



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

June 9, 2014

REPLY TO THE ATTENTION OF:

LU-9J

Jason Smith
Corporate Environmental Director
Tecumseh Products Company
2700 W. Wood Street
Paris, TN 38242

Re: Summary of Additional Investigative Work to be Performed following
May 12, 2014 Meeting, Pursuant to Administrative Consent Order MID 005 049 440

Dear Mr. Smith:

Thank you for meeting with the United States Environmental Protection Agency (EPA) in Chicago on May 12, 2014. As a result of our meeting, Tecumseh Products Company (TPC) agreed to undertake additional investigatory work to adequately characterize the nature and extent of contaminant releases at or from the facility and to investigate human health concerns associated with nine residences north of the site and the Martin's Home Center. This letter documents the specific tasks TPC agreed to perform at the May 12th meeting to accomplish the goals of these investigations.

Basis for Further Site Investigation

In anticipation of our May 12th meeting, a series of figures summarizing TPC-provided sampling results from primarily temporary groundwater sampling locations, as well as other data or interpretations, were generated. These figures document the progression of investigation and sampling results at locations where only temporary data was available and establishes the inadequacy of the data, both on and off-site, to document the extent and intensity of contaminants within the plume. In addition, the figures support the concern that on-site plume(s) are undefined and appear to be sinking/expanding. The figures developed prior to the meeting, and reviewed and revised with TPC during the meeting, are attached to this letter as Figures 1-15.

Requirement to Perform Three Dimensional Characterization of the Contaminant Plume

In response to EPA's January 31, 2014 deficiency letter, TPC provided to EPA on March 27, 2014 a revised Statement of Work identifying Membrane Interface Probe (MIP) and Groundwater High Resolution Site Characterization (HRSC) investigation activities it proposes

to perform to further characterize the source areas. In response to the concerns presented at the May 12th meeting, TPC agreed to expand the scope of its MIP and HRSC investigation and mobilize its subcontractor to begin the work in June 2014. Described below is a detailed description of the positioning of the MIP and HRSC locations agreed upon at the meeting; Figure 1 visually identifies the location of the MIPs and HRSC locations, and Figures 2-15 provide the bases for EPA's requests. Also set forth below is the general protocol discussed at the meeting, as well as potential issues requiring further clarification. TPC agreed to expand the HRSC investigation to additional areas beyond those identified in prior drafts of the SOW, with the understanding that siting adjustments may be necessary based on MIP results and initial HRSC results. Finally, a site visit will be conducted in June during the three dimensional characterization exercise to help ensure the characterization effort will be consistent with EPA's expectations. The goal of the three dimensional characterization in source area(s) is to produce the necessary data to: 1) define the nature, extent, and intensity of the contaminants in the source area(s); 2) design and install an adequate monitoring well network in the source areas; 3) establish a platform for the adequate characterization and delineation of the nature and extent of releases at or from the facility; and, 4) evaluate the source area corrective measures that could be required.

Membrane Interface Probe (MIP) Investigation

During the May 12th meeting, EPA and TPC agreed to 21 preliminary locations for the MIP investigation; these locations are shown on the attached Figure 1. The locations were selected to cover the high-concentration areas identified by TPC during passive soil-gas source characterization (refer to Figures 2 and 3 of the Technical Memorandum dated April 10, 2014, and attached to the April 15, 2014 quarterly progress report). Other areas were selected that were not identified by TPC as sources, but which contain high levels of contamination, are in areas that do not have current data, or are in areas with limited data. Locations outside the identified source areas are numbered on the attached Figure 1, and were included to assess the veracity of the of the soil-gas characterization data and concentration differences between defined source areas and the non-source areas. Lastly, the results of the passive soil gas work TPC performed in early 2014 in the northwest portion of the site, and near the sewers in the southeast portion of the site are currently unavailable. Once provided, additional MIP locations that are not identified in Figure 1 may be necessary. Detailed below are certain procedures related to the MIP work that were not addressed in TPC's two prior Statements of Work, and are required for the proposed work to be considered acceptable, given that a work plan has not been prepared as originally requested.

