subject work. Additional temporary construction facilities (field trailer) may be installed by the subcontractor. The location of the facilities will be discussed with the NYSDEC during the pre-construction meeting.

2.2.2 Dust Suppression

Dust suppression will be an integral component of the gas line excavation and backfill activities. Care will be taken to minimize dust formation during excavation and backfilling.

During excavation and backfill work, water will be sprayed across the surface of the work area as necessary to mitigate airborne dust formation and migration and assure conformance with community air monitoring thresholds. Water will also be sprayed as needed to control visible dust migration from the handling, placement, and compaction of cover material. Other dust suppression techniques that may be used to supplement the water spray include:

- Applying water on haul roads.
- Hauling materials in properly tarped containers or vehicles.
- Restricting vehicle speeds on-site.

All reasonable attempts will be made to keep visible and/or fugitive dust to a minimum and adhere to particulate emissions limits identified in the Community Air Monitoring Plan (Section 3.0).

2.2.3 Odor Control

Work practices will be modified during intrusive activities to minimize odors to the extent possible, including slow down or temporary stoppage if necessary. In addition, if odor migration from materials generated during pipe cleaning activities becomes problematic, the materials will be covered with poly sheathing and/or taken off-site for disposal in an expedited manner.

2.2.4 Storm Water Management

Due to the highly permeable nature of the slag/fill material, its coarse gradation, and the relatively flat topography in the proposed work area, storm water ponding/runoff is not expected to pose a significant soil particulate or contaminant transport pathway during IRM activities. During the pipe removal work, TurnKey-Benchmark will undertake specific measures to assure proper management of storm water and preclude migration of contaminants to surface waters or other areas of the Site. These will include:

- Direct loading of trucks where feasible to avoid staging of impacted materials.
- Use of poly sheeting for lay-down and daily cover if staging of impacted materials is necessary.
- Prompt backfill of excavations upon completion.

2.2.5 Equipment Decontamination and Site Restoration

All areas of excavation will be backfilled with non-impacted excavation spoils and supplemented with BUD-approved slag/fill compacted to grade. Roadway crossings will be top-coated with asphalt. Following the completion of site restoration activities and

prior to transport off-site, all equipment will be cleaned sufficiently to prevent off-site transport of impacted materials from the project area.

2.3 Gas Line Decommissioning

Approximately 1,234 linear feet of piping of various diameters has been identified for decommissioning on the CMS Area as depicted on Figure 2. In addition to the pipe materials, three concrete vaults are located along the length of the pipeline at places where an elevation transition occurs. These are believed to have served as access points which historically allowed maintenance personnel to remove gas condensate. In concert with the gas pipe remediation any surface water trapped within the vaults will be removed and the vaults will be decommissioned.

2.3.1 Cleaning

The coke oven gas piping will be cleaned in place prior to decommissioning via hydraulic (flush/vacuum) method. Specifically:

- Condensate pits will be exposed and trapped water and sediments will be removed via vacuum/flusher truck.
- The base of the condensate pit will be sealed, if necessary, based on visual assessment. Sealing will be via hydraulic cement, concrete or similar method.
- A pilot hole will be opened in the top of the pipe transition fitting using non-sparking equipment, and standing water/trapped condensate in the piping, if present, will be removed via the vacuum/flusher truck.
- The line will be opened within the vault and a flusher truck will jet clean the line between vaults with high pressure potable water, working from the high end of the pipe toward the low end. The discharged contents will be concurrently vacuumed from the pipe at the nearest low end condensate vault.
- The jet will be retrieved and the process repeated until no significant product is produced through the jetting operation.

- The contents of the vacuum truck will be discharged into a 25 cubic yard filter box lined with a coarse mesh filter fabric (e.g., 200 mesh). The filtrate will be pumped through a dual bag filter unit fitted with nominal 100 mesh bags followed by granular activated carbon (GAC). TurnKey-Benchmark will request a temporary discharge permit from Erie County Sewer District No. 6 to allow direct discharge of the pretreated filtrate to the sanitary sewer for final treatment at the local publicly owned treatment works (POTW). The filtration system will be staged near Water Quality Control Station (WCQS) no. 3A to facilitate discharge to a sanitary manhole along Highway 7.
- The dewatered solids will be transported to the ATP containment cell for interment or, if deemed more practical, to an offsite commercial solid waste disposal facility. Offsite disposal will require development and approval of a waste profile in accordance with the disposal facility's requirements. If onsite disposal in the ATP containment cell is selected the filter box liner will be shredded in the cell to preclude interference with future drainage within the cell. Based on the length of pipe slated for excavation and removal and an estimated 3-4" heel of semi-solid residuals in the piping, the volume of dewatered solids is expected to be approximately 15-20 cubic yards.

2.3.2 Pipe Decommissioning

Following cleaning, decommissioning will be effected through one of two methods: excavation/removal or abandonment in-place. Excavation and removal is the preferred method, however due to the presence of infrastructure over or adjacent to portions of the gas line, abandonment in place will be required at some locations. The method of decommissioning will be field determined during implementation based on the feasibility of piping removal. The planned extent of piping to be decommissioned in-place due to the presence of already identified active rail, underground utilities, or other known obstructions is depicted on Figure 2 and totals approximately 110 linear feet. Approximately 1124 linear feet of piping is proposed for decommissioning by excavation/removal.

2.3.3 Excavation/Removal

Prior to excavation work, site infrastructure drawings will be further reviewed and the underground utilities locating service will be contacted to locate and mark any underground utilities in the vicinity. If active utilities are identified, care will be taken to maintain appropriate set-backs or stabilize the utilities as necessary to allow project work to proceed. Where deemed appropriate, the gas line may be decommissioned in-place, as detailed in Section 2.3.2, to protect utilities or infrastructure or where excavation is otherwise impractical due to overlying structures.

Following in-place cleaning, overlying and adjacent slag/fill will be excavated to expose the gas line. The piping will then be removed from the excavation in sections, taking care to minimize breakage. Assuming it is suitably clean for offsite scrap disposal it will be direct-loaded to trucks for transport offsite. Alternatively, if inspection reveals that additional cleaning is required the piping will be staged on plastic sheeting, bermed up with slag around the edges, and additional mechanical cleaning (e.g., using a push rod and steel plate) will be performed prior to offsite transport and disposal. Residuals from mechanical cleaning will be transported offsite at a permitted landfill facility for disposal unless anticipated quantities vary significantly from assumptions presented herein or the materials are deemed unacceptable for landfill disposal, in which case they will be temporarily staged onsite in containers or on poly liner with a poly cover while an alternative treatment/disposal arrangement is agreed upon with the NYSDEC

The excavation limits will be field surveyed, backfilled with non-impacted overburden soil and supplemented with Beneficial Use Determination (BUD)-approved slag/fill.

At water crossings the lines will be cleaned via the same flush and vacuum approach as employed for the buried piping. The ends of the pipe will then be exposed several feet back from the crossing and slip-lined with a steel beam or smaller diameter steel pipe. The pipe will then be disconnected from bridge supports and will be lifted via a boom tethered to the slip line structure.

Environmental oversight and documentation of the gas line decommissioning will be performed by TurnKey-Benchmark personnel, including the inspection of slag/fill surrounding the excavated gas line. The slag/fill will be inspected for visual (staining or discoloration) and/or olfactory indications of gross contamination. Minor slag/fill

impacts indicative of a release from junctions or breaches in the gas line will be excavated and live-loaded for disposal offsite.

If grossly impacted materials are encountered that appear to be inconsistent with a release from the gas line and/or significant quantities of slag/fill require remediation (i.e., greater than 200 cubic yards), the NYSDEC will be contacted and a separate response/remedial action will be developed for approval. Grossly contaminated material will be handled in general accordance with the methods approved in the Soil/Fill Management Plan for the Tecumseh Redevelopment Site dated May 2008 and revised April 2009 (Ref. 3).

2.3.4 Decommissioning in Place

Approximately 110 linear feet of piping will be decommissioned in-place after cleaning due to the presence of active rail as indicated on Figure 2. Additional areas of piping may be decommissioned in-place if deemed necessary during implementation due to overlying foundations that can't be practically removed. In these instances the ends of the sections of piping to be decommissioned in place will be exposed and sealed with brick and mortar or hydraulic cement. The concrete vaults are located along the length of the pipe will be evacuated and filled with BUD-approved slag.

The location of piping and vaults decommissioned in place will be surveyed and transferred to a site map.

2.4 Impacted Material Disposal

. Dewatered sediments will be removed from the filter box by opening the end gate and loading the material to a tandem dump truck or dump trailer for transport to the landfill. .The number of truck trips and weight of material disposed (from scale receipts) will be documented for the Construction Completion Report (CCR). The estimated volume of water pretreated and discharged to the sanitary sewer will be similarly recorded and included in the CCR.

..

3.0 COMMUNITY AIR MONITORING

Real-time community air monitoring will be performed by TurnKey-Benchmark during all intrusive activities at the Site, including piping excavation and backfill. A Community Air Monitoring Plan (CAMP) is included with TurnKey-Benchmark's HASP. Particulate and vapor monitoring will be performed at a distance of approximately 100 feet downwind of the work area during excavation and backfill activities involving subgrade disturbance. In addition, no visible dust will be allowed beyond the Site perimeter during these activities. The CAMP is consistent with the requirements for community air monitoring at remediation sites as established by the NYSDOH and NYSDEC. Accordingly, it follows procedures and practices outlined under DER-10 Appendix 1A (NYSDOH's Generic Community Air Monitoring Plan) and Appendix 1B (Fugitive Dust and Particulate Monitoring).

4.0 DOCUMENTATION AND REPORTING

TurnKey-Benchmark will be on-site during excavation and backfilling to document the activities. Such documentation will include, at minimum, reports of construction activities, community air monitoring results, and photographs and sketches, as necessary.

4.1 Construction Monitoring

Standard reporting procedures for site activities will include preparation of a daily report and, when appropriate, problem identification and corrective measures reports. Appendix C contains sample project documentation forms. Information that may be included on the daily report form includes:

- Processes and locations of construction under way.
- Equipment and personnel working in the area, including subcontractors.
- A description of off-site materials received, including any quality verification (certification) documentation.

The completed reports will be available on-site and will be submitted to the NYSDEC as part of the CCR.

Problem identification and corrective measures reports will be completed whenever major field problems are encountered and corrective measures are necessary. These reports will be attached to the monthly progress reports. The NYSDEC will be promptly notified of problems requiring modifications to this Work Plan prior to proceeding or completion of the construction item. Changes or additions will be noted in the CCR as well.

Photo documentation of the remedial activities will be prepared by TurnKey-Benchmark throughout the duration of the project as necessary to convey typical work activities and whenever changed conditions or special circumstances arise. Photos will be provided in digital format.

4.2 Progress Reports

TurnKey-Benchmark will prepare and submit to NYSDEC monthly progress reports that include:

- Activities performed during reporting period.
- Results of tests or other pertinent data.
- Work scheduled for the upcoming reporting period.
- Other actions/information pertinent to the project.
- Percentage of completion, delays encountered or anticipated that may affect the schedule, and a description of efforts made to mitigate those delays or anticipated delays.

4.3 Construction Completion Report (CCR)

A CCR will be prepared and submitted to the NYSDEC within 30 days of completion of the work. The CCR will be prepared consistent with the requirements of Section 5.8 of DER-10 and will include:

- Text describing the gas line decommissioning, backfilling, and disposal activities performed, including an estimate of the volume of materials transported to the ATP containment cell and scale receipts for any materials sent offsite.
- A description of any problems encountered, 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.
- A Site or area planimetric map showing the extent of decommissioning activities (i.e., excavation(s), piping/vaults decommissioned in place).
- Copies of daily inspection reports and, if applicable, problem identification and corrective measure reports.
- A certification by a licensed NYS Professional Engineer in accordance with Section 1.5 of DER-10.

5.0 PROJECT SCHEDULE

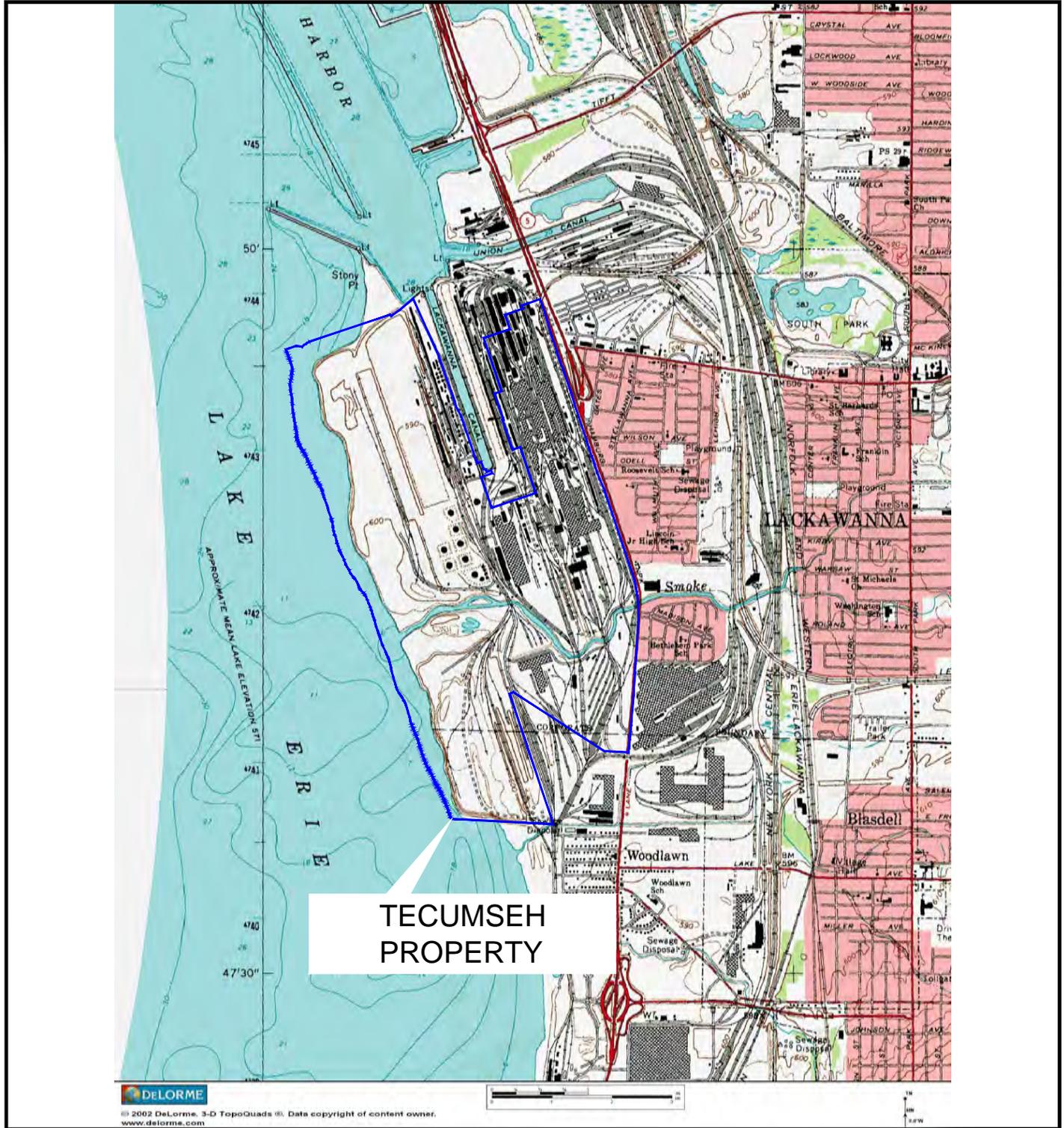
Gas line decommissioning activities will be initiated upon approval of this Work Plan, and are tentatively scheduled for initiation in summer 2014. It is anticipated that the IRM/ICM gas line decommissioning activities will be completed within approximately 4-6 weeks of initiation, barring significant weather delays. The NYSDEC Project Manager will be notified seven days in advance of all field activities.

6.0 REFERENCES

1. Benchmark Environmental Engineering & Science, PLLC. Brownfield Cleanup Program Final Engineering Report for Tecumseh Phase III-7 Business Park Site, NYSDEC Site Number C915199G, Lackawanna, New York. November 2013..
2. New York State Department of Environmental Conservation. *DER-10/Technical Guidance for Site Investigation and Remediation*. May 2010.
3. Benchmark Environmental Engineering & Science, PLLC in association with TurnKey Environmental Restoration, LLC. *Appendix B - Soil/Fill Management Plan for Tecumseh Redevelopment Site, Lackawanna, New York*. May 2008 revised April 2009.

FIGURES

FIGURE 1



DELOORME
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 www.delorme.com



2556 HAMBURG TURNPIKE
 SUITE 300
 BUFFALO, NY 14218
 (716) 856-0635

SITE LOCATION & VICINITY MAP

ICM WORK PLAN FOR SWMU P-76 FORMER COKE OVEN GAS LINE

TECUMSEH - CMS AREA
 LACKAWANNA, NEW YORK

PREPARED FOR

TECUMSEH REDEVELOPMENT INC.

PROJECT NO.: 0071-013-125

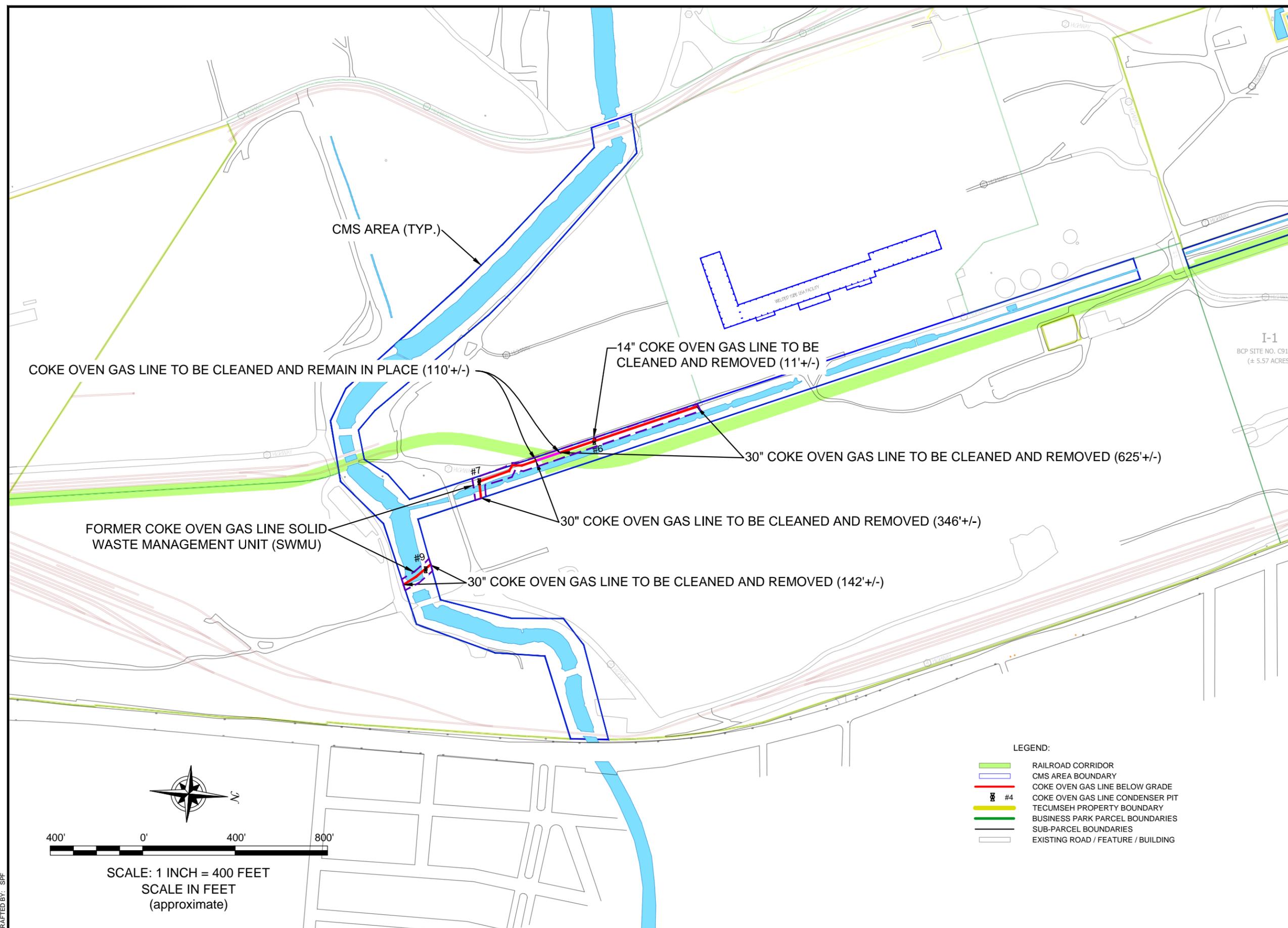
DATE: MARCH 2014

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F:\CAD\TurnKey\Tecumseh Redevelopment\Coke Oven Gas Lines\Addendum to ECM work plan for OJ2\Figure 2; Proposed Work Detail.dwg



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



TURNKEY ENVIRONMENTAL RESTORATION, LLC

JOB NO.: 0071-013-125

PROPOSED WORK DETAIL

ICM WORK PLAN FOR SWMU P-76 FORMER COKE OVEN GAS LINE
 TECUMSEH - CMS AREA
 LACKAWANNA, NEW YORK
 PREPARED FOR
 TECUMSEH REDEVELOPMENT INC.