- TPC will establish MIP sampling locations with a lateral spacing of approximately 150-feet between MIP sampling locations in identified source areas. The 150-foot spacing is necessary due to the observed spatial variability in TPC's soil-gas data.
- MIP screening data will be collected continuously from ground surface to the top of the deep basal clay.
- The MIP screening will be performed using in-series detectors to produce a combination of screening logs for each sampling location. EPA requires the following standard detectors for TPC's MIP work: EC (electrical conductance); gas chromatography (GC)-

grade flame ionization detector (FID); and halogen specific detector (XSD) or electron capture (ECD), if appropriate for isolating TCE. The detectors will establish the presence of trichloroethylene and associated degradation products in dissolved phase and/or as DNAPL (dense non-aqueous phase liquid). Photoionization (PID), or dry electrolytic conductivity (DELCD) detectors may also be employed by TPC along with the preceding detectors.

- The MIP will be calibrated with a TCE standard before each boring. MIP results will be compared with results from soil samples that will be collected and analyzed for VOCs (volatile organic compounds) by an on-site mobile laboratory.
- Soil samples will be selected for VOC analyses at the depths where the highest MIP readings for TCE are recorded at each MIP location. Laboratory analyses for VOCs need to be performed on 1-3 discrete soil samples per soil boring. The samples analyzed will be from the intervals displaying the three highest readings for trichloroethylene and/or degradation products. The soil sampling interval for each discrete soil sample will not exceed two (2) feet, or be less than 2-feet, for consistency. EPA has agreed to be in contact with TPC regarding samples selected for analysis. These data are needed to minimize the uncertainty regarding maximum source concentrations and assess the intensity and significance of the identified sources, evaluate the need for further source characterization and/or source remediation, and select the locations and screened intervals for permanent groundwater monitoring wells.
- It was agreed in the meeting that MIP locations denoted as locations 3, 4, and 9 on the original Figure 1 would be sampled as part of the high resolution groundwater sampling scope of work rather than with the MIP, while MIP location 11 was eliminated due to anticipated access issues. Since this location is immediately downgradient from the heaviest impact identified to date, EPA may assist TPC in gaining access for soil and groundwater sampling at location 11 in the future.
- The MIP results will be used to determine whether the sampling has sufficiently addressed the data gaps in source area characterization identified in EPA's January 31, 2014 letter.
- Upon completion of the MIP work, TPC will evaluate the MIP logs and provide cross-sections or fence diagrams incorporating all of the MIP data to aid in visualizing connection of preferential migration pathways across the site and assist in selecting locations for future monitoring well installations.
- Groundwater samples will subsequently be collected at the depth of the heaviest combined MIP readings and confirmation soil sampling results. The groundwater samples will be collected from permanent monitoring wells to be installed at the depth of heaviest impact(s). The locations and depths will be determined from the MIP results.
- Subsequent to our meeting, EPA provided TPC the option of collecting soil samples in 2-foot intervals continuously from the ground surface to the basal clay at all MIP locations, and performing laboratory analyses for VOCs on all sample intervals. This option was presented as an alternative to performing the MIP screening work to target individual sampling intervals for VOC analyses using the MIP screening data. If TPC chooses to implement this alternative, it must provide prior notification to EPA of such selection.

Groundwater High Resolution Site Characterization (HRSC) Work

EPA and TPC agreed to five (5) preliminary HRSC transects and 3 individual HRSC locations during the May 12th meeting. The locations identified for HRSC analysis are shown on the attached Figure 1. The HRSC locations were selected to be positioned downgradient from identified sources, including sewers and process areas, and/or along apparent preferential migration pathways. Additional HRSC locations that are not identified in Figure 1 may be necessary once the initial MIP and HRSC work are interpreted. I have detailed below the procedures EPA expects TPC to employ in conducting the HRSC work.