FIGURE 2

DISCLAIMER: PROPERTY OF TURNKEY ENV. REST., LLC. IMPORTANT: THIS DRAWING PRINT IS LOANED FOR MUTUAL ASSISTANCE AND AS SUCH IS SUBJECT TO RECALL AT ANY TIME. INFORMATION CONTAINED HEREON IS NOT TO BE DISCLOSED OR REPRODUCED IN ANY FORM FOR THE BENEFIT OF PARTIES OTHER THAN NECESSARY SUBCONTRACTORS & SUPPLIERS WITHOUT THE WRITTEN CONSENT OF TURNKEY ENV. REST., LLC.

DATE: MARCH 2014
 DRAFTED BY: SHF

APPENDIX A

ANALYTICAL RESULTS PRIOR WASTE CHARACTERIZATION

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Tel: (716)691-2600

TestAmerica Job ID: 480-35871-1
Client Project/Site: Tecumseh

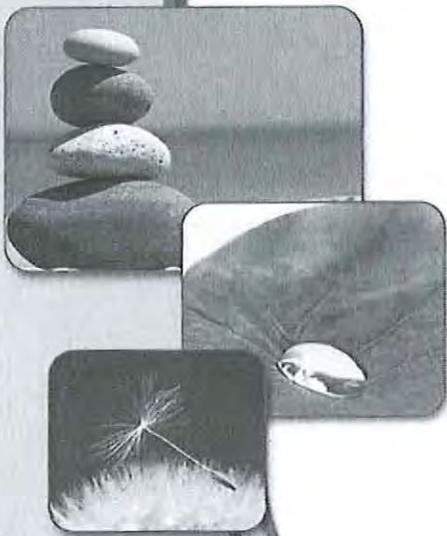
For:
Benchmark Env. Eng. & Science, PLLC
2558 Hamburg Turnpike
Suite 300
Lackawanna, New York 14218

Attn: Mr. Tom Forbes



Authorized for release by:
4/12/2013 4:26:26 PM

Brian Fischer
Project Manager II
brian.fischer@testamericainc.com



..... LINKS

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The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: Benchmark Env. Eng. & Science, PLLC
Project/Site: Tecumseh

TestAmerica Job ID: 480-35871-1

3

Qualifiers

Metals

Qualifier	Qualifier Description
*	LCS or LCSD exceeds the control limits
B	Compound was found in the blank and sample.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
□	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Case Narrative

Client: Benchmark Env. Eng. & Science, PLLC
Project/Site: Tecumseh

TestAmerica Job ID: 480-35871-1

Job ID: 480-35871-1

Laboratory: TestAmerica Buffalo

Narrative

Job Narrative
480-35871-1

Comments

No additional comments.

Receipt

The sample was received on 4/9/2013 1:45 PM; the sample arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 2.8° C.

GC/MS VOA

Method(s) 8260B: The following sample(s) was diluted due to the nature of the TCLP sample matrix: (LB 480-111979/1-A), 30" PIPE SOIL RESIDUAL (480-35871-1). Elevated reporting limits (RLs) are provided.

No other analytical or quality issues were noted.

GC/MS Semi VOA

No analytical or quality issues were noted.

Metals

Method(s) 6010B: The analytes barium and lead were detected in the TCLP Extractor Blank LB 480-111970, from batch 480-112190 at a concentration above the TestAmerica Laboratories standard quantitation limit. Sample 30" PIPE SOIL RESIDUAL (480-35871-1) associated with the blank was evaluated and determined to be at least five times less than the TCLP Regulatory Limits. The sample data was therefore accepted and no corrective action was performed.

Method(s) 6010B: Due to the nature of barium in the Extractor Blank fluid from which the Laboratory Control Sample (LCS) is created, barium is elevated in the LCS from batch 480-112190. Sample 30" PIPE SOIL RESIDUAL (480-35871-1) is below the TCLP regulatory limit for barium, therefore data is accepted.

No other analytical or quality issues were noted.

General Chemistry

No analytical or quality issues were noted.

Organic Prep

No analytical or quality issues were noted.

Detection Summary

Client: Benchmark Env. Eng. & Science, PLLC
 Project/Site: Tecumseh

TestAmerica Job ID: 480-35871-1

Client Sample ID: 30" PIPE SOIL RESIDUAL

Lab Sample ID: 480-35871-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	0.21		0.010	0.0041	mg/L	10		8260B	TCLP
3-Methylphenol	0.14		0.010	0.00040	mg/L	1		8270C	TCLP
2-Methylphenol	0.075		0.0050	0.00040	mg/L	1		8270C	TCLP
4-Methylphenol	0.14		0.010	0.00036	mg/L	1		8270C	TCLP
Pyridine	0.082		0.025	0.00041	mg/L	1		8270C	TCLP
Arsenic	0.062		0.010		mg/L	1		6010B	TCLP
Barium	0.29	B *	0.0020		mg/L	1		6010B	TCLP
Cadmium	0.0010		0.0010		mg/L	1		6010B	TCLP
Lead	0.017	B	0.0050		mg/L	1		6010B	TCLP
Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
Flashpoint	>176		50.0		Degrees F	1		1010	Total/NA

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This Detection Summary does not include radiochemical test results.

TestAmerica Buffalo

Client Sample Results

Client: Benchmark Env. Eng. & Science, PLLC
Project/Site: Tecumseh

TestAmerica Job ID: 480-35871-1

Client Sample ID: 30" PIPE SOIL RESIDUAL

Lab Sample ID: 480-35871-1

Date Collected: 04/08/13 13:30

Matrix: Solid

Date Received: 04/09/13 13:45

Method: 8260B - Volatile Organic Compounds (GC/MS) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.21		0.010	0.0041	mg/L			04/12/13 01:31	10
Carbon tetrachloride	ND		0.010	0.0027	mg/L			04/12/13 01:31	10
Chlorobenzene	ND		0.010	0.0075	mg/L			04/12/13 01:31	10
Chloroform	ND		0.010	0.0034	mg/L			04/12/13 01:31	10
1,2-Dichloroethane	ND		0.010	0.0021	mg/L			04/12/13 01:31	10
1,1-Dichloroethene	ND		0.010	0.0029	mg/L			04/12/13 01:31	10
2-Butanone (MEK)	ND		0.050	0.013	mg/L			04/12/13 01:31	10
Tetrachloroethene	ND		0.010	0.0036	mg/L			04/12/13 01:31	10
Trichloroethene	ND		0.010	0.0046	mg/L			04/12/13 01:31	10
Vinyl chloride	ND		0.010	0.0090	mg/L			04/12/13 01:31	10
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	119		66 - 137					04/12/13 01:31	10
Toluene-d8 (Surr)	93		71 - 126					04/12/13 01:31	10
4-Bromofluorobenzene (Surr)	106		73 - 120					04/12/13 01:31	10

Method: 8270C - Semivolatile Organic Compounds (GC/MS) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dichlorobenzene	ND		0.010	0.00046	mg/L		04/11/13 14:28	04/12/13 15:36	1
2,4-Dinitrotoluene	ND		0.0050	0.00045	mg/L		04/11/13 14:28	04/12/13 15:36	1
Hexachlorobenzene	ND		0.0050	0.00051	mg/L		04/11/13 14:28	04/12/13 15:36	1
Hexachlorobutadiene	ND		0.0050	0.00068	mg/L		04/11/13 14:28	04/12/13 15:36	1
Hexachloroethane	ND		0.0050	0.00059	mg/L		04/11/13 14:28	04/12/13 15:36	1
3-Methylphenol	0.14		0.010	0.00040	mg/L		04/11/13 14:28	04/12/13 15:36	1
2-Methylphenol	0.075		0.0050	0.00040	mg/L		04/11/13 14:28	04/12/13 15:36	1
4-Methylphenol	0.14		0.010	0.00036	mg/L		04/11/13 14:28	04/12/13 15:36	1
Nitrobenzene	ND		0.0050	0.00029	mg/L		04/11/13 14:28	04/12/13 15:36	1
Pentachlorophenol	ND		0.010	0.0022	mg/L		04/11/13 14:28	04/12/13 15:36	1
Pyridine	0.082		0.025	0.00041	mg/L		04/11/13 14:28	04/12/13 15:36	1
2,4,5-Trichlorophenol	ND		0.0050	0.00048	mg/L		04/11/13 14:28	04/12/13 15:36	1
2,4,6-Trichlorophenol	ND		0.0050	0.00061	mg/L		04/11/13 14:28	04/12/13 15:36	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
2,4,6-Tribromophenol	99		52 - 132				04/11/13 14:28	04/12/13 15:36	1
2-Fluorobiphenyl	90		48 - 120				04/11/13 14:28	04/12/13 15:36	1
2-Fluorophenol	47		20 - 120				04/11/13 14:28	04/12/13 15:36	1
Nitrobenzene-d5	80		46 - 120				04/11/13 14:28	04/12/13 15:36	1
p-Terphenyl-d14	89		67 - 150				04/11/13 14:28	04/12/13 15:36	1
Phenol-d5	33		16 - 120				04/11/13 14:28	04/12/13 15:36	1

Method: 6010B - Metals (ICP) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.062		0.010		mg/L		04/11/13 09:40	04/11/13 17:40	1
Barium	0.29	B *	0.0020		mg/L		04/11/13 09:40	04/11/13 17:40	1
Cadmium	0.0010		0.0010		mg/L		04/11/13 09:40	04/11/13 17:40	1
Chromium	ND		0.0040		mg/L		04/11/13 09:40	04/11/13 17:40	1
Lead	0.017	B	0.0050		mg/L		04/11/13 09:40	04/11/13 17:40	1
Selenium	ND		0.015		mg/L		04/11/13 09:40	04/11/13 17:40	1
Silver	ND		0.0030		mg/L		04/11/13 09:40	04/11/13 17:40	1

TestAmerica Buffalo

Client Sample Results

Client: Benchmark Env. Eng. & Science, PLLC
 Project/Site: Tecumseh

TestAmerica Job ID: 480-35871-1

Client Sample ID: 30" PIPE SOIL RESIDUAL

Lab Sample ID: 480-35871-1

Date Collected: 04/08/13 13:30

Matrix: Solid

Date Received: 04/09/13 13:45

Method: 7470A - Mercury (CVAA) - TCLP									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		04/11/13 11:00	04/11/13 15:50	1

General Chemistry									
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Flashpoint	>176		50.0		Degrees F			04/10/13 12:00	1

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Surrogate Summary

Client: Benchmark Env. Eng. & Science, PLLC
Project/Site: Tecumseh

TestAmerica Job ID: 480-35871-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Solid

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)		
		12DCE (66-137)	TOL (71-126)	BFB (73-120)
LCS 480-112340/4	Lab Control Sample	109	97	103
MB 480-112340/5	Method Blank	112	94	95

Surrogate Legend
 12DCE = 1,2-Dichloroethane-d4 (Surr)
 TOL = Toluene-d8 (Surr)
 BFB = 4-Bromofluorobenzene (Surr)

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Solid

Prep Type: TCLP

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)		
		12DCE (66-137)	TOL (71-126)	BFB (73-120)
480-35871-1	30" PIPE SOIL RESIDUAL	119	93	106
LB 480-111979/1-A LB	Method Blank	116	93	92

Surrogate Legend
 12DCE = 1,2-Dichloroethane-d4 (Surr)
 TOL = Toluene-d8 (Surr)
 BFB = 4-Bromofluorobenzene (Surr)

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Matrix: Solid

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)					
		TBP (52-132)	FBP (48-120)	2FP (20-120)	NBZ (46-120)	TPH (67-150)	PHL (16-120)
LCS 480-112271/2-A	Lab Control Sample	97	86	51	88	91	36
MB 480-112271/1-A	Method Blank	78	84	48	87	95	31

Surrogate Legend
 TBP = 2,4,6-Tribromophenol
 FBP = 2-Fluorobiphenyl
 2FP = 2-Fluorophenol
 NBZ = Nitrobenzene-d5
 TPH = p-Terphenyl-d14
 PHL = Phenol-d5

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Matrix: Solid

Prep Type: TCLP

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)					
		TBP (52-132)	FBP (48-120)	2FP (20-120)	NBZ (46-120)	TPH (67-150)	PHL (16-120)
480-35871-1	30" PIPE SOIL RESIDUAL	99	90	47	80	89	33
LB 480-111970/1-D LB	Method Blank	89	88	45	95	95	31

Surrogate Legend
 TBP = 2,4,6-Tribromophenol
 FBP = 2-Fluorobiphenyl

TestAmerica Buffalo

Surrogate Summary

Client: Benchmark Env. Eng. & Science, PLLC
Project/Site: Tecumseh

TestAmerica Job ID: 480-35871-1

2FP = 2-Fluorophenol
NBZ = Nitrobenzene-d5
TPH = p-Terphenyl-d14
PHL = Phenol-d5

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QC Sample Results

Client: Benchmark Env. Eng. & Science, PLLC
Project/Site: Tecumseh

TestAmerica Job ID: 480-35871-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 480-112340/5							Client Sample ID: Method Blank			
Matrix: Solid							Prep Type: Total/NA			
Analysis Batch: 112340										
Analyte	MB MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac	
	Result	Qualifier								
Benzene	ND		0.0010	0.00041	mg/L			04/11/13 22:37	1	
Carbon tetrachloride	ND		0.0010	0.00027	mg/L			04/11/13 22:37	1	
Chlorobenzene	ND		0.0010	0.00075	mg/L			04/11/13 22:37	1	
Chloroform	ND		0.0010	0.00034	mg/L			04/11/13 22:37	1	
1,2-Dichloroethane	ND		0.0010	0.00021	mg/L			04/11/13 22:37	1	
1,1-Dichloroethene	ND		0.0010	0.00029	mg/L			04/11/13 22:37	1	
2-Butanone (MEK)	ND		0.0050	0.0013	mg/L			04/11/13 22:37	1	
Tetrachloroethene	ND		0.0010	0.00036	mg/L			04/11/13 22:37	1	
Trichloroethene	ND		0.0010	0.00046	mg/L			04/11/13 22:37	1	
Vinyl chloride	ND		0.0010	0.00090	mg/L			04/11/13 22:37	1	

Surrogate	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
1,2-Dichloroethane-d4 (Surr)	112		66 - 137		04/11/13 22:37	1
Toluene-d8 (Surr)	94		71 - 126		04/11/13 22:37	1
4-Bromofluorobenzene (Surr)	95		73 - 120		04/11/13 22:37	1

Lab Sample ID: LCS 480-112340/4							Client Sample ID: Lab Control Sample			
Matrix: Solid							Prep Type: Total/NA			
Analysis Batch: 112340										
Analyte	Spike Added	LCS LCS		Unit	D	%Rec	%Rec. Limits			
		Result	Qualifier							
Benzene	0.0250	0.0224		mg/L		89	71 - 124			
Chlorobenzene	0.0250	0.0248		mg/L		99	72 - 120			
1,2-Dichloroethane	0.0250	0.0277		mg/L		111	75 - 127			
1,1-Dichloroethene	0.0250	0.0217		mg/L		87	58 - 121			
Tetrachloroethene	0.0250	0.0253		mg/L		101	74 - 122			
Trichloroethene	0.0250	0.0243		mg/L		97	74 - 123			

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
1,2-Dichloroethane-d4 (Surr)	109		66 - 137
Toluene-d8 (Surr)	97		71 - 126
4-Bromofluorobenzene (Surr)	103		73 - 120

Lab Sample ID: LB 480-111979/1-A LB							Client Sample ID: Method Blank			
Matrix: Solid							Prep Type: TCLP			
Analysis Batch: 112340										
Analyte	LB LB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac	
	Result	Qualifier								
Benzene	ND		0.010	0.0041	mg/L			04/12/13 00:16	10	
Carbon tetrachloride	ND		0.010	0.0027	mg/L			04/12/13 00:16	10	
Chlorobenzene	ND		0.010	0.0075	mg/L			04/12/13 00:16	10	
Chloroform	ND		0.010	0.0034	mg/L			04/12/13 00:16	10	
1,2-Dichloroethane	ND		0.010	0.0021	mg/L			04/12/13 00:16	10	
1,1-Dichloroethene	ND		0.010	0.0029	mg/L			04/12/13 00:16	10	
2-Butanone (MEK)	ND		0.050	0.013	mg/L			04/12/13 00:16	10	
Tetrachloroethene	ND		0.010	0.0036	mg/L			04/12/13 00:16	10	
Trichloroethene	ND		0.010	0.0046	mg/L			04/12/13 00:16	10	

TestAmerica Buffalo

QC Sample Results

Client: Benchmark Env. Eng. & Science, PLLC
Project/Site: Tecumseh

TestAmerica Job ID: 480-35871-1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LB 480-111979/1-A LB							Client Sample ID: Method Blank			
Matrix: Solid							Prep Type: TCLP			
Analysis Batch: 112340										
Analyte	LB Result	LB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac	
Vinyl chloride	ND		0.010	0.0090	mg/L			04/12/13 00:16	10	
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac	
1,2-Dichloroethane-d4 (Surr)	116		66 - 137					04/12/13 00:16	10	
Toluene-d8 (Surr)	93		71 - 126					04/12/13 00:16	10	
4-Bromofluorobenzene (Surr)	92		73 - 120					04/12/13 00:16	10	

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: MB 480-112271/1-A							Client Sample ID: Method Blank			
Matrix: Solid							Prep Type: Total/NA			
Analysis Batch: 112498							Prep Batch: 112271			
Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac	
1,4-Dichlorobenzene	ND		0.0025	0.00012	mg/L		04/11/13 14:28	04/12/13 12:31	1	
2,4-Dinitrotoluene	ND		0.0013	0.00011	mg/L		04/11/13 14:28	04/12/13 12:31	1	
Hexachlorobenzene	ND		0.0013	0.00013	mg/L		04/11/13 14:28	04/12/13 12:31	1	
Hexachlorobutadiene	ND		0.0013	0.00017	mg/L		04/11/13 14:28	04/12/13 12:31	1	
Hexachloroethane	ND		0.0013	0.00015	mg/L		04/11/13 14:28	04/12/13 12:31	1	
3-Methylphenol	ND		0.0025	0.00010	mg/L		04/11/13 14:28	04/12/13 12:31	1	
2-Methylphenol	ND		0.0013	0.00010	mg/L		04/11/13 14:28	04/12/13 12:31	1	
4-Methylphenol	ND		0.0025	0.000090	mg/L		04/11/13 14:28	04/12/13 12:31	1	
Nitrobenzene	ND		0.0013	0.000073	mg/L		04/11/13 14:28	04/12/13 12:31	1	
Pentachlorophenol	ND		0.0025	0.00055	mg/L		04/11/13 14:28	04/12/13 12:31	1	
Pyridine	ND		0.0063	0.00010	mg/L		04/11/13 14:28	04/12/13 12:31	1	
2,4,5-Trichlorophenol	ND		0.0013	0.00012	mg/L		04/11/13 14:28	04/12/13 12:31	1	
2,4,6-Trichlorophenol	ND		0.0013	0.00015	mg/L		04/11/13 14:28	04/12/13 12:31	1	
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac	
2,4,6-Tribromophenol	78		52 - 132				04/11/13 14:28	04/12/13 12:31	1	
2-Fluorobiphenyl	84		48 - 120				04/11/13 14:28	04/12/13 12:31	1	
2-Fluorophenol	48		20 - 120				04/11/13 14:28	04/12/13 12:31	1	
Nitrobenzene-d5	87		46 - 120				04/11/13 14:28	04/12/13 12:31	1	
p-Terphenyl-d14	95		67 - 150				04/11/13 14:28	04/12/13 12:31	1	
Phenol-d5	31		16 - 120				04/11/13 14:28	04/12/13 12:31	1	

Lab Sample ID: LCS 480-112271/2-A							Client Sample ID: Lab Control Sample			
Matrix: Solid							Prep Type: Total/NA			
Analysis Batch: 112498							Prep Batch: 112271			
Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits			
1,4-Dichlorobenzene	0.100	0.0680		mg/L		68	32 - 120			
2,4-Dinitrotoluene	0.100	0.0971		mg/L		97	65 - 154			
Hexachloroethane	0.100	0.0671		mg/L		67	14 - 101			
Pentachlorophenol	0.100	0.0978		mg/L		98	39 - 136			

TestAmerica Buffalo

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QC Sample Results

Client: Benchmark Env. Eng. & Science, PLLC
Project/Site: Tecumseh

TestAmerica Job ID: 480-35871-1

Method: 8270C - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 480-112271/2-A
Matrix: Solid
Analysis Batch: 112498

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 112271

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
2,4,6-Tribromophenol	97		52 - 132
2-Fluorobiphenyl	86		48 - 120
2-Fluorophenol	51		20 - 120
Nitrobenzene-d5	88		46 - 120
p-Terphenyl-d14	91		67 - 150
Phenol-d5	36		16 - 120

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Lab Sample ID: LB 480-111970/1-D LB
Matrix: Solid
Analysis Batch: 112498

Client Sample ID: Method Blank
Prep Type: TCLP
Prep Batch: 112271

Analyte	LB LB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
1,4-Dichlorobenzene	ND		0.010	0.00046	mg/L		04/11/13 14:28	04/12/13 13:17	1
2,4-Dinitrotoluene	ND		0.0050	0.00045	mg/L		04/11/13 14:28	04/12/13 13:17	1
Hexachlorobenzene	ND		0.0050	0.00051	mg/L		04/11/13 14:28	04/12/13 13:17	1
Hexachlorobutadiene	ND		0.0050	0.00068	mg/L		04/11/13 14:28	04/12/13 13:17	1
Hexachloroethane	ND		0.0050	0.00059	mg/L		04/11/13 14:28	04/12/13 13:17	1
3-Methylphenol	ND		0.010	0.00040	mg/L		04/11/13 14:28	04/12/13 13:17	1
2-Methylphenol	ND		0.0050	0.00040	mg/L		04/11/13 14:28	04/12/13 13:17	1
4-Methylphenol	ND		0.010	0.00036	mg/L		04/11/13 14:28	04/12/13 13:17	1
Nitrobenzene	ND		0.0050	0.00029	mg/L		04/11/13 14:28	04/12/13 13:17	1
Pentachlorophenol	ND		0.010	0.0022	mg/L		04/11/13 14:28	04/12/13 13:17	1
Pyridine	ND		0.025	0.00041	mg/L		04/11/13 14:28	04/12/13 13:17	1
2,4,5-Trichlorophenol	ND		0.0050	0.00048	mg/L		04/11/13 14:28	04/12/13 13:17	1
2,4,6-Trichlorophenol	ND		0.0050	0.00061	mg/L		04/11/13 14:28	04/12/13 13:17	1

Surrogate	LB LB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
2,4,6-Tribromophenol	89		52 - 132	04/11/13 14:28	04/12/13 13:17	1
2-Fluorobiphenyl	88		48 - 120	04/11/13 14:28	04/12/13 13:17	1
2-Fluorophenol	45		20 - 120	04/11/13 14:28	04/12/13 13:17	1
Nitrobenzene-d5	95		46 - 120	04/11/13 14:28	04/12/13 13:17	1
p-Terphenyl-d14	95		67 - 150	04/11/13 14:28	04/12/13 13:17	1
Phenol-d5	31		16 - 120	04/11/13 14:28	04/12/13 13:17	1

Method: 6010B - Metals (ICP)

Lab Sample ID: MB 480-112190/2-A
Matrix: Solid
Analysis Batch: 112451

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 112190

Analyte	MB MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Arsenic	ND		0.010		mg/L		04/11/13 09:40	04/11/13 17:20	1
Barium	ND		0.0020		mg/L		04/11/13 09:40	04/11/13 17:20	1
Cadmium	ND		0.0010		mg/L		04/11/13 09:40	04/11/13 17:20	1
Chromium	ND		0.0040		mg/L		04/11/13 09:40	04/11/13 17:20	1
Lead	ND		0.0050		mg/L		04/11/13 09:40	04/11/13 17:20	1
Selenium	ND		0.015		mg/L		04/11/13 09:40	04/11/13 17:20	1

TestAmerica Buffalo

QC Sample Results

Client: Benchmark Env. Eng. & Science, PLLC
Project/Site: Tecumseh

TestAmerica Job ID: 480-35871-1

Method: 6010B - Metals (ICP) (Continued)

Lab Sample ID: MB 480-112190/2-A
Matrix: Solid
Analysis Batch: 112451

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 112190

Analyte	MB MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Silver	ND		0.0030		mg/L		04/11/13 09:40	04/11/13 17:20	1

Lab Sample ID: LCS 480-112190/3-A
Matrix: Solid
Analysis Batch: 112451

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 112190

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Barium	1.00	1.34	*	mg/L		134	80 - 120
Cadmium	1.00	1.09		mg/L		109	80 - 120
Chromium	1.00	1.03		mg/L		103	80 - 120
Lead	1.00	1.08		mg/L		108	80 - 120
Selenium	1.00	1.20		mg/L		120	80 - 120
Silver	1.00	1.12		mg/L		112	80 - 120

Lab Sample ID: LB 480-111970/1-B LB
Matrix: Solid
Analysis Batch: 112451

Client Sample ID: Method Blank
Prep Type: TCLP
Prep Batch: 112190

Analyte	LB LB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Arsenic	ND		0.010		mg/L		04/11/13 09:40	04/11/13 17:17	1
Barium	0.349		0.0020		mg/L		04/11/13 09:40	04/11/13 17:17	1
Cadmium	ND		0.0010		mg/L		04/11/13 09:40	04/11/13 17:17	1
Chromium	ND		0.0040		mg/L		04/11/13 09:40	04/11/13 17:17	1
Lead	0.00544		0.0050		mg/L		04/11/13 09:40	04/11/13 17:17	1
Selenium	ND		0.015		mg/L		04/11/13 09:40	04/11/13 17:17	1
Silver	ND		0.0030		mg/L		04/11/13 09:40	04/11/13 17:17	1

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 480-112214/2-A
Matrix: Solid
Analysis Batch: 112393

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 112214

Analyte	MB MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Mercury	ND		0.00020		mg/L		04/11/13 11:00	04/11/13 15:43	1

Lab Sample ID: LCS 480-112214/3-A
Matrix: Solid
Analysis Batch: 112393

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 112214

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits

QC Sample Results

Client: Benchmark Env. Eng. & Science, PLLC
 Project/Site: Tecumseh

TestAmerica Job ID: 480-35871-1

Method: 7470A - Mercury (CVAA) (Continued)

Lab Sample ID: LB 480-111970/1-C LB
 Matrix: Solid
 Analysis Batch: 112393

Client Sample ID: Method Blank
 Prep Type: TCLP
 Prep Batch: 112214

Analyte	LB LB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Mercury	ND		0.00020		mg/L		04/11/13 11:00	04/11/13 15:41	1

Method: 1010 - Ignitability, Pensky-Martens Closed-Cup Method

Lab Sample ID: LCS 480-112046/1
 Matrix: Solid
 Analysis Batch: 112046

Client Sample ID: Lab Control Sample
 Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec.
							Limits
Flashpoint	81.0	80.00		Degrees F		99	97.5 - 102. 5

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QC Association Summary

Client: Benchmark Env. Eng. & Science, PLLC
Project/Site: Tecumseh

TestAmerica Job ID: 480-35871-1

GC/MS VOA

Leach Batch: 111979

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-35871-1	30" PIPE SOIL RESIDUAL	TCLP	Solid	1311	
LB 480-111979/1-A LB	Method Blank	TCLP	Solid	1311	

Analysis Batch: 112340

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-35871-1	30" PIPE SOIL RESIDUAL	TCLP	Solid	8260B	111979
LB 480-111979/1-A LB	Method Blank	TCLP	Solid	8260B	111979
LCS 480-112340/4	Lab Control Sample	Total/NA	Solid	8260B	
MB 480-112340/5	Method Blank	Total/NA	Solid	8260B	

GC/MS Semi VOA

Leach Batch: 111970

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-35871-1	30" PIPE SOIL RESIDUAL	TCLP	Solid	1311	
LB 480-111970/1-D LB	Method Blank	TCLP	Solid	1311	

Prep Batch: 112271

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-35871-1	30" PIPE SOIL RESIDUAL	TCLP	Solid	3510C	111970
LB 480-111970/1-D LB	Method Blank	TCLP	Solid	3510C	111970
LCS 480-112271/2-A	Lab Control Sample	Total/NA	Solid	3510C	
MB 480-112271/1-A	Method Blank	Total/NA	Solid	3510C	

Analysis Batch: 112498

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-35871-1	30" PIPE SOIL RESIDUAL	TCLP	Solid	8270C	112271
LB 480-111970/1-D LB	Method Blank	TCLP	Solid	8270C	112271
LCS 480-112271/2-A	Lab Control Sample	Total/NA	Solid	8270C	112271
MB 480-112271/1-A	Method Blank	Total/NA	Solid	8270C	112271

Metals

Leach Batch: 111970

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-35871-1	30" PIPE SOIL RESIDUAL	TCLP	Solid	1311	
LB 480-111970/1-B LB	Method Blank	TCLP	Solid	1311	
LB 480-111970/1-C LB	Method Blank	TCLP	Solid	1311	

Prep Batch: 112190

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-35871-1	30" PIPE SOIL RESIDUAL	TCLP	Solid	3010A	111970
LB 480-111970/1-B LB	Method Blank	TCLP	Solid	3010A	111970
LCS 480-112190/3-A	Lab Control Sample	Total/NA	Solid	3010A	
MB 480-112190/2-A	Method Blank	Total/NA	Solid	3010A	

Prep Batch: 112214

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-35871-1	30" PIPE SOIL RESIDUAL	TCLP	Solid	7470A	111970
LB 480-111970/1-C LB	Method Blank	TCLP	Solid	7470A	111970

TestAmerica Buffalo

QC Association Summary

Client: Benchmark Env. Eng. & Science, PLLC
 Project/Site: Tecumseh

TestAmerica Job ID: 480-35871-1

Metals (Continued)

Prep Batch: 112214 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 480-112214/3-A	Lab Control Sample	Total/NA	Solid	7470A	
MB 480-112214/2-A	Method Blank	Total/NA	Solid	7470A	

Analysis Batch: 112393

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-35871-1	30" PIPE SOIL RESIDUAL	TCLP	Solid	7470A	112214
LB 480-111970/1-C LB	Method Blank	TCLP	Solid	7470A	112214
LCS 480-112214/3-A	Lab Control Sample	Total/NA	Solid	7470A	112214
MB 480-112214/2-A	Method Blank	Total/NA	Solid	7470A	112214

Analysis Batch: 112451

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-35871-1	30" PIPE SOIL RESIDUAL	TCLP	Solid	6010B	112190
LB 480-111970/1-B LB	Method Blank	TCLP	Solid	6010B	112190
LCS 480-112190/3-A	Lab Control Sample	Total/NA	Solid	6010B	112190
MB 480-112190/2-A	Method Blank	Total/NA	Solid	6010B	112190

General Chemistry

Analysis Batch: 112046

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-35871-1	30" PIPE SOIL RESIDUAL	Total/NA	Solid	1010	
LCS 480-112046/1	Lab Control Sample	Total/NA	Solid	1010	

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Lab Chronicle

Client: Benchmark Env. Eng. & Science, PLLC
 Project/Site: Tecumseh

TestAmerica Job ID: 480-35871-1

Client Sample ID: 30" PIPE SOIL RESIDUAL

Lab Sample ID: 480-35871-1

Date Collected: 04/08/13 13:30

Matrix: Solid

Date Received: 04/09/13 13:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
TCLP	Leach	1311			111979	04/10/13 13:11	KB	TAL BUF
TCLP	Analysis	8260B		10	112340	04/12/13 01:31	RJ	TAL BUF
TCLP	Leach	1311			111970	04/10/13 12:04	KB	TAL BUF
TCLP	Prep	3510C			112271	04/11/13 14:28	TG	TAL BUF
TCLP	Analysis	8270C		1	112498	04/12/13 15:36	AM	TAL BUF
TCLP	Leach	1311			111970	04/10/13 12:04	KB	TAL BUF
TCLP	Prep	7470A			112214	04/11/13 11:00	JRK	TAL BUF
TCLP	Analysis	7470A		1	112393	04/11/13 15:50	JRK	TAL BUF
TCLP	Leach	1311			111970	04/10/13 12:04	KB	TAL BUF
TCLP	Prep	3010A			112190	04/11/13 09:40	SS	TAL BUF
TCLP	Analysis	6010B		1	112451	04/11/13 17:40	AH	TAL BUF
Total/NA	Analysis	1010		1	112046	04/10/13 12:00	SB	TAL BUF

Laboratory References:

TAL BUF = TestAmerica Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

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Certification Summary

Client: Benchmark Env. Eng. & Science, PLLC
Project/Site: Tecumseh

TestAmerica Job ID: 480-35871-1

Laboratory: TestAmerica Buffalo

Unless otherwise noted, all analytes for this laboratory were covered under each certification below.

Authority	Program	EPA Region	Certification ID	Expiration Date
New York	NELAP	2	10026	04-01-14

The following analytes are included in this report, but are not certified under this certification:

Analysis Method	Prep Method	Matrix	Analyte
1010		Solid	Flashpoint
6010B	3010A	Solid	Arsenic
6010B	3010A	Solid	Barium
6010B	3010A	Solid	Cadmium
6010B	3010A	Solid	Chromium
6010B	3010A	Solid	Lead
6010B	3010A	Solid	Selenium
6010B	3010A	Solid	Silver

The following analytes are included in this report, but certification is not offered by the governing authority:

Analysis Method	Prep Method	Matrix	Analyte
7470A	7470A	Solid	Mercury
8260B		Solid	Trichloroethene

Method Summary

Client: Benchmark Env. Eng. & Science, PLLC
Project/Site: Tecumseh

TestAmerica Job ID: 480-35871-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL BUF
8270C	Semivolatile Organic Compounds (GC/MS)	SW846	TAL BUF
6010B	Metals (ICP)	SW846	TAL BUF
7470A	Mercury (CVAA)	SW846	TAL BUF
1010	Ignitability, Pensky-Martens Closed-Cup Method	SW846	TAL BUF

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL BUF = TestAmerica Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

Sample Summary

Client: Benchmark Env. Eng. & Science, PLLC
Project/Site: Tecumseh

TestAmerica Job ID: 480-35871-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
480-35871-1	30" PIPE SOIL RESIDUAL	Solid	04/08/13 13:30	04/09/13 13:45

Chain of Custody Record

Temperature on Receipt _____

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TAL-4124 (1007)

Drinking Water? Yes No

Client Turn Key Env Restoration, LLC			Project Manager Tom Forbes			Date 4/18/13	Chain of Custody Number 219586
Address 2558 Hamburg Turnpike			Telephone Number (Area Code)/Fax Number 716-858-0599/0583			Lab Number	
City Duffalo	State NY	Zip Code 14218	Site Contact R. OBISZ	Lab Contact B FISCHER	Analysis (Attach list if more space is needed)		
Project Name and Location (State) Leisure/Watered Insite Site			Carrier/Waybill Number			Special Instructions/ Conditions of Receipt	
Contract/Purchase Order/Quote No.			Matrix			Containers & Preservatives	

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix				Containers & Preservatives						Analysis (Attach list if more space is needed)	Special Instructions/ Conditions of Receipt			
			Air	Aqueous	Sed	Soil	Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH					
50' pipe soil residual	4/18/13	1330			✓	✓											

Possible Hazard Identification: Non-Hazard Flammable Skin Irritant Poison B Unknown

Sample Disposal: Return To Client Disposal By Lab Archive For _____ Months (A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required: 24 Hours 48 Hours 7 Days 14 Days 21 Days Other _____

QC Requirements (Specify)

1. Relinquished By <i>[Signature]</i>	Date 4/18/13	Time	1. Received By <i>[Signature]</i>	Date 4/18/13	Time 1240
2. Relinquished By <i>[Signature]</i>	Date 4/18/13	Time 1345	2. Received By <i>[Signature]</i>	Date 4/19/13	Time 1345
3. Relinquished By	Date	Time	3. Received By	Date	Time

Comments

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

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4/12/2013

Login Sample Receipt Checklist

Client: Benchmark Env. Eng. & Science, PLLC

Job Number: 480-35871-1

Login Number: 35871

List Source: TestAmerica Buffalo

List Number: 1

Creator: Janish, Carl

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	True	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	True	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Sampling Company provided.	True	bmk
Samples received within 48 hours of sampling.	True	
Samples requiring field filtration have been filtered in the field.	N/A	
Chlorine Residual checked.	N/A	

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APPENDIX B

SITE HEALTH AND SAFETY PLAN AND COMMUNITY AIR MONITORING PLAN

Health and Safety Plan (HASP)

*Tecumseh Redevelopment Site
ATP SWMU Group
Lackawanna, New York*

April 2010

0071-007-140

Prepared For:

Tecumseh Redevelopment, Inc.
Richfield, Ohio

Prepared By:



HEALTH AND SAFETY PLAN

TECUMSEH REDEVELOPMENT SITE ATP SWMU GROUP AREA LACKAWANNA, NEW YORK

April 2010

0071-008-140

Prepared for:

Tecumseh Redevelopment, Inc.

Prepared by:



In association with:



**HEALTH AND SAFETY PLAN
TECUMSEH REDEVELOPMENT SITE
ATP SWMU GROUP AREA**

ACKNOWLEDGEMENT

Plan Reviewed by (initial):

Corporate Health and Safety Director: _____

Project Manager: _____

Designated Site Safety and Health Officer: _____

Acknowledgement:

I acknowledge that I have reviewed the information contained in this site-specific Health and Safety Plan, and understand the hazards associated with performance of the field activities described herein. I agree to comply with the requirements of this plan.

NAME (PRINT)	SIGNATURE	DATE
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____



**HEALTH AND SAFETY PLAN
TECUMSEH REDEVELOPMENT SITE**

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**HEALTH AND SAFETY PLAN
TECUMSEH REDEVELOPMENT SITE**

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1.0 INTRODUCTION

1.1 General

In accordance with OSHA requirements contained in 29 CFR 1910.120, this Health and Safety Plan (HASP) describes the specific health and safety practices and procedures to be employed by TurnKey Environmental Restoration, LLC and Benchmark Environmental Engineering & Science, PLLC employees (referred to jointly hereafter as “TurnKey-Benchmark”) during RCRA Corrective Measures Study (CMS) activities on the Tecumseh Redevelopment Site (former Bethlehem Steel Lackawanna Works), located in the City of Lackawanna, New York.. This HASP presents procedures for TurnKey-Benchmark employees who will be involved with investigation and remedial field activities; it does not cover the activities of other contractors, subcontractors, or other individuals on the Site. These firms will be required to develop and enforce their own HASPs as discussed in Section 2.0. TurnKey-Benchmark accepts no responsibility for the health and safety of contractor, subcontractor, or other personnel.