- TPC will position HRSC locations along transects so that horizontal spacing between individual HRSC sampling locations does not exceed 150 feet due to the noted horizontal spatial variability exhibited by the data and presence of multiple sources. For this phase of the work, a total of 37 sampling locations have been identified.
- Groundwater samples will be collected for laboratory analysis of VOCs at multiple depths at all HRSC locations.
- Samples will be collected at discrete consecutive intervals throughout the water column at all HRSC locations. Samples will be collected using Geoprobe® or equivalent direct-push technology equipped with dual tube samplers. Soil samples will be collected for logging from the ground surface through the basal clay. A 3-foot long slotted temporary well screen will be inserted into the outer tubes for groundwater purging and sampling. After sample collection for VOCs at the basal clay, the tubes and well screen will be retracted to the next interval, so that the sampling tube is positioned at the upper screen slot. Groundwater samples must be collected and analyzed from all intervals proceeding from the basal clay to the water table in 3-foot increments with no more than 3 feet between successive intervals.
- Samples will be collected sequentially across the entire saturated thickness of the aquifer.
- Groundwater samples will be collected and analyzed for VOCs from all discrete intervals not to exceed 3 feet, due to the documented variability in groundwater concentrations at varying depths in B-1/MW-1, B-50, and B-52, and potential for multiple sources at varying depths.
- Vertical spacing between the groundwater sampling intervals to be analyzed will also not exceed 3 feet, due to the aforementioned vertical concentration variability.
- The HRSC data will be used to select the location and screened intervals for permanent monitoring wells. Additional HRSC locations may also be needed. The combined HRSC and MIP results will be evaluated to determine the next steps in TPC's site characterization process.

Human Health Concerns

Based on the high levels of TCE in various soil gas samples, the high variability in soil gas sample results, and concerns regarding the delineation of impacts in groundwater, TPC agreed on May 12th to evaluate presumptive mitigation and/or vapor intrusion testing at nine (9) residences of concern north of the site (PIN 325-0160-00, 325-0120-00, 305-2091-00, 305-2110-00, 305-2120-00, 305-2131-00, 305-2140-00, 305-2151-00, and 305-2170-00). Within ninety days, TPC

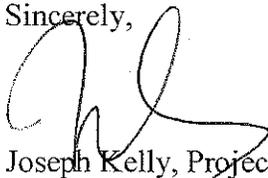
agreed to provide an assessment for future steps in the evaluation of these properties. In addition, TPC agreed to initiate efforts to obtain access to the Martin's Home Center site to conduct soil gas testing at the building perimeter, as shown in Figure 3 of the original SOW, dated March 3, 2014, rather than at the TPC property line, as proposed in the revised SOW. Additional work may still be needed after this initial scope of identified work.

Other Matters Discussed on May 12

EPA emphasized that permanent monitoring wells must be installed following completion and assessment of the investigatory work described during this phase of investigation. It is likely that subsequent follow-up investigation(s) will also be required to establish the extent of contamination in groundwater to MCLs. In addition, TPC's characterization work for the groundwater/surface water interface submittal will require coordination with and approval from MDEQ. The proximity of contamination relative to on-site sewers was noted, and EPA requested site plans showing the configuration for all current/former on-site sewers. TPC indicated that plans showing the configuration of sewers within building footprint were unavailable. EPA remains concerned that the on-site sewers may be a source for contamination, and requires a visual survey of on-site manholes. The visual survey can be completed during the MIP and HRSC work. Based on the results, EPA will evaluate whether alternate methods for determining the location of sewers are needed. Finally, in a follow-up message to TPC, EPA identified that all of the existing permanent monitoring wells installed at all intervals at SS-09, SS-10, NS-18, NS-19, and NS-20 should be added to the current quarterly groundwater monitoring network to track the lateral and vertical migration of contamination adjacent to these (three) source areas beginning with the current quarter in May 2014.

EPA appreciates TPC's continued cooperation and commitment to addressing the site concerns we discussed at our meeting and look forward to scheduling the site work referenced above as soon as possible. Please contact me if you have any concerns or comments.