This HASP presents information on known Site health and safety hazards using available historical information, and identifies the equipment, materials and procedures that will be used to eliminate or control these hazards. Environmental monitoring will be performed during the course of field activities to provide real-time data for on-going assessment of potential hazards.

1.2 Background

Tecumseh Redevelopment, Inc. (Tecumseh) owns approximately 1,100 acres of land at 1951 Hamburg Turnpike, approximately 2 miles south of the City of Buffalo (see Figure 1). 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 (Hamburg Turnpike) on the east; Lake Erie to the west and northwest; and other industrial properties to the south and the northeast. Figure 2 provides an overview of the Tecumseh Property, including major leased or licensed parcels, and adjacent parcels owned by others.

The Tecumseh property is located on a portion of the site of the former Bethlehem Steel Corporation (BSC) Lackawanna Works in a primarily industrial area. The former BSC-

Lackawanna Facility was used for iron and steel production since the beginning of the 20th century. Steel-making operations were discontinued by the end of 1983, and, by the mid-1990s, most of the steel-making facilities on the west side of Hamburg Turnpike (NYS Route 5) had been demolished. In September 2001, BSC's coke oven operation was terminated leaving only a galvanized products mill operating by BSC at the Site. Galvanizing operations were acquired by ISG Lackawanna LLC pursuant to the asset purchase agreement that was approved by the Bankruptcy Court in April 2003. ISG, Inc. merged with Mittal Steel Inc. in July 2005 to become Mittal Steel USA Inc. In June 2007, Mittal Steel merged with Arcelor Steel, with Mittal Steel USA, Inc. and Tecumseh Redevelopment, Inc. respectively becoming ArcelorMittal USA, Inc. and Tecumseh Redevelopment, Inc.

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 January 2005. In August 2006, USEPA approved the RFI and terminated Bethlehem Steel's (and in turn Tecumseh's) obligation 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.

1.3 Known and Suspected Environmental Conditions

The CMS Areas were formerly used to house portions of BSC's steel making operations. The slag and other industrial fill materials contain highly variable and sometimes elevated concentrations of metals, as well as semi-volatile and volatile organic compounds (SVOCs and VOCs). In addition, groundwater in contact with the soil/fill materials described above may exhibit elevated concentrations of corresponding soluble COPCs (e.g., BTEX) in groundwater.

1.4 Parameters of Interest

Constituents of potential concern (COPCs) at the Site include:

- **Volatile Organic Compounds (VOCs)** – VOCs present at elevated concentration may include benzene, toluene, ethylbenzene, and xylene (i.e., BTEX). These VOCs are typically associated with storage and handling of petroleum products such as gasoline.
- **Semi-Volatile Organic Compounds (SVOCs)** – SVOCs present at elevated concentrations may include base-neutral semi-volatile organic compounds (SVOCs) from oils, greases, and fuels associated with the operation of locomotive engines, steel mills, petroleum bulk storage, and other historic steel manufacturing operations. Specifically, polynuclear aromatic hydrocarbons (PAHs), which are byproducts of incomplete combustion and impurities in petroleum products. Although PAHs are commonly found in urban soil environments, they may be present at the Site at concentrations that are elevated compared to typical “background” levels. Naphthalene is a natural component of fossil fuels such as petroleum and coal; it is also formed when natural products such as wood or tobacco are burned.
- **Inorganic Compounds** – Inorganic COPCs potentially present at elevated concentrations due to steel making activities may include arsenic, cadmium, chromium, lead, and mercury. Several of these parameters are components of coke and slag, which are prevalent in the planned work area.

In addition, groundwater in contact with the soil/fill materials described above may exhibit elevated concentrations of corresponding soluble COPCs (e.g., BTEX).

1.5 Overview of ECM Activities

TurnKey-Benchmark personnel will be on-site to observe ECM remedial activities. General field activities to be completed are described below. Detailed ECM activities are more fully described in the ECM Work Plan.

1. **Soil/Fill Excavation:** TurnKey-Benchmark will monitor all soil/fill excavations (e.g., test pit investigations, SWMU material excavation) and related activities to visually inspect soil/fill for evidence of contamination.
2. **Soil/Fill Sampling:** TurnKey-Benchmark may collect surface and subsurface soil/fill samples during and following excavation in accordance with any work plan requirements.

3. **Surface Water Management:** During excavation, surface water and/or perched groundwater infiltration may occur. TurnKey-Benchmark will direct the contractor to collect and characterize the surface water for proper disposal.
4. **Sediment and Surface Water Sampling:** TurnKey-Benchmark may collect sediment and surface water samples in accordance with any work plan requirements.
5. **Groundwater Monitoring Well Installation and Sampling:** TurnKey-Benchmark may install groundwater monitoring wells and collect samples for the long-term groundwater monitoring program in accordance with any work plan requirements.
6. **Groundwater Remediation:** TurnKey-Benchmark personnel will oversee all groundwater remediation at the Site, if any.
7. **Subgrade Work:** Significant grading of the Site may be required before implementation of remedial measures (e.g., cover system placement).
8. **Cover Soil Placement:** A soil cover system will be placed over select portions of the Site to reduce potential contact with impacted soil/fill. TurnKey-Benchmark will oversee installation of the cover system.

2.0 ORGANIZATIONAL STRUCTURE

This chapter of the HASP describes the lines of authority, responsibility, and communication as they pertain to health and safety functions at the Site. The purpose of this chapter is to identify the personnel who impact the development and implementation of the HASP and to describe their roles and responsibilities. This chapter also identifies other contractors and subcontractors involved in work operations and establishes the lines of communications among them for health and safety matters. The organizational structure described in this chapter is consistent with the requirements of 29 CFR 1910.120(b)(2). This section will be reviewed by the Project Manager and updated as necessary to reflect the current organizational structure at this Site.

2.1 Roles and Responsibilities

All Turnkey-Benchmark personnel on the ATP SWMU Group Area Site must comply with the minimum requirements of this HASP. The specific responsibilities and authority of management, safety and health, and other personnel on this site are detailed in the following paragraphs.

2.1.1 Corporate Health and Safety Director

The TurnKey-Benchmark Corporate Health and Safety Director is ***Mr. Thomas H. Forbes, P.E.*** The Corporate Health and Safety Director responsible for developing and implementing the Health and Safety program and policies for Benchmark Environmental Engineering & Science, PLLC and TurnKey Environmental Restoration, LLC, and consulting with corporate management to ensure adequate resources are available to properly implement these programs and policies. The Corporate Health and Safety Director coordinates TurnKey-Benchmark's Health and Safety training and medical monitoring programs and assists project management and field staff in developing site-specific health and safety plans.

2.1.2 Project Manager

The Project Manager for this site is ***Thomas H. Forbes, P.E.*** The Project Manager has the responsibility and authority to direct all TurnKey-Benchmark work operations at the

site. The Project Manager coordinates safety and health functions with the Site Safety and Health Officer, and bears ultimate responsibility for proper implementation of this HASP. He may delegate authority to expedite and facilitate any application of the program, including modifications to the overall project approach as necessary to circumvent unsafe work conditions. Specific duties of the Project Manager include:

- Preparing and coordinating the site work plan.
- Providing TurnKey-Benchmark workers with work assignments and overseeing their performance.
- Coordinating health and safety efforts with the Site Safety and Health Officer (SSHO).
- Reviewing the emergency response coordination plan to assure its effectiveness.
- Serving as the primary liaison with site contractors and the property owner.

2.1.3 Site Safety and Health Officer

The Site Safety and Health Officer (SSHO) for this site is **Mr. Richard L. Dubisz**. The qualified alternate SSHO is **Mr. Thomas Behrendt**. The SSHO reports to the Project Manager. The SSHO is on-site or readily accessible to the site during all work operations and has the authority to halt site work if unsafe conditions are detected. The specific responsibilities of the SSHO are:

- Managing the safety and health functions for TurnKey-Benchmark personnel on the site.
- Serving as the point of contact for safety and health matters.
- Ensuring that TurnKey-Benchmark field personnel working on the site have received proper training (per 29 CFR Part 1910.120(e)), that they have obtained medical clearance to wear respiratory protection (per 29 CFR Part 1910.134), and that they are properly trained in the selection, use and maintenance of personal protective equipment, including qualitative respirator fit testing.
- Performing or overseeing site monitoring as required by the HASP.

- Assisting in the preparation and review of the HASP
- Maintaining site-specific safety and health records as described in this HASP
- Coordinating with the Project Manager, Site Workers and Contractor's SSHO as necessary for safety and health efforts.

2.1.4 Site Workers

Site workers are responsible for: complying with this HASP or a more stringent HASP, if appropriate (i.e., Contractor and Subcontractor's HASP); using proper PPE; reporting unsafe acts and conditions to the SSHO; and following the safety and health instructions of the Project Manager and SSHO.

2.1.5 Other Site Personnel

Other site personnel who will have health and safety responsibilities will include the Remedial Contractor, who will be responsible for developing, implementing and enforcing a Health and Safety Plan equally stringent or more stringent than TurnKey-Benchmark's HASP. TurnKey-Benchmark assumes no responsibility for the health and safety of anyone outside its direct employ. Each Contractor's HASP shall cover all non-TurnKey/Benchmark site personnel. Each Contractor shall assign a SSHO who will coordinate with TurnKey-Benchmark's SSHO as necessary to ensure effective lines of communication and consistency between contingency plans.

In addition to TurnKey-Benchmark and Contractor personnel, other individuals who may have responsibilities in the work zone include subcontractors and governmental agencies performing site inspection work (i.e., the New York State Department of Environmental Conservation). The Contractor shall be responsible for ensuring that these individuals have received OSHA-required training (29 CFR 1910.120(e)), including initial, refresher and site-specific training, and shall be responsible for the safety and health of these individuals while they are on-site.

3.0 HAZARD EVALUATION

Due to the presence of certain contaminants at the Site, the possibility exists that workers will be exposed to hazardous substances during field activities. The principal points of exposure would be through direct contact with and incidental ingestion of soil/fill, and through the inhalation of contaminated particles or vapors, during test pit completion, monitoring well installation, and soil/fill excavation. In addition, the use of heavy construction equipment (e.g., dozer) will also present conditions for potential physical injury to workers. Further, since work will be performed outdoors, the potential exists for heat/cold stress to impact workers, especially those wearing protective equipment and clothing. Adherence to the medical evaluations, worker training relative to chemical hazards, safe work practices, proper personal protection, environmental monitoring, establishment work zones and site control, appropriate decontamination procedures and contingency planning outlined herein will reduce the potential for chemical exposures and physical injuries.

3.1 Chemical Hazards

As discussed in Section 1.3, historic activities related to the former steel-manufacturing operations and facilities have resulted in elevated concentrations of VOCs, SVOCs, and inorganic compounds in Site soils and groundwater. Table 1 identifies maximum concentrations of COPCs detected throughout the Tecumseh property. Table 2 lists exposure limits for airborne concentrations of the COPCs identified in Section 1.4 of this HASP. Brief descriptions of the toxicology of the prevalent constituents of potential concern and related health and safety guidance and criteria are provided below.

- **Arsenic (CAS #7440-38-2)** is a naturally occurring element and is usually found combined with one or more elements, such as oxygen or sulfur. Inhalation is a more important exposure route than ingestion. First phase exposure symptoms include nausea, vomiting, diarrhea and pain in the stomach. Prolonged contact is corrosive to the skin and mucus membranes. Arsenic is considered a Group A human carcinogen by the USEPA. Exposure via inhalation is associated with an increased risk of lung cancer. Exposure via the oral route is associated with an increased risk of skin cancer.

- **Benzene (CAS #71-43-2)** poisoning occurs most commonly through inhalation of the vapor; however, benzene can also penetrate the skin and poison in that way. Locally, benzene has a comparatively strong irritating effect, producing erythema and burning and, in more severe cases, edema and blistering. Exposure to high concentrations of the vapor (i.e., 3,000 ppm or higher) may result in acute poisoning characterized by the narcotic action of benzene on the central nervous system. In acute poisoning, symptoms include confusion, dizziness, tightening of the leg muscles, and pressure over the forehead. Chronic exposure to benzene (i.e., long-term exposure to concentrations of 100 ppm or less) may lead to damage of the blood-forming system. Benzene is very flammable when exposed to heat or flame and can react vigorously with oxidizing materials.
- **Cadmium** is a natural element and is usually combined with one or more elements, such as oxygen, chloride or sulfur. Breathing high levels of cadmium severely damages the lungs and can cause death. Ingestion of high levels of cadmium severely irritates the stomach, leading to vomiting and diarrhea. Long term exposure to lower levels of cadmium leads to a buildup of this substance in the kidneys and possible kidney disease. Other potential long term effects are lung damage and fragile bones. Cadmium is suspected to be a human carcinogen.
- **Chromium (CAS #7440-47-3)** is used in the production of stainless steel, chrome plated metals, and batteries. Two forms of chromium, hexavalent (CR+6) and trivalent (CR+3) are toxic. Hexavalent chromium is an irritant and corrosive to the skin and mucus membranes. Chromium is a potential occupational carcinogen. Acute exposures to dust may cause coughing, wheezing, headaches, pain and fever.
- **Ethylbenzene (CAS #100-41-4)** is a component of automobile gasoline. Over-exposure may cause kidney, skin liver and/or respiratory disease. Signs of exposure may include dermatitis, irritation of the eyes and mucus membranes, headache. Narcosis and coma may result in more severe cases.
- **Lead (CAS #7439-92-1)** can affect almost every organ and system in our bodies. The most sensitive is the central nervous system, particularly in children. Lead also damages kidneys and the immune system. The effects are the same whether it is breathed or swallowed. Lead may decrease reaction time, cause weakness in fingers, wrists or ankles and possibly affect memory. Lead may cause anemia.
- **Mercury (CAS #7439-97-6)** is used in industrial applications for the production of caustic and chlorine, and in electrical control equipment and apparatus. Over-exposure to mercury may cause coughing, chest pains, bronchitis, pneumonia, indecision, headaches, fatigue and salivation. Mercury is a skin and eye irritant.

- **Naphthalene (CAS #91-20-3)** is a white solid with a strong smell; is also called mothballs, moth flakes, white tar, and tar camphor. Naphthalene is a natural component of fossil fuels such as petroleum and coal; it is also formed when natural products such as wood or tobacco are burned. Acute exposure to naphthalene can cause systemic reactions, including nausea, headache, diaphoresis, hematuria, fever, anemia, liver damage, vomiting, convulsions, and coma. Acute exposure can also cause eye irritation, confusion, excitement, malaise, abdominal pain, irritation to the bladder, profuse sweating, jaundice, hematopoietic, hemoglobinuria, renal shutdown, and dermatitis. Exposure to a large amount of naphthalene can cause red blood cells to be damaged or destroyed, a condition called hemolytic anemia, which leads to fatigue, lack of appetite, restlessness, and a pale appearance. Poisoning may occur by ingestion of large doses, skin and/or eye contact, inhalation, or skin absorption.
- **Polycyclic Aromatic Hydrocarbons (PAHs)** are formed as a result of the pyrolysis and incomplete combustion of organic matter such as fossil fuel. PAH aerosols formed during the combustion process disperse throughout the atmosphere, resulting in the deposition of PAH condensate in soil, water and on vegetation. In addition, several products formed from petroleum processing operations (e.g., roofing materials and asphalt) also contain elevated levels of PAHs. Hence, these compounds are widely dispersed in the environment. PAHs are characterized by a molecular structure containing three or more fused, unsaturated carbon rings. Seven of the PAHs are classified by USEPA as probable human carcinogens (USEPA Class B2). These are: benzo(a)pyrene; benzo(a)anthracene; benzo(b)fluoranthene; benzo(k)fluoranthene; chrysene; dibenzo(a,h)anthracene; and indeno(1,2,3-cd)pyrene. The primary route of exposure to PAHs is through incidental ingestion and inhalation of contaminated particulates. PAH's are characterized by an organic odor, and exist as oily liquids in pure form. Acute exposure symptoms may include acne-type blemishes in areas of the skin exposed to sunlight.
- **Toluene (CAS #108-88-3)** is a common component of paint thinners and automobile fuel. Acute exposure predominantly results in central nervous system depression. Symptoms include headache, dizziness, fatigue, muscular weakness, drowsiness, and coordination loss. Repeated exposures may cause removal of lipids from the skin, resulting in dry, fissured dermatitis.
- **Xylenes (o, m, and p) (CAS #95-47-6, 108-38-3, and 106-42-3)** are colorless, flammable liquids present in paint thinners and fuels. Acute exposure may cause central nervous system depression, resulting in headache, dizziness, fatigue, muscular weakness, drowsiness, and coordination loss. Repeated exposures may

also cause removal of lipids from the skin, producing dry, fissured dermatitis. Exposure of high concentrations of vapor may cause eye irritation and damage, as well as irritation of the mucus membranes.

With respect to the anticipated ECM activities discussed in Section 1.5, possible routes of exposure to the above-mentioned contaminants are presented in Table 3. The use of proper respiratory equipment, as outlined in Section 7.0 of this HASP, will minimize the potential for exposure to airborne contamination. Exposure to contaminants through dermal and other routes will also be minimized through the use of protective clothing (Section 7.0), safe work practices (Section 6.0), and proper decontamination procedures (Section 12.0).

3.2 Physical Hazards

ECM remedial activities at the Tecumseh site may present the following physical hazards:

- The potential for physical injury during heavy construction equipment use, such as grading equipment, excavators, and tandem trucks.
- The potential for heat/cold stress to employees during the summer/winter months (see Section 10.0).
- The potential for slip and fall injuries due to rough, uneven terrain and/or open excavations.

These hazards represent only some of the possible means of injury that may be present during investigation and remedial activities at the Site. Since it is impossible to list all potential sources of injury, it shall be the responsibility of each individual to exercise proper care and caution during all phases of the work.

4.0 TRAINING

4.1 Site Workers

All personnel performing investigation and remedial activities at the ATP SWMU Group Area Site (such as, but not limited to, equipment operators, general laborers, and supervisors) and who may be exposed to hazardous substances, health hazards, or safety hazards and their supervisors/managers responsible for the Site shall receive training in accordance with 29 CFR 1910.120(e) before they are permitted to engage in operations in the exclusion zone or contaminant reduction zone. This training includes an initial 40-hour Hazardous Waste Site Worker Protection Course, an 8-hour Annual Refresher Course subsequent to the initial 40-hour training, and 3 days of actual field experience under the direct supervision of a trained, experienced supervisor. Additional site-specific training shall also be provided by the SSHO prior to the start of field activities. A description of topics to be covered by this training is provided below.

4.1.1 Initial and Refresher Training

Initial and refresher training is conducted by a qualified instructor as specified under OSHA 29 CFR 1910.120(e)(5), and is specifically designed to meet the requirements of OSHA 29 CFR 1910.120(e)(3) and 1910.120(e)(8). The training covers, as a minimum, the following topics:

- OSHA HAZWOPER regulations.
- Site safety and hazard recognition, including chemical and physical hazards.
- Medical monitoring requirements.
- Air monitoring, permissible exposure limits, and respiratory protection level classifications.
- Appropriate use of personal protective equipment (PPE), including chemical compatibility and respiratory equipment selection and use.
- Work practices to minimize risk.
- Work zones and site control.
- Safe use of engineering controls and equipment.
- Decontamination procedures.
- Emergency response and escape.

- Confined space entry procedures.
- Heat and cold stress monitoring.
- Elements of a Health and Safety Plan.
- Spill containment.

Initial training also incorporates workshops for PPE and respiratory equipment use (Levels A, B and C), and respirator fit testing. Records and certification received from the course instructor documenting each employee's successful completion of the training identified above are maintained on file at TurnKey-Benchmark's Buffalo, NY office. Contractors and Subcontractors are required to provide similar documentation of training for all their personnel who will be involved in on-site work activities.