Sincerely,



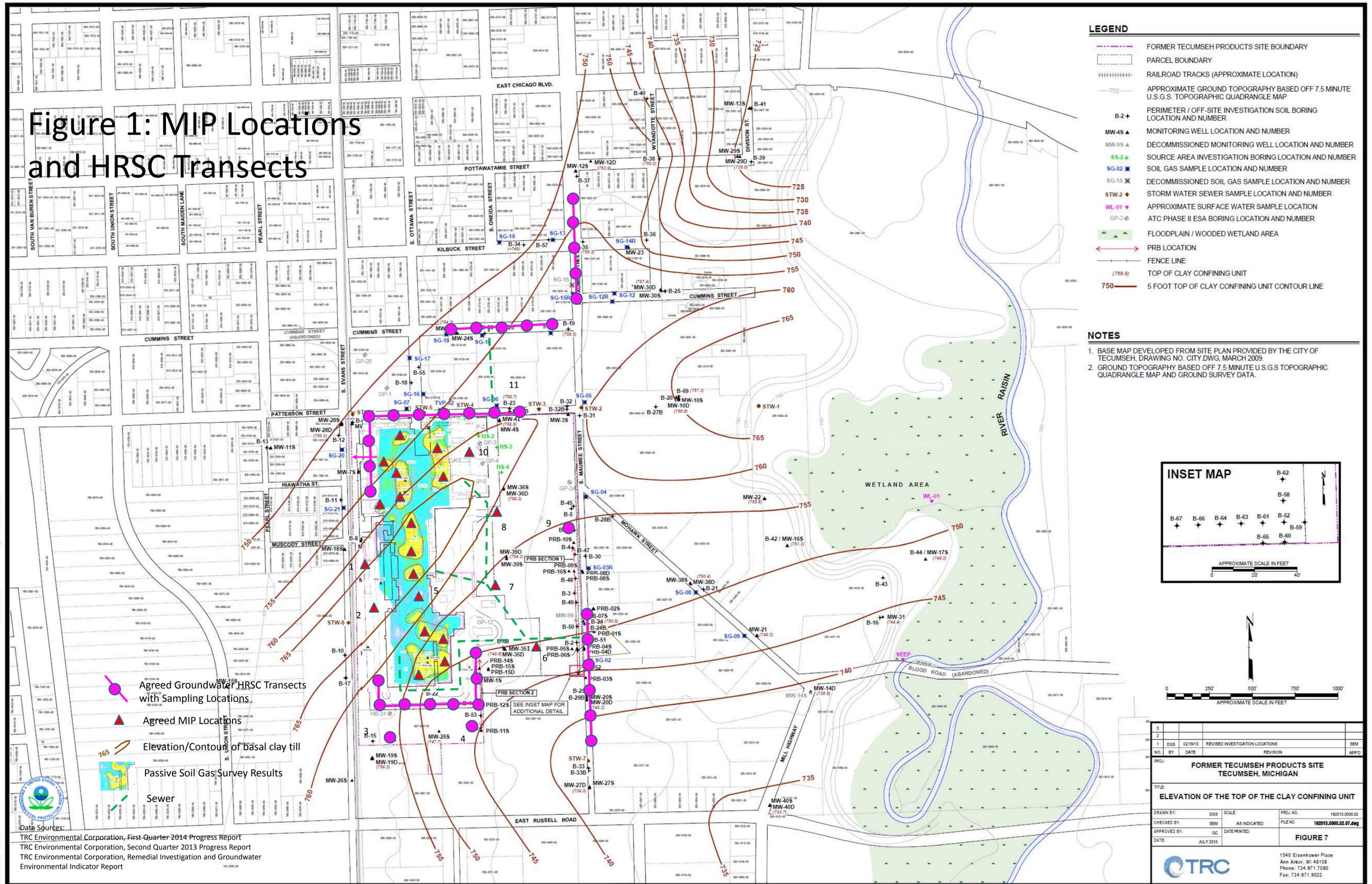
Joseph Kelly, Project Manager
Remediation and Reuse Branch

cc: Graham Crockford, TRC Environmental Corporation (TPC Project Manager)
Douglas McClure, Conlin, McKenney & Philbrick, PC
Stacy Metz, TRC Environmental Corporation
Tecumseh District Library – Public Repository

Attachments: Figures 1-15

bcc: Susan Perdomo, ORC C-14J
Joseph Kelly, LCD LU-9J
Mario Mangino, LCD LU-9J
Dan Mazur, LCD LU-9J
Colleen Olsberg, LCD LU-9J
Dave Petrovski, LCD LU-9J
Bhooma Sundar, LCD LU-9J