Any employee who has not been certified as having received health and safety training in conformance with 29 CFR 1910.120(e) is prohibited from working in the exclusion and contamination reduction zones, or to engage in any on-site work activities that may involve exposure to hazardous substances or wastes.

4.1.2 Site Training

ATP SWMU Group Area Site workers are given a copy of the HASP and provided a site-specific briefing prior to the commencement of work to ensure that employees are familiar with the HASP and the information and requirements it contains. The site briefing shall be provided by the SSHO prior to initiating field activities and shall include:

- Names of personnel and alternates responsible for site safety and health.
- Safety, health and other hazards present on the Site.
- The Site lay-out including work zones and places of refuge.
- The emergency communications system and emergency evacuation procedures.
- Use of PPE.
- Work practices by which the employee can minimize risks from hazards.
- Safe use of engineering controls and equipment on the site.
- Medical surveillance, including recognition of symptoms and signs of over-exposure as described in Chapter 5 of this HASP.
- Decontamination procedures as detailed in Chapter 12 of this HASP.
- The emergency response plan as detailed in Chapter 15 of this HASP.

- Confined space entry procedures, if required, as detailed in Chapter 13 of this HASP.
- The spill containment program as detailed in Chapter 9 of this HASP.
- Site control as detailed in Chapter 11 of this HASP.

Supplemental health and safety briefings will also be conducted by the SSHO on an as-needed basis during the course of the work. Supplemental briefings are provided as necessary to notify employees of any changes to this HASP as a result of information gathered during ongoing site characterization and analysis. Conditions for which the SSHO may schedule additional briefings include, but are not limited to: a change in Site conditions (i.e., based on monitoring results); changes in the work schedule/plan; newly discovered hazards; and safety incidents occurring during Site work.

4.2 Supervisor Training

On-site safety and health personnel who are directly responsible for or who supervise the safety and health of workers engaged in hazardous waste operations (i.e., SSHO) shall receive, in addition to the appropriate level of worker training described in Section 4.1, above, 8 additional hours of specialized supervisory training, in compliance with 29 CFR 1910.120(e)(4).

4.3 Emergency Response Training

Emergency response training is addressed in Appendix A of this HASP, Emergency Response Plan.

4.4 Site Visitors

Each Contractor's SSHO will provide a site-specific briefing to all site visitors and other non-TurnKey/Benchmark personnel who enter the ATP SWMU Group Area Site beyond the site entry point. The site-specific briefing will provide information about site hazards, the site layout including work zones and places of refuge, the emergency communications system and emergency evacuation procedures, and other pertinent safety and health requirements as appropriate.

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Site visitors will not be permitted to enter the exclusion zone or contaminant reduction zones unless they have received the level of training required for site workers as described in Section 4.1.



5.0 MEDICAL MONITORING

Medical monitoring examinations are provided to TurnKey-Benchmark employees as stipulated under 29 CFR Part 1910.120(f). These exams include initial employment, annual and employment termination physicals for all TurnKey-Benchmark employees involved in hazardous waste site field operations. Post-exposure examinations are also provided for employees who may have been injured, received a health impairment, or developed signs or symptoms of over-exposure to hazardous substances or were accidentally exposed to substances at concentrations above the permissible exposure limits without necessary personal protective equipment. Such exams are performed as soon as possible following development of symptoms or the known exposure event.

Medical evaluations are performed by ADP Screening & Selection Services, an occupational health care provider under contract with TurnKey-Benchmark. ADP's local facility is Health Works WNY, Seneca Square Plaza, 1900 Ridge Road, West Seneca, New York 14224. The facility can be reached at (716) 823-5050 to schedule routine appointments or post-exposure examinations.

Medical evaluations are conducted according to the TurnKey-Benchmark Medical Monitoring Program and include an evaluation of the workers' ability to use respiratory protective equipment. The purpose of the medical evaluation is to determine an employee's fitness for duty on hazardous waste sites; and to establish baseline medical data. The examinations include:

- Occupational/medical history review.
- Physical exam, including vital sign measurement.
- Spirometry testing.
- Eyesight testing.
- Audio testing (minimum baseline and exit, annual for employees routinely exposed to greater than 85db).
- EKG (for employees >40 yrs age or as medical conditions dictate).
- Chest X-ray (baseline and exit, and every 5 years).
- Blood biochemistry (including blood count, white cell differential count, serum multiplastic screening).
- Medical certification of physical requirements (i.e., sight, musculoskeletal, cardiovascular) for safe job performance and to wear respiratory protection equipment.

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In conformance with OSHA regulations, TurnKey-Benchmark will maintain and preserve medical records for a period of 30 years following termination of employment. Employees are provided a copy of the physician's post-exam report, and have access to their medical records and analyses.

6.0 SAFE WORK PRACTICES

All TurnKey-Benchmark employees shall conform to the following safe work practices during all on-site work activities conducted within the exclusion and contamination reduction zones:

- Eating, drinking, chewing gum or tobacco, smoking, or any practice that increases the probability of hand-to-mouth contact is strictly prohibited.
- The hands and face must be thoroughly washed upon leaving the work area and prior to engaging in any activity indicated above.
- Respiratory protective equipment and clothing must be worn by all personnel entering the site as required by the HASP or as modified by the site safety officer. Excessive facial hair (i.e., beards, long mustaches or sideburns) that interferes with the satisfactory respirator-to-face seal is prohibited.
- Contact with surfaces/materials either suspected or known to be contaminated will be avoided to minimize the potential for transfer to personnel, cross contamination and need for decontamination.
- Medicine and alcohol can synergize the effects of exposure to toxic chemicals. Due to possible contraindications, use of prescribed drugs should be reviewed with the TurnKey-Benchmark occupational physician. Alcoholic beverage and illegal drug intake are strictly forbidden during the workday.
- All personnel shall be familiar with standard operating safety procedures and additional instructions contained in this Health and Safety Plan.
- On-site personnel shall use the “buddy” system. No one may work alone (i.e., out of earshot or visual contact with other workers) in the exclusion zone.
- Personnel and equipment in the contaminated area shall be minimized, consistent with effective site operations.
- All employees have the obligation to immediately report and if possible, correct unsafe work conditions.
- Use of contact lenses on-site will not be permitted. Spectacle kits for insertion into full-face respirators will be provided for TurnKey-Benchmark employees, as requested and required.

The recommended specific safety practices for working around the contractor's equipment (e.g., backhoes, bulldozers, excavators, etc.) are as follows:

- Although the Contractor and subcontractors are responsible for their equipment and safe operation of the site, TurnKey-Benchmark personnel are also responsible for their own safety.
- Subsurface work will not be initiated without first clearing underground utility services.
- Heavy equipment should not be operated within 20 feet of overhead wires. This distance may be increased if windy conditions are anticipated or if lines carry high voltage. The site should also be sufficiently clear to ensure the project staff can move around the heavy machinery safely.
- Care should be taken to avoid overhead wires when moving heavy-equipment from location to location.
- Hard hats, safety boots and safety glasses should be worn at all times in the vicinity of heavy equipment. Hearing protection is also recommended.
- The work site should be kept neat. This will prevent personnel from tripping and will allow for fast emergency exit from the site.
- Proper lighting must be provided when working at night.
- Construction activities should be discontinued during an electrical storm or severe weather conditions.
- The presence of combustible gases should be checked before igniting any open flame.
- Personnel shall stand upwind of any construction operation when not immediately involved in sampling/logging/observing activities.
- Personnel will not approach the edge of an unsecured trench/excavation closer than 2 feet.

7.0 PERSONAL PROTECTIVE EQUIPMENT

7.1 Equipment Selection

Personal protective equipment (PPE) will be donned when work activities may result in exposure to physical or chemical hazards beyond acceptable limits, and when such exposure can be mitigated through appropriate PPE. The selection of PPE will be based on an evaluation of the performance characteristics of the PPE relative to the requirements and limitations of the Site, the task-specific conditions and duration, and the hazards and potential hazards identified at the site.

Equipment designed to protect the body against contact with known or suspect chemical hazards are grouped into four categories according to the degree of protection afforded. These categories designated A through D consistent with USEPA Level of Protection designation, are:

- **Level A:** Should be selected when the highest level of respiratory, skin and eye protection is needed.
- **Level B:** Should be selected when the highest level of respiratory protection is needed, but a lesser level of skin protection is required. Level B protection is the minimum level recommended on initial site entries until the hazards have been further defined by on-site studies. Level B (or Level A) is also necessary for oxygen-deficient atmospheres.
- **Level C:** Should be selected when the types of airborne substances are known, the concentrations have been measured and the criteria for using air-purifying respirators are met. In atmospheres where no airborne contaminants are present, Level C provides dermal protection only.
- **Level D:** Should not be worn on any site with elevated respiratory or skin hazards. This is generally a work uniform providing minimal protection.

OSHA requires the use of certain PPE under conditions where an immediate danger to life and health (IDLH) may be present. Specifically, OSHA 29 CFR 1910.120(g)(3)(iii) requires use of a positive pressure self-contained breathing apparatus, or positive pressure air-line respirator equipped with an escape air supply when chemical exposure levels present a substantial possibility of immediate serious injury, illness or death, or impair the ability to

escape. Similarly, OSHA 29 CFR 1910.120(g)(3)(iv) requires donning totally encapsulating chemical protective suits (with a protection level equivalent to Level A protection) in conditions where skin absorption of a hazardous substance may result in a substantial possibility of immediate serious illness, injury or death, or impair the ability to escape.

In situations where the types of chemicals, concentrations, and possibilities of contact are unknown, the appropriate level of protection must be selected based on professional experience and judgment until the hazards can be further characterized. The individual components of clothing and equipment must be assembled into a full protective ensemble to protect the worker from site-specific hazards, while at the same time minimizing hazards and drawbacks of the personal protective gear itself. Ensemble components are detailed below for levels A/B, C, and D protection.

7.2 Protection Ensembles

7.2.1 Level A/B Protection Ensemble

Level A/B ensembles include similar respiratory protection, however Level A provides a higher degree of dermal protection than Level B. Use of Level A over Level B is determined by: comparing the concentrations of identified substances in the air with skin toxicity data, and assessing the effect of the substance (by its measured air concentrations or splash potential) on the small area of the head and neck unprotected by Level B clothing.

The recommended PPE for level A/B is:

- Pressure-demand, full-face piece self-contained breathing apparatus (MSHA/-NIOSH approved) or pressure-demand supplied-air respirator with escape self-contained breathing apparatus (SCBA).
- Chemical-resistant clothing. For Level A, clothing consists of totally-encapsulating chemical resistant suit. Level B incorporates hooded one-or two-piece chemical splash suit.
- Inner and outer chemical resistant gloves.
- Chemical-resistant safety boots/shoes.
- Hardhat.

7.2.2 Level C Protection Ensemble

Level C protection is distinguished from Level B by the equipment used to protect the respiratory system, assuming the same type of chemical-resistant clothing is used. The main selection criterion for Level C is that conditions permit wearing an air-purifying device. The device (when required) must be an air-purifying respirator (MSHA/NIOSH approved) equipped with filter cartridges. Cartridges must be able to remove the substances encountered. Respiratory protection will be used only with proper fitting, training and the approval of a qualified individual. In addition, an air-purifying respirator can be used only if: oxygen content of the atmosphere is at least 19.5% in volume; substances are identified and concentrations measured; substances have adequate warning properties; the individual passes a qualitative fit-test for the mask; and an appropriate cartridge/canister is used, and its service limit concentration is not exceeded.

Recommended PPE for Level C conditions includes:

- Full-face piece, air-purifying respirator equipped with MSHA and NIOSH approved organic vapor/acid gas/dust/mist combination cartridges or as designated by the SSHO.
- Chemical-resistant clothing (hooded, one or two-piece chemical splash suit or disposable chemical-resistant one-piece suit).
- Inner and outer chemical-resistant gloves.
- Chemical-resistant safety boots/shoes.
- Hardhat.

An air-monitoring program is part of all response operations when atmospheric contamination is known or suspected. It is particularly important that the air be monitored thoroughly when personnel are wearing air-purifying respirators. Continual surveillance using direct-reading instruments is needed to detect any changes in air quality necessitating a higher level of respiratory protection.

7.2.3 Level D Protection Ensemble

As indicated above, Level D protection is primarily a work uniform. It can be worn in areas where only boots can be contaminated, where there are no inhalable toxic substances and where the atmospheric contains at least 19.5% oxygen.

Recommended PPE for Level D includes:

- Coveralls.
- Safety boots/shoes.
- Safety glasses or chemical splash goggles.
- Hardhat.
- Optional gloves; escape mask; face shield.

7.2.4 Recommended Level of Protection for Site Tasks

Based on current information regarding both the contaminants suspected to be present at the Site and the various tasks that are included in the investigation and remedial activities, the minimum required Levels of Protection for these tasks shall be as identified in Table 4.

8.0 EXPOSURE MONITORING

8.1 General

Based on the results of historic sample analysis and the nature of the proposed work activities at the Site, the possibility exists that organic vapors and/or particulates may be released to the air during intrusive construction activities. Ambient breathing zone concentrations may at times, exceed the permissible exposure limits (PELs) established by OSHA for the individual compounds (see Table 2), in which case respiratory protection will be required. Respiratory and dermal protection may be modified (upgraded or downgraded) by the SSHO based upon real-time field monitoring data.

8.1.1 On-Site Work Zone Monitoring

TurnKey-Benchmark personnel will conduct routine, real-time air monitoring during all intrusive construction phases such as excavation, backfilling, drilling, etc. The work area will be monitored at regular intervals using a photo-ionization detector (PID), combustible gas meter and a particulate meter. Observed values will be recorded and maintained as part of the permanent field record.

Additional air monitoring measurements may be made by TurnKey-Benchmark personnel to verify field conditions during subcontractor oversight activities. Monitoring instruments will be protected from surface contamination during use. Additional monitoring instruments may be added if the situations or conditions change. Monitoring instruments will be calibrated in accordance with manufacturer's instructions before use.

8.1.2 Off-Site Community Air Monitoring

In addition to on-site monitoring within the work zone(s), monitoring at the downwind portion of the Site perimeter will be conducted. This will provide a real-time method for determination of substantial vapor and/or particulate releases to the surrounding community as a result of ground intrusive investigation work.

Ground intrusive activities are defined by NYSDOH Appendix 1A Generic Community Air Monitoring Plan (Reference 4) and attached as Appendix C. Ground intrusive activities include soil/waste excavation and handling, test pitting or trenching, and

the installation of soil borings or monitoring wells. Non-intrusive activities include the collection of soil and sediment samples or the collection of groundwater samples from existing wells. Continuous monitoring is required for ground intrusive activities and periodic monitoring is required for non-intrusive activities. Periodic monitoring consists of taking a reading upon arrival at a sample location, monitoring while opening a well cap or overturning soil, monitoring while bailing a well, and taking a reading prior to leaving a sampling location. This may be upgraded to continuous if the sampling location is in close proximity to individuals not involved in the site activity (i.e., on a curb of a busy street). The action levels below will be used during periodic monitoring. This will provide a real-time method for determination of substantial vapor and/or particulate releases to the surrounding community because of site investigation work.

8.2 Monitoring Action Levels

8.2.1 On-Site Work Zone Action Levels

The PID, explosimeter, or other appropriate instrument(s), will be used by TurnKey-Benchmark personnel to monitor organic vapor concentrations as specified in this HASP. In addition, fugitive dust/particulate concentrations will be monitored during major soil intrusion using a real-time particulate monitor as specified in this plan. In the absence of such monitoring, appropriate respiratory protection for particulates shall be donned. Sustained readings obtained in the breathing zone may be interpreted (with regard to other site conditions) as follows for TurnKey-Benchmark personnel:

- Total atmospheric concentrations of unidentified vapors or gases ranging from 0 to 1 ppm above background on the PID) - Continue operations under Level D (see Appendix A).
- Total atmospheric concentrations of unidentified vapors or gases yielding sustained readings from >1 ppm to 5 ppm above background on the PID (vapors not suspected of containing high levels of chemicals toxic to the skin) - Continue operations under Level C (see Appendix A).
- Total atmospheric concentrations of unidentified vapors or gases yielding sustained readings of >5 ppm to 50 ppm above background on the PID -

Continue operations under Level B (see Attachment 1), re-evaluate and alter (if possible) construction methods to achieve lower vapor concentrations.

- Total atmospheric concentrations of unidentified vapors or gases above 50 ppm on the PID - Discontinue operations and exit the work zone immediately.

The explosimeter will be used to monitor levels of both combustible gases and oxygen during RD activities involving deep excavation, if required. Action levels based on the instrument readings shall be as follows:

- Less than 10% LEL - Continue engineering operations with caution.
- 10-25% LEL - Continuous monitoring with extreme caution, determine source/cause of elevated reading.
- Greater than 25% LEL - Explosion hazard, evaluate source and leave the Work Zone.
- 19.5-21% oxygen - Proceed with extreme caution; attempt to determine potential source of oxygen displacement.
- Less than 19.5% oxygen - Leave work zone immediately.
- 21-25% oxygen - Continue engineering operations with caution.
- Greater than 25% oxygen - Fire hazard potential, leave Work Zone immediately.

The particulate monitor will be used to monitor respirable dust concentrations during all intrusive activities and during handling of site soil/fill. Action levels based on the instrument readings shall be as follows:

- Less than 50 $\mu\text{g}/\text{m}^3$ - Continue field operations.
- 50-150 $\mu\text{g}/\text{m}^3$ - Don dust/particulate mask or equivalent
- Greater than 150 $\mu\text{g}/\text{m}^3$ - Don dust/particulate mask or equivalent. Initiate engineering controls to reduce respirable dust concentration (i.e., wetting of excavated soils or tools at discretion of SSHO).

Readings with the organic vapor analyzer, combustible gas meter, and particulate monitor will be recorded and documented on the appropriate Project Field Forms. All instruments will be calibrated before use on a daily basis and the procedure will be documented on the appropriate Project Field Forms.

8.2.2 Community Air Monitoring Action Levels

In addition to the action levels prescribed in Section 8.2.1 for Benchmark personnel on-site, the following criteria shall also be adhered to for the protection of downwind receptors consistent with NYSDOH requirements (Appendix C):

- o **ORGANIC VAPOR PERIMETER MONITORING:**
 - If the sustained ambient air concentration of organic vapors at the downwind perimeter of the exclusion zone exceeds 5 ppm above background, work activities will be halted and monitoring continued. If the sustained organic vapor decreases below 5 ppm over background, work activities can resume but more frequent intervals of monitoring, as directed by the SSHO, must be conducted.
 - If the sustained ambient air concentration of organic vapors at the downwind perimeter of the exclusion zone are greater than 5 ppm over background but less than 25 ppm, activities can resume provided that: the organic vapor level 200 feet downwind of the working site or half the distance to the nearest off-site residential or commercial structure, whichever is less, is below 5 ppm over background; and more frequent intervals of monitoring, as directed by the SSHO, are conducted.
 - If the sustained organic vapor level is above 25 ppm at the perimeter of the exclusion zone, the SSHO must be notified and work activities shut down. The SSHO will determine when re-entry of the exclusion zone is possible and will implement downwind air monitoring to ensure vapor emissions do not impact the nearest off-site residential or commercial structure at levels exceeding those specified in the ***Organic Vapor Contingency Monitoring Plan*** below. All readings will be recorded and will be available for New York State Department of Environmental Conservation (NYSDEC) and Department of Health (NYSDOH) personnel to review.

o **ORGANIC VAPOR CONTINGENCY MONITORING PLAN:**

- If the sustained organic vapor level is greater than 5 ppm over background 200 feet downwind from the work area or half the distance to the nearest off-site residential or commercial property, whichever is less, all work activities must be halted.
- If, following the cessation of the work activities or as the result of an emergency, sustained organic levels persist above 5 ppm above background 200 feet downwind or half the distance to the nearest off-site residential or commercial property from the work area, then the air quality must be monitored within 20 feet of the perimeter of the nearest off-site residential or commercial structure (20-foot zone).
- If efforts to abate the emission source are unsuccessful and if sustained organic vapor levels approach or exceed 5 ppm above background within the 20-foot zone for more than 30 minutes, or are sustained at levels greater than 10 ppm above background for longer than one minute, then the ***Major Vapor Emission Response Plan*** (see below) will automatically be placed into effect.

o **Major Vapor Emission Response Plan:**

Upon activation, the following activities will be undertaken:

1. All Emergency Response Contacts as listed in this Health and Safety Plan and the Emergency Response Plan (Appendix A) will be advised.
2. The local police authorities will immediately be contacted by the SSHO and advised of the situation.
3. Frequent air monitoring will be conducted at 30-minute intervals within the 20-foot zone. If two sustained successive readings below action levels are measured, air monitoring may be halted or modified by the SSHO.

The following personnel are to be notified in the listed sequence in the event that a Major Vapor Emission Plan is activated:

Responsible Person	Contact	Phone Number
SSHO	Police	911
SSHO	State Emergency Response Hotline	(800) 457-7362

Additional emergency numbers are listed in the Emergency Response Plan included as Appendix A.

o **EXPLOSIVE VAPORS:**

- Sustained atmospheric concentrations of greater than 10% LEL in the work area - Initiate combustible gas monitoring at the downwind portion of the Site perimeter.
- Sustained atmospheric concentrations of greater than 10% LEL at the downwind Site perimeter – Halt work and contact local Fire Department.

o **Airborne Particulate Community Air Monitoring**

Respirable (PM-10) particulate monitoring will be performed on a continuous basis at the upwind and downwind perimeter of the exclusion zone. The monitoring will be performed using real-time monitoring equipment capable of measuring PM-10 and integrating over a period of 15-minutes for comparison to the airborne particulate action levels. The equipment will be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration will be visually assessed during all work activities. All readings will be recorded and will be available for NYSDEC and NYSDOH review. Readings will be interpreted as follows:

- If the downwind PM-10 particulate level is 100 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) greater than the background (upwind perimeter) reading for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression provided that the downwind PM-10 particulate levels do not exceed $150 \mu\text{g}/\text{m}^3$ above the upwind level and that visible dust is not migrating from the work area.
- If, after implementation of dust suppression techniques downwind PM-10 levels are greater than $150 \mu\text{g}/\text{m}^3$ above the upwind level, work activities must be stopped and dust suppression controls re-evaluated. Work can resume provided that supplemental dust suppression measures and/or other controls

are successful in reducing the downwind PM-10 particulate concentration to within 150 $\mu\text{g}/\text{m}^3$ of the upwind level and in preventing visible dust migration.

Pertinent emergency response information including the telephone number of the Fire Department is included in the Emergency Response Plan (Appendix A).

9.0 SPILL RELEASE/RESPONSE

This chapter of the HASP describes the potential for and procedures related to spills or releases of known or suspected petroleum and/or hazardous substances on the Site. The purpose of this Section of the HASP is to plan appropriate response, control, counter-measures and reporting, consistent with OSHA requirements in 29 CFR 1910.120(b)(4)(ii)(J) and (j)(1)(viii). The spill containment program addresses the following elements:

- Potential hazardous material spills and available controls.
- Initial notification and evaluation.
- Spill response.
- Post-spill evaluation.

9.1 Potential Spills and Available Controls

An evaluation was conducted to determine the potential for hazardous material and oil/petroleum spills at this site. For the purpose of this evaluation, hazardous materials posing a significant spill potential are considered to be:

- CERCLA Hazardous Substances as identified in 40 CFR Part 302, where such materials pose the potential for release in excess of their corresponding Reportable Quantity (RQ).
- Extremely Hazardous Substances as identified in 40 CFR Part 355, Appendix A, where such materials pose the potential for release in excess of their corresponding RQ.
- Hazardous Chemicals as defined under Section 311(e) of the Emergency Planning and Community Right-To-Know Act of 1986, where such chemicals are present or will be stored in excess of 10,000 lbs.
- Toxic Chemicals as defined in 40 CFR Part 372, where such chemicals are present or will be stored in excess of 10,000 lbs.
- Chemicals regulated under 6NYCRR Part 597, where such materials pose the potential for release in excess of their corresponding RQ.

Oil/petroleum products are considered to pose a significant spill potential whenever the following situations occur:

- The potential for a “harmful quantity” of oil (including petroleum and non-petroleum-based fuels and lubricants) to reach navigable waters of the U.S. exists (40 CFR Part 112.4). Harmful quantities are considered by USEPA to be volumes that could form a visible sheen on the water or violate applicable water quality standards.
- The potential for any amount of petroleum to reach any waters of NY State, including groundwater, exists. Petroleum, as defined by NY State in 6NYCRR Part 612, is a petroleum-based heat source, energy source, or engine lubricant/maintenance fluid.
- The potential for any release, to soil or water, of petroleum from a bulk storage facility regulated under 6NYCRR Part 612. A regulated petroleum storage facility is defined by NY State as a site having stationary tank(s) and intra-facility piping, fixtures and related equipment with an aggregate storage volume of 1,100 gallons or greater.

The evaluation indicates that, based on site history and decommissioning records, a hazardous material spill and/or a petroleum product spill is not likely to occur during Remedial efforts.

9.2 Initial Spill Notification and Evaluation

Any worker who discovers a hazardous substance or oil/petroleum spill will immediately notify the Project Manager and SSHO. The worker will, to the best of his/her ability, report the material involved, the location of the spill, the estimated quantity of material spilled, the direction/flow of the spill material, related fire/explosion incidents, if any, and any associated injuries. The Emergency Response Plan presented as Appendix A of this HASP will immediately be implemented if an emergency release has occurred.

Following initial report of a spill, the Project Manager will make an evaluation as to whether the release exceeds RQ levels. If an RQ level is exceeded, the Project Manager will notify the site owner and NYSDEC at 1-800-457-7362 within 2 hours of spill discovery. The Project Manager will also determine what additional agencies (e.g., USEPA) are to be

contacted regarding the release, and will follow-up with written reports as required by the applicable regulations.

9.3 Spill Response

For all spill situations, the following general response guidelines will apply:

- Only those personnel involved in overseeing or performing containment operations will be allowed within the spill area. If necessary, the area will be roped, ribboned, or otherwise blocked off to prevent unauthorized access.
- Appropriate PPE, as specified by the SSHO, will be donned before entering the spill area.
- Ignition points will be extinguished/removed if fire or explosion hazards exist.
- Surrounding reactive materials will be removed.
- Drains or drainage in the spill area will be blocked to prevent inflow of spilled materials or applied materials.

For minor spills, the Contractor will maintain a Spill Control and Containment Kit in the Field Office or other readily accessible storage location. The kit will consist of, at a minimum, a 50 lb. bag of “speedy dry” granular absorbent material, absorbent pads, shovels, empty 5-gallon pails and an empty open-top 55-gallon drum. Spilled materials will be absorbed, and shoveled into a 55-gallon drum for proper disposal (NYSDEC approval will be secured for on-site treatment of the impacted soils/absorbent materials, if applicable). Impacted soils will be hand-excavated to the point that no visible signs of contamination remains, and will be drummed with the absorbent.

In the event of a major release or a release that threatens surface water, a spill response contractor will be called to the site. The response contractor may use heavy equipment (i.e., excavator, backhoe, etc.) to berm the soils surrounding the spill site or create diversion trenching to mitigate overland migration or release to navigable waters. Where feasible, pumps will be used to transfer free liquid to storage containers. Spill control/cleanup contractors in the Western New York area that may be contacted for assistance include:

- The Environmental Service Group of NY, Inc.: (716) 695-6720
- Op-Tech: (716) 873-7680

9.4 Post-Spill Evaluation

If a reportable quantity of hazardous material or oil/petroleum is spilled as determined by the Project Manager, a written report will be prepared as indicated in Section 9.2. The report will identify the root cause of the spill, type and amount of material released, date/time of release, response actions, agencies notified and/or involved in cleanup, and procedures to be implemented to avoid repeat incidents. In addition, all re-useable spill cleanup and containment materials will be decontaminated, and spill kit supplies/disposable items will be replenished.

10.0 HEAT/COLD STRESS MONITORING

Since some of the work activities at the Site will be scheduled for both the summer and winter months, measures will be taken to minimize heat/cold stress to TurnKey-Benchmark employees. The SSHO and/or his or her designee will be responsible for monitoring TurnKey-Benchmark field personnel for symptoms of heat/cold stress.

10.1 Heat Stress Monitoring

Personal protective equipment may place an employee at risk of developing heat stress, a common and potentially serious illness often encountered at construction, landfill, waste disposal, industrial or other unsheltered sites. The potential for heat stress is dependent on a number of factors, including environmental conditions, clothing, workload, physical conditioning and age. Personal protective equipment may severely reduce the body's normal ability to maintain temperature equilibrium (via evaporation and convection), and require increased energy expenditure due to its bulk and weight.

Proper training and preventive measures will mitigate the potential for serious illness. Heat stress prevention is particularly important because once a person suffers from heat stroke or heat exhaustion, that person may be predisposed to additional heat related illness. To avoid heat stress, the following steps should be taken:

- Adjust work schedules.
- Modify work/rest schedules according to monitoring requirements.
- Mandate work slowdowns as needed.
- Perform work during cooler hours of the day if possible or at night if adequate lighting can be provided.
- Provide shelter (air-conditioned, if possible) or shaded areas to protect personnel during rest periods.
- Maintain worker's body fluids at normal levels. This is necessary to ensure that the cardiovascular system functions adequately. Daily fluid intake must approximately equal the amount of water lost in sweat (i.e., eight fluid ounces must be ingested for approximately every 1 lb of weight lost). The normal thirst mechanism is not sensitive enough to ensure that enough water will be consumed to replace lost perspiration. When heavy sweating occurs, workers should be encouraged to drink more.

- Train workers to recognize the symptoms of heat related illness.

Heat-Related Illness - Symptoms:

- Heat rash may result from continuous exposure to heat or humid air.
- Heat cramps are caused by heavy sweating with inadequate electrolyte replacement. Signs and symptoms include: muscle spasms; pain in the hands, feet and abdomen.
- Heat exhaustion occurs from increased stress on various body organs including inadequate blood circulation due to cardiovascular insufficiency or dehydration. Signs and symptoms include: pale, cool, moist skin; heavy sweating; dizziness; nausea; fainting.
- Heat stroke is the most serious form of heat stress. Temperature regulation fails and the body temperature rises to critical levels. Immediate action must be taken to cool the body before serious injury and death occur. Competent medical help must be obtained. Signs and symptoms are: red, hot, usually dry skin; lack of or reduced perspiration; nausea; dizziness and confusion; strong, rapid pulse; coma.

The monitoring of personnel wearing protective clothing should commence when the ambient temperature is 70 degrees Fahrenheit or above. For monitoring the body's recuperative ability to excess heat, one or more of the following techniques should be used as a screening mechanism.

- Heart rate may be measured by the radial pulse for 30 seconds as early as possible in the resting period. The rate at the beginning of the rest period should not exceed 100 beats per minute. If the rate is higher, the next work period should be shortened by 10 minutes (or 33%), while the length of the rest periods stay the same. If the pulse rate is 100 beats per minute at the beginning of the next rest period, the following work cycle should be further shortened by 33%.
- Body temperature may be measured orally with a clinical thermometer as early as possible in the resting period. Oral temperature at the beginning of the rest period should not exceed 99.6 degrees Fahrenheit. If it does, the next work period should be shortened by 10 minutes (or 33%), while the length of the rest period remains the same. However, if the oral temperature exceeds 99.6 degrees Fahrenheit at the beginning of the next period, the work cycle may be further shortened by 33%. Oral temperature should be measured at the end of the rest

period to make sure that it has dropped below 99.6 degrees Fahrenheit. No TurnKey-Benchmark employee will be permitted to continue wearing semi-permeable or impermeable garments when his/her oral temperature exceeds 100.6 degrees Fahrenheit.

10.2 Cold Stress Monitoring

Exposure to cold conditions may result in frostbite or hypothermia, each of which progresses in stages as shown below.

- **Frostbite** occurs when body tissue (usually on the extremities) begins to freeze. The three states of frostbite are:
 - 1) **Frost nip** - This is the first stage of the freezing process. It is characterized by a whitened area of skin, along with a slight burning or painful sensation. Treatment consists of removing the victim from the cold conditions, removal of boots and gloves, soaking the injured part in warm water (102 to 108 degrees Fahrenheit) and drinking a warm beverage. Do not rub skin to generate friction/ heat.
 - 2) **Superficial Frostbite** - This is the second stage of the freezing process. It is characterized by a whitish gray area of tissue, which will be firm to the touch but will yield little pain. The treatment is identical for Frost nip.
 - 3) **Deep Frostbite** - In this final stage of the freezing process the affected tissue will be cold, numb and hard and will yield little to no pain. Treatment is identical to that for Frost nip.
- **Hypothermia** is a serious cold stress condition occurring when the body loses heat at a rate faster than it is produced. If untreated, hypothermia may be fatal. The stages of hypothermia may not be clearly defined or visible at first, but generally include:
 - 1) Shivering
 - 2) Apathy (i.e., a change to an indifferent or uncaring mood)
 - 3) Unconsciousness
 - 4) Bodily freezing

Employees exhibiting signs of hypothermia should be treated by medical professionals. Steps that can be taken while awaiting help include:

- 1) Remove the victim from the cold environment and remove wet or frozen clothing. (Do this carefully as frostbite may have started.)
- 2) Perform active re-warming with hot liquids for drinking (Note: do not give the victim any liquid containing alcohol or caffeine) and a warm water bath (102 to 108 degrees Fahrenheit).
- 3) Perform passive re-warming with a blanket or jacket wrapped around the victim.

In any potential cold stress situation, it is the responsibility of the Site Health and Safety Officer to encourage the following:

- Education of workers to recognize the symptoms of frostbite and hypothermia.
- Workers should dress warmly, with more layers of thin clothing as opposed to one thick layer.
- Personnel should remain active and keep moving.
- Personnel should be allowed to take shelter in a heated areas, as necessary.
- Personnel should drink warm liquids (no caffeine or alcohol if hypothermia has set in).
- For monitoring the body's recuperation from excess cold, oral temperature recordings should occur:
 - At the Site Safety Technicians discretion when suspicion is based on changes in a worker's performance or mental status.
 - At a workers request.
 - As a screening measure, two times per shift, under unusually hazardous conditions (e.g., wind chill less than 20 degrees Fahrenheit or wind chill less than 30 degrees Fahrenheit with precipitation).
 - As a screening measure whenever anyone worker on site develops hypothermia.

Any person developing moderate hypothermia (a core body temperature of 92 degrees Fahrenheit) will not be allowed to return to work for 48 hours without the recommendation of a qualified medical doctor.

11.0 WORK ZONES AND SITE CONTROL

Work zones around the areas designated for construction activities will be established on a daily basis and communicated to all employees and other site users by the SSHO. It shall be each Contractor's SSHO's responsibility to ensure that all site workers are aware of the work zone boundaries and to enforce proper procedures in each area. The zones will include:

- **Exclusion Zone ("Hot Zone"):** The area where contaminated materials may be exposed, excavated or handled and all areas where contaminated equipment or personnel may travel. The zone will be delineated by flagging tape. All personnel entering the Exclusion Zone must wear the prescribed level of personal protective equipment identified in Section 7.
- **Contamination Reduction Zone:** The zone where decontamination of personnel and equipment takes place. Any potentially contaminated clothing, equipment and samples must remain in the Contamination Reduction Zone until decontaminated.
- **Support Zone:** The part of the site that is considered non-contaminated or "clean." Support equipment will be located in this zone, and personnel may wear normal work clothes within this zone.

In the absence of other task-specific work zone boundaries established by the SSHO, the following boundaries will apply to all investigation and construction activities involving disruption or handling of site soils or groundwater:

- **Exclusion Zone:** 50 foot radius from the outer limit of the sampling/construction activity.
- **Contaminant Reduction Zone:** 100 foot radius from the outer limit of the sampling/construction activity.
- **Support Zone:** Areas outside the Contaminant Reduction Zone.

Access of non-essential personnel to the Exclusion and Contamination Reduction Zones will be strictly controlled by the SSHO. Only personnel who are essential to the completion of the task will be allowed access to these areas and only if they are wearing the prescribed level of protection. Entrance of all personnel must be approved by the SSHO.

**HEALTH AND SAFETY PLAN
TECUMSEH REDEVELOPMENT SITE**

The SSHO will maintain a Health and Safety Logbook containing the names of TurnKey-Benchmark workers and their level of protection. The zone boundaries may be changed by the SSHO as environmental conditions warrant, and to respond to the necessary changes in work locations on-site.

12.0 DECONTAMINATION

12.1 Decontamination for TurnKey-Benchmark Employees

The degree of decontamination required is a function of a particular task and the environment within which it occurs. The following decontamination procedure will remain flexible, thereby allowing the decontamination crew to respond appropriately to the changing environmental conditions that may arise at the site. All TurnKey-Benchmark personnel on-site shall follow the procedure below, or the Contractor's procedure (if applicable), whichever is more stringent.

Station 1 - Equipment Drop: Deposit visibly contaminated (if any) re-useable equipment used in the contamination reduction and exclusion zones (tools, containers, monitoring instruments, radios, clipboards, etc.) on plastic sheeting.

Station 2 - Boots and Gloves Wash and Rinse: Scrub outer boots and outer gloves.

Station 3 - Tape, Outer Boot and Glove Removal: Remove tape, outer boots and gloves. Deposit tape and gloves in waste disposal container.

Station 4 - Canister or Mask Change: If worker leaves exclusive zone to change canister (or mask), this is the last step in the decontamination procedure. Worker's canister is exchanged, new outer gloves and boot cover donned, and worker returns to duty.

Station 5 - Outer Garment/Face Piece Removal: Protective suit removed and deposited in separate container provided by Contractor. Face piece or goggles are removed if used. Avoid touching face with fingers. Face piece and/or goggles deposited on plastic sheet. Hard hat removed and placed on plastic sheet.

Station 6 - Inner Glove Removal: Inner gloves are the last personal protective equipment to be removed. Avoid touching the outside of the gloves with bare fingers. Dispose of these gloves in waste disposal container.

Following PPE removal, personnel shall wash hands, face and forearms with absorbent wipes. If field activities proceed for a duration of 6 consecutive months or longer, shower facilities will be provided for worker use in accordance with OSHA 29 CFR

1910.120(n).

12.2 Decontamination for Medical Emergencies

In the event of a minor, non-life threatening injury, personnel should follow the decontamination procedures as defined, and then administer first-aid.

In the event of a major injury or other serious medical concern (e.g., heat stroke), immediate first-aid is to be administered and the victim transported to the hospital in lieu of further decontamination efforts unless exposure to a site contaminant would be considered “Immediately Dangerous to Life or Health.”

12.3 Decontamination of Field Equipment

Decontamination of heavy equipment will be conducted by the Contractor in accordance with his approved Health and Safety Plan in the Contamination Reduction Zone. As a minimum, this will include manually removing heavy soil contamination, followed by steam cleaning on an impermeable pad.

Decontamination of all tools used for sample collection purposes will be conducted by TurnKey-Benchmark personnel. It is expected that all tools will be constructed of nonporous, nonabsorbent materials (i.e., metal), which will aid in the decontamination effort. Any tool or part of a tool made of porous, absorbent material (i.e., wood) will be placed into suitable containers and prepared for disposal.

Decontamination of bailers, split-spoons, spatula knives, and other tools used for environmental sampling and examination shall be as follows:

- Disassemble the equipment.
- Water wash to remove all visible foreign matter.
- Wash with detergent.
- Rinse all parts with distilled-deionized water.
- Allow to air dry.
- Wrap all parts in aluminum foil or polyethylene.

13.0 CONFINED SPACE ENTRY

OSHA 29 CFR 1910.146 identifies a confined space as a space that is large enough and so configured that an employee can physically enter and do assigned work, has limited or restricted means for entry and exit, and is not intended for continuous employee occupancy. Confined spaces include, but are not limited to, trenches, storage tanks, process vessels, pits, sewers, tunnels, underground utility vaults, pipelines, sumps, wells, and excavations.