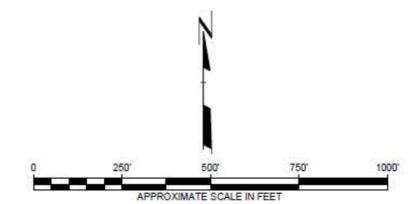
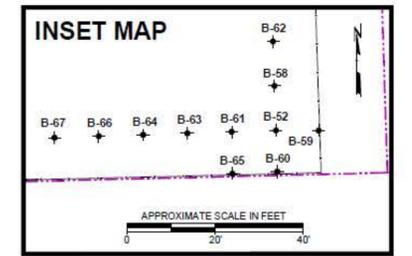
Figure 1: MIP Locations and HRSC Transects



LEGEND

- FORMER TECUMSEH PRODUCTS SITE BOUNDARY
- PARCEL BOUNDARY
- RAILROAD TRACKS (APPROXIMATE LOCATION)
- 750 APPROXIMATE GROUND TOPOGRAPHY BASED OFF 7.5 MINUTE U.S.G.S. TOPOGRAPHIC QUADRANGLE MAP
- B-2+ PERIMETER / OFF-SITE INVESTIGATION SOIL BORING LOCATION AND NUMBER
- ▲ MW-4S MONITORING WELL LOCATION AND NUMBER
- ▲ MW-9S DECOMMISSIONED MONITORING WELL LOCATION AND NUMBER
- + SS-2+ SOURCE AREA INVESTIGATION BORING LOCATION AND NUMBER
- ✖ SG-02 SOIL GAS SAMPLE LOCATION AND NUMBER
- ✖ SG-15 DECOMMISSIONED SOIL GAS SAMPLE LOCATION AND NUMBER
- ✖ STW-2 STORM WATER SEWER SAMPLE LOCATION AND NUMBER
- ▼ WL-01 APPROXIMATE SURFACE WATER SAMPLE LOCATION
- ▼ GP-2 ATC PHASE II ESA BORING LOCATION AND NUMBER
- FLOODPLAIN / WOODED WETLAND AREA
- PRB LOCATION
- FENCE LINE
- (759.6) TOP OF CLAY CONFINING UNIT
- 750 5 FOOT TOP OF CLAY CONFINING UNIT CONTOUR LINE

- ### NOTES
1. BASE MAP DEVELOPED FROM SITE PLAN PROVIDED BY THE CITY OF TECUMSEH, DRAWING NO. CITY.DWG, MARCH 2009.
 2. GROUND TOPOGRAPHY BASED OFF 7.5 MINUTE U.S.G.S TOPOGRAPHIC QUADRANGLE MAP AND GROUND SURVEY DATA.



- Agreed Groundwater HRSC Transects with Sampling Locations
- ▲ Agreed MIP Locations
- Elevation/Contour of basal clay till
- Passive Soil Gas Survey Results
- Sewer

3				
2				
1	DOS	02/19/13	REVISED INVESTIGATION LOCATIONS	SEM
NO.	BY	DATE	REVISION	APPD.
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TITLE ELEVATION OF THE TOP OF THE CLAY CONFINING UNIT				
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CHECKED BY:	SEM	AS INDICATED	FILE NO.:	192013.0000.02.dwg
APPROVED BY:	GC	DATE PRINTED:	FIGURE 7	
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			1540 Eisenhower Place Ann Arbor, MI 48108 Phone: 734.971.7080 Fax: 734.971.9022	

Date: 07/15/13
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Data Sources:
 TRC Environmental Corporation, First Quarter 2014 Progress Report
 TRC Environmental Corporation, Second Quarter 2013 Progress Report
 TRC Environmental Corporation, Remedial Investigation and Groundwater Environmental Indicator Report

Figure 2: Investigation Chronology ATC December 2008-January 2009 Due Diligence Investigation