Confined space entry by TurnKey-Benchmark employees is not anticipated to be necessary to complete the investigation and remedial activities identified in Section 2.0. In the event that the scope of work changes or confined space entry appears necessary, the Project Manager will be consulted to determine if feasible engineering alternatives to confined space entry can be implemented. If confined space entry by TurnKey-Benchmark employees cannot be avoided through reasonable engineering measures, task-specific confined space entry procedures will be developed and a confined-space entry permit will be issued through TurnKey-Benchmark's corporate Health and Safety Director. TurnKey-Benchmark employees shall not enter a confined space without these procedures and permits in place.

14.0 FIRE PREVENTION AND PROTECTION

14.1 General Approach

Recommended practices and standards of the National Fire Protection Association (NFPA) and other applicable regulations will be followed in the development and application of Project Fire Protection Programs. When required by regulatory authorities, the project management will prepare and submit a Fire Protection Plan for the approval of the contracting officers, authorized representative or other designated official. Essential considerations for the Fire Protection Plan will include:

- Proper site preparation and safe storage of combustible and flammable materials.
- Availability of coordination with private and public fire authorities.
- Adequate job-site fire protection and inspections for fire prevention.
- Adequate indoctrination and training of employees.

14.2 Equipment and Requirements

Fire extinguishers will be provided by each Contractor and are required on all heavy equipment and in each field trailer. Fire extinguishers will be inspected, serviced, and maintained in accordance with the manufacturer's instructions. As a minimum, all extinguishers shall be checked monthly and weighed semi-annually, and recharged if necessary. Recharge or replacement shall be mandatory immediately after each use.

14.3 Flammable and Combustible Substances

All storage, handling or use of flammable and combustible substances will be under the supervision of qualified persons. All tanks, containers and pumping equipment, whether portable or stationary, used for the storage and handling of flammable and combustible liquids, will meet the recommendations of the NFPA.

14.4 Hot Work

If the scope of work necessitates welding or blowtorch operation, the hot work permit presented in Appendix B will be completed by the SSHO and reviewed/issued by the Project Manager.

15.0 EMERGENCY INFORMATION

In accordance with OSHA 29 CFR Part 1910, an Emergency Response Plan is attached to this HASP as Appendix A. The hospital route map is presented as Figure A-1.

16.0 REFERENCES

1. New York State Department of Health. 2002. *Generic Community Air Monitoring Plan, Appendix 1A, Draft DER-10 Technical Guidance for Site Investigation and Remediation*. December.

TABLES



TABLE 1

CONSTITUENTS OF POTENTIAL CONCERN

Health and Safety Plan
Tecumseh Redevelopment, Inc.
Lackawanna, New York

Parameter ¹	CAS No.	Maximum Detected Concentration ²			
		Groundwater ³ (mg/L)	Surface Soil/Fill (mg/kg)	Sub-Surface Soil/Fill (mg/kg)	LNAPL (mg/kg)
<i>Volatile Organic Compounds (VOCs):</i>					
Benzene	71-43-2	570	0.0047	2800	14,000
Ethylbenzene	100-41-4	25	<i>Note 4</i>	170	4,600
Toluene	108-88-3	77	0.001	1700	5,700
Xylene, Total	1330-20-7	390	0.0017	1100	31,000
<i>Polycyclic Aromatic Hydrocarbons (PAHs):</i>					
Acenaphthene	83-32-9	0.36	<i>Note 4</i>	<i>Note 4</i>	400
Acenaphthylene	208-96-8	0.09	<i>Note 4</i>	<i>Note 4</i>	570
Anthracene	120-12-7	0.27	0.23	<i>Note 4</i>	240
Benz(a)anthracene	56-55-3	0.28	0.7	<i>Note 4</i>	27
Benzo(a)pyrene	50-32-8	0.23	0.56	<i>Note 4</i>	ND
Benzo(b)fluoranthene	205-99-2	0.069	0.86	<i>Note 4</i>	12
Benzo(ghi)perylene	191-24-2	0.033	0.35	<i>Note 4</i>	ND
Benzo(k)fluoranthene	207-08-9	0.071	0.38	<i>Note 4</i>	ND
Chrysene	218-01-9	0.26	0.67	<i>Note 4</i>	17
Dibenz(ah)anthracene	53-70-3	0.022	0.08	<i>Note 4</i>	ND
Fluoranthene	206-44-0	0.76	1.3	<i>Note 4</i>	200
Fluorene	86-73-7	1.7	<i>Note 4</i>	<i>Note 4</i>	9,600
Indeno(1,2,3-cd)pyrene	193-39-5	0.04	0.36	<i>Note 4</i>	ND
Naphthalene	91-20-3	280	0.29	1100	49,000
Phenanthrene	85-01-8	0.94	0.87	<i>Note 4</i>	800
Pyrene	129-00-0	0.41	0.87	<i>Note 4</i>	220
<i>Inorganic Compounds:</i>					
Arsenic	7440-38-2	70.6	30.5	17.7	28.2
Cadmium	7440-43-9	20.6	9.7	3.7	0.03
Chromium	7440-47-3	306	1190	508	1.7
Lead	7439-92-1	26.3	160	224	0.34
Mercury	7439-97-6	0.22	4.2	0.99	ND

Notes:

1. Constituents were identified as parameters of interest during the RFI for the Benzol Plant Tank Storage Area (SWMU P-11).
2. Maximum detected concentrations as presented in the Final RFI Report for the Benzol Plant Tank Storage Area (SWMU P-11).
3. Groundwater analytical data collected from the Coke Oven Area of the Former Bethlehem Steel Lackawanna Coke Division Site.
4. Compounds with a detection frequency greater than 5% and a maximum concentration greater than the screening criteria were retained as potential parameters of interest during the RFI (Reference 1).

Acronyms:

- NA = Not analyzed.
ND = Parameter not detected above method detection limits.



TABLE 2

TOXICITY DATA FOR CONSTITUENTS OF POTENTIAL CONCERN

Health and Safety Plan
Tecumseh Redevelopment, Inc.
Lackawanna, New York

Parameter	Synonyms	CAS No.	Code	Concentration Limits ¹		
				PEL	TLV	IDLH
<i>Volatile Organic Compounds (VOCs): ppm</i>						
Benzene	Benzol, Phenyl hydride	71-43-2	Ca	1	0.5	500
Ethylbenzene	Ethylbenzol, Phenylethane	100-41-4	none	100	100	800
Toluene	Methyl benzene, Methyl benzol	108-88-3	C-300	200	50	500
Xylene, Total	o-, m-, p-isomers	1330-20-7	none	100	100	900
<i>Polycyclic Aromatic Hydrocarbons (PAHs) ²: ppm</i>						
Acenaphthene	none	83-32-9	none	--	--	--
Acenaphthylene	none	208-96-8	none	--	--	--
Anthracene	none	120-12-7	none	--	--	--
Benz(a)anthracene	none	56-55-3	none	--	--	--
Benzo(a)pyrene	none	50-32-8	none	--	--	--
Benzo(b)fluoranthene	none	205-99-2	none	--	--	--
Benzo(ghi)perylene	none	191-24-2	none	--	--	--
Benzo(k)fluoranthene	none	207-08-9	none	--	--	--
Chrysene	none	218-01-9	none	--	--	--
Dibenz(ah)anthracene	none	53-70-3	none	--	--	--
Fluoranthene	none	206-44-0	none	--	--	--
Fluorene	none	86-73-7	none	--	--	--
Indeno(1,2,3-cd)pyrene	none	193-39-5	none	--	--	--
Naphthalene	Naphthalin, Tar camphor, White tar	91-20-3	none	10	10	250
Phenanthrene	none	85-01-8	none	--	--	--
Pyrene	none	129-00-0	none	--	--	--
<i>Inorganic Compounds: mg/m³</i>						
Arsenic	none	7440-38-2	Ca	0.01	0.01	5
Cadmium	none	7440-43-9	Ca	0.005	0.01	9
Chromium	none	7440-47-3	none	1	0.5	250
Lead	none	7439-92-1	none	0.05	0.15	100
Mercury	none	7439-97-6	C-0.1	0.1	0.05	10

Notes:

1. Concentration limits as reported by NIOSH Pocket Guide to Chemical Hazards, February 2004 (NIOSH Publication No. 97-140, fourth printing with changes and updates).
2. Individual parameters listed are those most commonly detected at steel/coke manufacturing sites.
3. "--" = concentration limit not available; exposure should be minimized to the extent feasible through appropriate engineering controls & PPE.

Explanation:

Ca = NIOSH considers constituent to be a potential occupational carcinogen.

C-### = Ceiling Level equals the maximum exposure concentration allowable during the work day.

IDLH = Immediately Dangerous to Life or Health.

ND indicates that an IDLH has not as yet been determined.

TLV = Threshold Limit Value, established by American Conference of Industrial Hygienists (ACGIH), equals the max. exposure concentration allowable for 8 hr/d @ 40 hr/wk.

TLVs are the amounts of chemicals in the air that almost all healthy adult workers are predicted to be able to tolerate without adverse effects. There are three types.

TLV-TWA (TLV-Time-Weighted Average) which is averaged over the normal eight-hour day/forty-hour work week. (Most TLVs.)

TLV-STEL or Short Term Exposure Limits are 15 minute exposures that should not be exceeded for even an instant. It is not a stand alone value but is accompanied by the TLV-TWA.

TLV-C or Ceiling limits are the concentration that should not be exceeded during any part of the working exposure.

Unless the initials "STEL" or "C" appear in the Code column, the TLV value should be considered to be the eight-hour TLV-TWA.

PEL = Permissible Exposure Limit, established by OSHA, equals the maximum exposure concentration allowable for 8 hours per day @ 40 hours per week



TABLE 3

**POTENTIAL ROUTES OF EXPOSURE TO
CONSTITUENTS OF POTENTIAL CONCERN**

**Health and Safety Plan
Tecumseh Redevelopment, Inc
Lackawanna, New York**

Activity ¹	Direct Contact with Soil/Fill	Inhalation of Vapors or Dust	Direct Contact with Groundwater
1. Soil/Fill Excavation	x	x	
2. Soil/Fill Sampling	x	x	
3. Surface Water Management			x
4. Sediment and Surface Water Sampling			x
5. Groundwater Monitoring Well Installation/Sampling	x	x	x
6. Groundwater Remediation	x	x	x
7. Subgrade Work	x	x	
8. Cover Soil Placement	x	x	

Notes:

1. Activity as described in Section 1.5 of the Health and Safety Plan.

TABLE 4

**REQUIRED LEVELS OF PROTECTION
FOR REMEDIAL ACTIVITIES**

**Health and Safety Plan
Tecumseh Redevelopment, Inc
Lackawanna, New York**

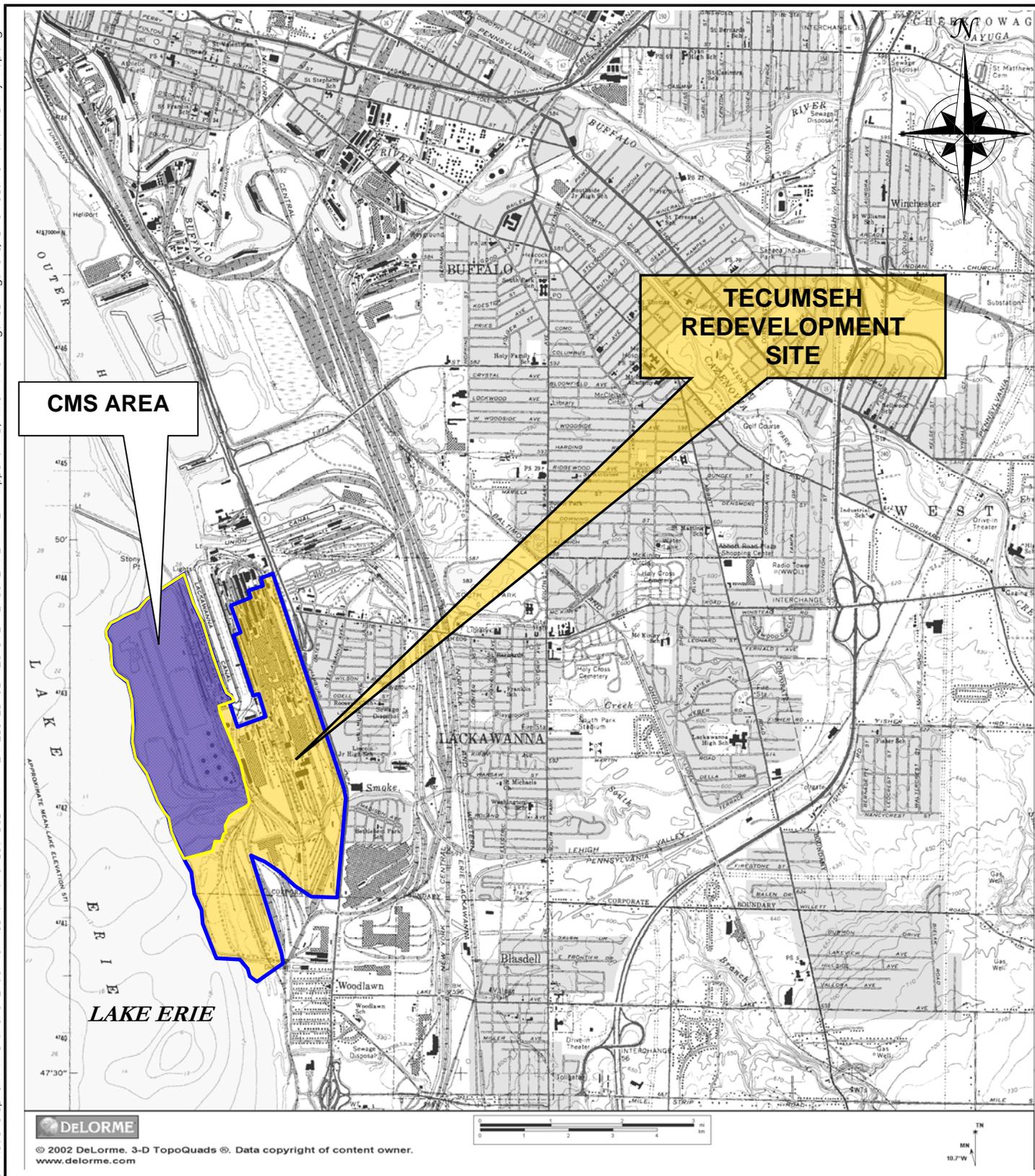
Activity	Respiratory Protection¹	Clothing	Gloves²	Boots^{2,3}	Other Required PPE/Modifications^{2,4}
1. Soil/Fill Excavation	Level D (upgrade to Level C if necessary)	Work Uniform or Tyvek	L	outer: L inner: STSS	HH SGSS
2. Soil/Fill Sampling	Level D (upgrade to Level C if necessary)	Work Uniform or Tyvek	L	outer: L inner: STSS	HH SGSS
3. Surface Water Management	Level D (upgrade to Level C if necessary)	Poly-coated Tyvek or S	L/N	outer: L inner: STSS	HH SGSS
4. Sediment and Surface Water Sampling	Level D (upgrade to Level C if necessary)	Poly-coated Tyvek or S	L/N	outer: L inner: STSS	HH SGSS
5. Groundwater Monitoring Well Installation/Sampling	Level D (upgrade to Level C if necessary)	Poly-coated Tyvek or S	L/N	outer: L inner: STSS	HH SGSS
6. Groundwater Remediation	Level D (upgrade to Level C if necessary)	Poly-coated Tyvek or S	L	outer: L inner: STSS	HH SGSS
7. Subgrade Work	Level D (upgrade to Level C if necessary)	Work Uniform or Tyvek	L	outer: L inner: STSS	HH SGSS
8. Cover Soil Placement	Level D (upgrade to Level C if necessary)	Work Uniform or Tyvek	L	outer: L inner: STSS	HH SGSS

Notes:

1. Respiratory equipment shall conform to guidelines presented in Section 7.0 of this HASP. The Level C requirement is an air-purifying respirator equipped with organic compound/acid gas/dust cartridge.
2. HH = hardhat; L= Latex; L/N = latex inner glove, nitrile outer glove; N = Nitrile; S = Saranex; SG = safety glasses; SGSS = safety glasses with sideshields; STSS = steel toe safety shoes.
3. Latex outer boot (or approved overboot) required whenever contact with contaminated materials may occur. SSHO may downgrade to STSS (steel-toed safety shoes) if contact will be limited to cover/replacement soils.
4. Dust masks shall be donned as directed by the SSHO (site safety and health officer) or site safety technician whenever potentially contaminated airborne particulates (i.e., dust) are present in significant amounts in the breathing zone. Goggles may be substituted with safety glasses w/side-shields whenever contact with contaminated liquids is not anticipated.

FIGURES

FIGURE 1



FILEPATH\FATurnKey\Clients\Tecumseh Redevelopment\RFI & CMS Order\SWMUS & Watercourses\ATP - EXPEDITED CORRECTIVE MEASURE WORK PLAN\Appendix B\HASP\HASP Figures\Figure 1\ site location and vicinity map.dwg

CMS AREA

TECUMSEH REDEVELOPMENT SITE

LAKE ERIE



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2558 HAMBURG TURNPIKE
SUITE 300
BUFFALO, NEW YORK 14218
(716) 856-0599

SITE LOCATION AND VICINITY MAP

HEALTH AND SAFETY PLAN

TECUMSEH REDEVELOPMENT SITE
LACKAWANNA, NEW YORK

PREPARED FOR

TECUMSEH REDEVELOPMENT, INC.

PROJECT NO.: 0071-007-110

DATE: APRIL 2010

DRAFTED BY: AJZ

APPENDIX A

EMERGENCY RESPONSE PLAN



EMERGENCY RESPONSE PLAN

TECUMSEH REDEVELOPMENT SITE

LACKAWANNA, NEW YORK

April 2010

0071-008-111

Prepared for:

Tecumseh Redevelopment, Inc.

Prepared by:



In association with:



TECUMSEH REDEVELOPMENT SITE
HEALTH AND SAFETY PLAN
APPENDIX A: EMERGENCY RESPONSE PLAN

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Figure A-1 Hospital Route Map



1.0 GENERAL

This report presents the site-specific Emergency Response Plan (ERP) referenced in the Health and Safety Plan (HASP) prepared for CMS investigation and remedial activities conducted at the Tecumseh Redevelopment Site (former Bethlehem Steel Lackawanna Works), Lackawanna, New York. This appendix of the HASP describes potential emergencies that may occur at the Site; procedures for responding to those emergencies; roles and responsibilities during emergency response; and training all workers must receive in order to follow emergency procedures. This ERP also describes the provisions this Site has made to coordinate its emergency response planning with other contractors on-site and with off-site emergency response organizations.

This ERP is consistent with the requirements of 29 CFR 1910.120(l) and provides the following site-specific information:

- Pre-emergency planning.
- Personnel roles, lines of authority, and communication.
- Emergency recognition and prevention.
- Safe distances and places of refuge.
- Evacuation routes and procedures.
- Decontamination procedures.
- Emergency medical treatment and first aid.
- Emergency alerting and response procedures.
- Critique of response and follow-up.
- Emergency personal protective equipment (PPE) and equipment.

2.0 PRE-EMERGENCY PLANNING

This Site has been evaluated for potential emergency occurrences, based on site hazards, the required work tasks, the site topography, and prevailing weather conditions. The results of that evaluation indicate the potential for the following site emergencies to occur at the locations indicated.

Type of Emergency:

1. Medical, due to physical injury
2. Fire

Source of Emergency:

1. Slip/trip/fall
2. Fire

Location of Source:

1. Non-specific

APPENDIX A: EMERGENCY RESPONSE PLAN

3.0 ON-SITE EMERGENCY RESPONSE EQUIPMENT

Emergency procedures may require specialized equipment to facilitate worker rescue, contamination control and reduction, or post-emergency clean up. Emergency response equipment available on the Site is listed below. The equipment inventory and storage locations are based on the potential emergencies described above. This equipment inventory is designed to meet on-site emergency response needs and any specialized equipment needs that off-site responders might require because of the hazards at this Site but not ordinarily stocked.

Any additional personal protective equipment (PPE) required and stocked for emergency response is also listed in below. During an emergency, the Emergency Response Coordinator (ERC) is responsible for specifying the level of PPE required for emergency response. At a minimum, PPE used by emergency responders will comply with Section 7.0, Personal Protective Equipment, of this HASP. Emergency response equipment is inspected at regular intervals and maintained in good working order. The equipment inventory is replenished as necessary to maintain response capabilities.

Emergency Equipment	Quantity	Location
Spill Response Kit	2	Benzol Yard ICM Treatment Building; Wastewater Treatment Plant Garage
First Aid Kit	3	Site Vehicle; Benzol Yard ICM Treatment Building; Field Office in Coke Oven Office Building
Chemical Fire Extinguisher	2	All heavy equipment and Site Vehicle; Field Office in Coke Oven Office Building

Emergency PPE	Quantity	Location
Full-face respirator	1 for each worker	Site Vehicle
Chemical-resistant suits	4 (minimum)	Site Vehicle

4.0 EMERGENCY PLANNING MAPS

An area-specific map of the Tecumseh Redevelopment Site will be developed on a daily basis during performance of field activities. The map will be marked to identify critical on-site emergency planning information, including: emergency evacuation routes, a place of refuge, an assembly point, and the locations of key site emergency equipment. Site zone boundaries will be shown to alert responders to known areas of contamination. There are no major topographical features; however, the direction of prevailing winds/weather conditions that could affect emergency response planning are also marked on the map. The map will be posted at site-designated place of refuge and inside the TurnKey personnel field vehicle.

5.0 EMERGENCY CONTACTS

The following identifies the emergency contacts for this ERP.

Emergency Telephone Numbers:

Project Manager: *Patrick T. Martin*

Work: (716) 856-0599

Mobile: (716) 867-2860

Corporate Health and Safety Director: *Thomas H. Forbes*

Work: (716) 856-0599

Mobile: (716) 864-1730

Site Safety and Health Officer (SSHO): *Richard L. Dubisz*

Work: (716) 856-0635

Mobile: (716) 998-4334

Alternate SSHO: *Thomas Behrendt*

Work: (716) 856-0635

Mobile: (716) 818-8358

MERCY HOSPITAL (ER):	(716) 826-7000
FIRE:	911
AMBULANCE:	911
BUFFALO POLICE:	911
STATE EMERGENCY RESPONSE HOTLINE:	(800) 457-7362
NATIONAL RESPONSE HOTLINE:	(800) 424-8802
NYSDOH:	(716) 847-4385
NYSDEC:	(716) 851-7220
NYSDEC 24-HOUR SPILL HOTLINE:	(800) 457-7252

The Site location is:

Tecumseh Redevelopment, Inc

1951 Hamburg Turnpike

Lackawanna, New York 14218

Site Phone Number: (Insert Cell Phone or Field Trailer): _____

6.0 EMERGENCY ALERTING & EVACUATION

Internal emergency communication systems are used to alert workers to danger, convey safety information, and maintain site control. Any effective system can be employed. Two-way radio headsets or field telephones are often used when work teams are far from the command post. Hand signals and air-horn blasts are also commonly used. Every system must have a backup. It shall be the responsibility of each contractor's SSHO to ensure an adequate method of internal communication is understood by all personnel entering the site. Unless all personnel are otherwise informed, the following signals shall be used.

- 1) Emergency signals by portable air horn, siren, or whistle: two short blasts, personal injury; continuous blast, emergency requiring site evacuation.
- 2) Visual signals: hand gripping throat, out of air/cannot breathe; hands on top of head, need assistance; thumbs up, affirmative/ everything is OK; thumbs down, no/negative; grip partner's wrist or waist, leave area immediately.

If evacuation notice is given, site workers leave the worksite with their respective buddies, if possible, by way of the nearest exit. Emergency decontamination procedures detailed in Section 12.0 of the HASP are followed to the extent practical without compromising the safety and health of site personnel. The evacuation routes and assembly area will be determined by conditions at the time of the evacuation based on wind direction, the location of the hazard source, and other factors as determined by rehearsals and inputs from emergency response organizations. Wind direction indicators are located so that workers can determine a safe up wind or cross wind evacuation route and assembly area if not informed by the emergency response coordinator at the time the evacuation alarm sounds. Since work conditions and work zones within the site may be changing on daily basis, it shall be the responsibility of the construction Site Health and Safety Officer to review evacuation routes and procedures as necessary and to inform all TurnKey-Benchmark workers of any changes.

Personnel exiting the site will gather at a designated assembly point. To determine that everyone has successfully exited the site, personnel will be accounted for at the assembly site. If any worker cannot be accounted for, notification is given to the SSHO (*Thomas*

APPENDIX A: EMERGENCY RESPONSE PLAN

Behrendt or *Richard Dubisz*) so that appropriate action can be initiated. Contractors and subcontractors on this site have coordinated their emergency response plans to ensure that these plans are compatible and that source(s) of potential emergencies are recognized, alarm systems are clearly understood, and evacuation routes are accessible to all personnel relying upon them.

7.0 EXTREME WEATHER CONDITIONS

In the event of adverse weather conditions, the SSHO in conjunction with the Contractor's SSHO will determine if engineering operations can continue without sacrificing the health and safety of site personnel. Items to be considered prior to determining if work should continue include but are not limited to:

- Potential for heat/cold stress.
- Weather-related construction hazards (i.e., flooding or wet conditions producing undermining of structures or sheeting, high wind threats, etc).
- Limited visibility.
- Potential for electrical storms.
- Limited site access/egress (e.g., due to heavy snow)

8.0 EMERGENCY MEDICAL TREATMENT & FIRST AID

Personnel Exposure:

The following general guidelines will be employed in instances where health impacts threaten to occur acute exposure is realized:

- **Skin Contact:** Use copious amounts of soap and water. Wash/rinse affected area for at least 15 minutes. Decontaminate and provide medical attention. Eyewash stations will be provided on site. If necessary, transport to Mercy Hospital.
- **Inhalation:** Move to fresh air and, if necessary, transport to Mercy Hospital.
- **Ingestion:** Decontaminate and transport to Mercy Hospital.

Personal Injury:

Minor first-aid will be applied on-site as deemed necessary. In the event of a life threatening injury, the individual should be transported to Mercy Hospital via ambulance. The SSHO will supply available chemical specific information to appropriate medical personnel as requested.

First aid kits will conform to Red Cross and other applicable good health standards, and shall consist of a weatherproof container with individually sealed packages for each type of item. First aid kits will be fully equipped before being sent out on each job and will be checked weekly by the SSHO to ensure that the expended items are replaced.

Directions to Mercy Hospital (see Figure A-1):

The following directions describe the best route to Mercy Hospital:

- From Gate 2, proceed onto the Hamburg Turnpike (SR 5).
- Proceed east on Hamburg Turnpike (SR 5) to the Tiff Street Exit and turn right onto Tiff Street.
- Take Tiff Street east crossing South Park Avenue and McKinley Parkway. Bear left on Edgewood Avenue.
- Turn right on Abbott Road and Mercy Hospital will be on right hand side. Follow signs to emergency room (ER).

9.0 EMERGENCY RESPONSE CRITIQUE & RECORD KEEPING

Following an emergency, the SSHO and Project Manager shall review the effectiveness of this Emergency Response Plan (ERP) in addressing notification, control and evacuation requirements. Updates and modifications to this ERP shall be made accordingly. It shall be the responsibility of each contractor to establish and assure adequate records of the following:

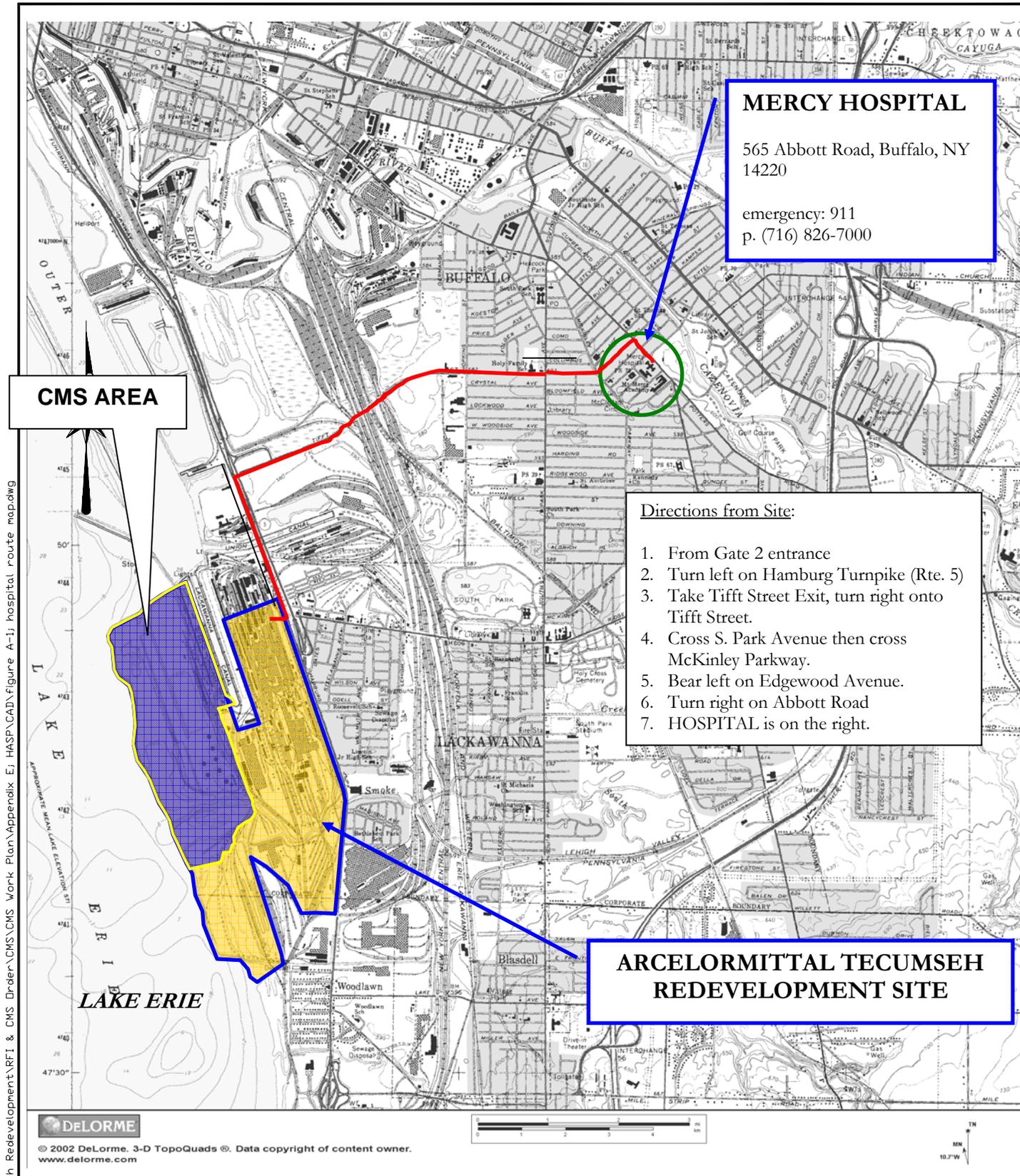
- Occupational injuries and illnesses.
- Accident investigations.
- Reports to insurance carrier or State compensation agencies.
- Reports required by the client.
- Records and reports required by local, state, federal and/or international agencies.
- Property or equipment damage.
- Third party injury or damage claims.
- Environmental testing logs.
- Explosive and hazardous substances inventories and records.
- Records of inspections and citations.
- Safety training.

10.0 EMERGENCY RESPONSE TRAINING

All persons who enter the worksite, including visitors, shall receive a site-specific briefing about anticipated emergency situations and the emergency procedures by the SSHO. Where this site relies on off-site organizations for emergency response, the training of personnel in those off-site organizations has been evaluated and is deemed adequate for response to this site.

FIGURES

FIGURE A-1



MERCY HOSPITAL
 565 Abbott Road, Buffalo, NY
 14220
 emergency: 911
 p. (716) 826-7000

CMS AREA

- Directions from Site:**
1. From Gate 2 entrance
 2. Turn left on Hamburg Turnpike (Rte. 5)
 3. Take Tift Street Exit, turn right onto Tift Street.
 4. Cross S. Park Avenue then cross McKinley Parkway.
 5. Bear left on Edgewood Avenue.
 6. Turn right on Abbott Road
 7. HOSPITAL is on the right.

ARCELORMITTAL TECUMSEH REDEVELOPMENT SITE

FILEPATH\F\TurnKey\Clients\Tecumseh Redevelopment\RFI & CMS Order\CMS\CMS Work Plan\Appendix E\HASP\CAD\Figure A-1\hospital_route_map.dwg

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726 EXCHANGE STREET
 SUITE 624
 BUFFALO, NEW YORK 14210
 (716) 856-0835

HOSPITAL ROUTE MAP
 HEALTH AND SAFETY PLAN FOR CMS
 TECUMSEH REDEVELOPMENT SITE
 LACKAWANNA, NEW YORK

PREPARED FOR
ARCELORMITTAL TECUMSEH REDEVELOPMENT, INC.

PROJECT NO.: 0071-006-110
 DATE: DECEMBER 2008
 DRAFTED BY: JCT

APPENDIX B

HOT WORK PERMIT FORM





HOT WORK PERMIT

PART 1 - INFORMATION

Issue Date:

Date Work to be Performed: Start:

Finish (permit terminated):

Performed By:

Work Area:

Object to be Worked On:

PART 2 - APPROVAL

(for 1, 2 or 3: mark Yes, No or NA)*

Will working be on or in:

Finish (permit terminated):

- | | | |
|--|-----|----|
| 1. Metal partition, wall, ceiling covered by combustible material? | yes | no |
| 2. Pipes, in contact with combustible material? | yes | no |
| 3. Explosive area? | yes | no |

* = If any of these conditions exist (marked "yes"), a permit will not be issued without being reviewed and approved by Thomas H. Forbes (Corporate Health and Safety Director). Required Signature below.

PART 3 - REQUIRED CONDITIONS**

(Check all conditions that must be met)

PROTECTIVE ACTION		PROTECTIVE EQUIPMENT	
<input type="checkbox"/>	Specific Risk Assessment Required	<input type="checkbox"/>	Goggles/visor/welding screen
<input type="checkbox"/>	Fire or spark barrier	<input type="checkbox"/>	Apron/fireproof clothing
<input type="checkbox"/>	Cover hot surfaces	<input type="checkbox"/>	Welding gloves/gauntlets/other:
<input type="checkbox"/>	Move movable fire hazards, specifically	<input type="checkbox"/>	Wellintons/Knee pads
<input type="checkbox"/>	Erect screen on barrier	<input type="checkbox"/>	Ear protection: Ear muffs/Ear plugs
<input type="checkbox"/>	Restrict Access	<input type="checkbox"/>	B.A.: SCBA/Long Breather
<input type="checkbox"/>	Wet the ground	<input type="checkbox"/>	Respirator: Type:
<input type="checkbox"/>	Ensure adequate ventilation	<input type="checkbox"/>	Cartridge:
<input type="checkbox"/>	Provide adequate supports	<input type="checkbox"/>	Local Exhaust Ventilation
<input type="checkbox"/>	Cover exposed drain/floor or wall cracks	<input type="checkbox"/>	Extinguisher/Fire blanket
<input type="checkbox"/>	Fire watch (must remain on duty during duration of permit)	<input type="checkbox"/>	Personal flammable gas monitor
<input type="checkbox"/>	Issue additional permit(s):		

Other precautions:

** Permit will not be issued until these conditions are met.

SIGNATURES

Originating Employee:

Date:

Project Manager:

Date:

Part 2 Approval:

Date:

APPENDIX C

NYSDOH GENERIC COMMUNITY AIR MONITORING PLAN



APPENDIX 1A

New York State Department of Health Generic Community Air Monitoring Plan

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

The generic CAMP presented below will be sufficient to cover many, if not most, sites. Specific requirements should be reviewed for each situation in consultation with NYSDOH to ensure proper applicability. In some cases, a separate site-specific CAMP or supplement may be required. Depending upon the nature of contamination, chemical- specific monitoring with appropriately-sensitive methods may be required. Depending upon the proximity of potentially exposed individuals, more stringent monitoring or response levels than those presented below may be required. Special requirements will be necessary for work within 20 feet of potentially exposed individuals or structures and for indoor work with co-located residences or facilities. These requirements should be determined in consultation with NYSDOH.

Reliance on the CAMP should not preclude simple, common-sense measures to keep VOCs, dust, and odors at a minimum around the work areas.

Community Air Monitoring Plan

Depending upon the nature of known or potential contaminants at each site, real-time air monitoring for volatile organic compounds (VOCs) and/or particulate levels at the perimeter of the exclusion zone or work area will be necessary. Most sites will involve VOC and particulate monitoring; sites known to be contaminated with heavy metals alone may only require particulate monitoring. If radiological contamination is a concern, additional monitoring requirements may be necessary per consultation with appropriate NYSDEC/NYSDOH staff.

Continuous monitoring will be required for all ground intrusive activities and during the demolition of contaminated or potentially contaminated structures. Ground intrusive activities include, but are not limited to, soil/waste excavation and handling, test pitting or trenching, and the installation of soil borings or monitoring wells.

Periodic monitoring for VOCs will be required during non-intrusive activities such as the collection of soil and sediment samples or the collection of groundwater samples from existing monitoring wells. "Periodic" monitoring during sample collection might reasonably consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or overturning soil, monitoring during well baling/purging, and taking a reading prior to leaving a sample location. In some instances, depending upon the proximity of potentially exposed individuals, continuous monitoring may be required during sampling activities. Examples of such situations include groundwater sampling at wells on the curb of a busy urban street, in the midst of a public park, or adjacent to a school or residence.

VOC Monitoring, Response Levels, and Actions

Volatile organic compounds (VOCs) must be monitored at the downwind perimeter of the immediate work area (i.e., the exclusion zone) on a continuous basis or as otherwise specified. Upwind concentrations should be measured at the start of each workday and periodically thereafter to establish background conditions. The monitoring work should be performed using equipment appropriate to measure the types of contaminants known or suspected to be present. The equipment should be calibrated at least daily for the contaminant(s) of concern or for an appropriate surrogate. The equipment should be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

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

All 15-minute readings must be recorded and be available for State (DEC and DOH) personnel to review. Instantaneous readings, if any, used for decision purposes should also be recorded.

Particulate Monitoring, Response Levels, and Actions

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

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

All readings must be recorded and be available for State (DEC and DOH) personnel to review.

APPENDIX C

PROJECT DOCUMENTATION FORMS



INSPECTOR'S DAILY REPORT

CONTRACTOR					
CLIENT				DATE:	
LOCATION				DAY	
WEATHER		TEMP	° F	START	
				JOB NO.	
				END	

MEETINGS HELD & RESULTS:

CONTRACTOR'S WORK FORCE AND EQUIPMENT											
DESCRIPTION	H	#	DESCRIPTION	H	#	DESCRIPTION	H	#	DESCRIPTION	H	#
Field Engineer						Equipment			Front Loader Ton		
Superintendent			Ironworker			Generators			Bulldozer		
						Welding Equip.			DJ Dump truck		
Laborer-Foreman			Carpenter						Water Truck		
Laborer									Backhoe		
Operating Engineer			Concrete Finisher						Excavator		
						Roller			Pad foot roller		
Carpenter						Paving Equipment					
						Air Compressor					

REMARKS:

REFERENCES TO OTHER FORMS:

SAMPLES COLLECTED:				
SAMPLE NUMBER				
APPROX. LOCATION OF STOCKPILE				
NO. OF STOCKPILE				
DATE OF COLLECTION				
CLIMATOLOGIC CONDITIONS				
FIELD OBSERVATION		SHEET		OF