LEGEND

- FORMER TECUMSEH PRODUCTS SITE BOUNDARY
- PARCEL BOUNDARY
- RAILROAD TRACKS (APPROXIMATE LOCATION)
- 750 APPROXIMATE GROUND TOPOGRAPHY BASED OFF 7.5 MINUTE U.S.G.S. TOPOGRAPHIC QUADRANGLE MAP
- PERIMETER / OFF-SITE INVESTIGATION SOIL BORING LOCATION AND NUMBER
- MONITORING WELL LOCATION AND NUMBER
- DECOMMISSIONED MONITORING WELL LOCATION AND NUMBER
- SOURCE AREA INVESTIGATION BORING LOCATION AND NUMBER
- SOIL GAS SAMPLE LOCATION AND NUMBER
- DECOMMISSIONED SOIL GAS SAMPLE LOCATION AND NUMBER
- STORM WATER SEWER SAMPLE LOCATION AND NUMBER
- APPROXIMATE SURFACE WATER SAMPLE LOCATION
- ATC PHASE II ESA BORING LOCATION AND NUMBER
- SUB-SLAB SOIL GAS SAMPLE NUMBER AND LOCATION
- INDOOR AIR SAMPLE NUMBER AND LOCATION
- FLOODPLAIN / WOODED WETLAND AREA
- PRB LOCATION
- FENCE LINE

- ### NOTES
1. BASE MAP DEVELOPED FROM SITE PLAN PROVIDED BY THE CITY OF TECUMSEH, DRAWING NO. CITY.DWG, MARCH 2009.
 2. GROUND TOPOGRAPHY BASED OFF 7.5 MINUTE U.S.G.S TOPOGRAPHIC QUADRANGLE MAP AND GROUND SURVEY DATA.

- TCE > 1,000 ug/L
- TCE > 800 ug/L
- TCE > 600 ug/L
- TCE > 400 ug/L
- TCE > 200 ug/L
- Temporary boring (TCE < 200 ug/L)

INSET MAP

3				
2				
1	000	02/19/13	REVISED INVESTIGATION LOCATIONS	SEM
NO.	BY	DATE	REVISION	APPD
PROJ: FORMER TECUMSEH PRODUCTS SITE TECUMSEH, MICHIGAN				
TITLE: SITE LAYOUT AND SAMPLE LOCATIONS				
DRAWN BY:	DDB	SCALE:	PROJ. NO:	004304.0001.02
CHECKED BY:	SEM	AS INDICATED	FILE NO:	004004.0001.02.01.dwg
APPROVED BY:	GC	DATE PRINTED:	FIGURE 1	
DATE:	JANUARY 2014			
			1540 Eisenhower Place Ann Arbor, MI 48108 Phone: 734.971.7080 Fax: 734.971.9022	

Mapped Date: 10/10/13 (pm)
 Author: J. Allen
 Date: 11/20/13
 Title: 004304.0001.02.dwg
 Project: 004304

Data Sources:
 TRC Environmental Corporation, First Quarter 2014 Progress Report
 TRC Environmental Corporation, Second Quarter 2013 Progress Report
 TRC Environmental Corporation, Remedial Investigation and Groundwater
 Environmental Indicator Report

Figure 3: Investigation Chronology RMT March 2009

LEGEND

- FORMER TECUMSEH PRODUCTS SITE BOUNDARY
- PARCEL BOUNDARY
- RAILROAD TRACKS (APPROXIMATE LOCATION)
- 750 APPROXIMATE GROUND TOPOGRAPHY BASED OFF 7.5 MINUTE U.S.G.S. TOPOGRAPHIC QUADRANGLE MAP
- PERIMETER / OFF-SITE INVESTIGATION SOIL BORING LOCATION AND NUMBER
- MONITORING WELL LOCATION AND NUMBER
- DECOMMISSIONED MONITORING WELL LOCATION AND NUMBER
- SOURCE AREA INVESTIGATION BORING LOCATION AND NUMBER
- SOIL GAS SAMPLE LOCATION AND NUMBER
- DECOMMISSIONED SOIL GAS SAMPLE LOCATION AND NUMBER
- STORM WATER SEWER SAMPLE LOCATION AND NUMBER
- APPROXIMATE SURFACE WATER SAMPLE LOCATION
- ATC PHASE II ESA BORING LOCATION AND NUMBER
- SUB-SLAB SOIL GAS SAMPLE NUMBER AND LOCATION
- INDOOR AIR SAMPLE NUMBER AND LOCATION
- FLOODPLAIN / WOODED WETLAND AREA
- PRB LOCATION
- FENCE LINE

NOTES

1. BASE MAP DEVELOPED FROM SITE PLAN PROVIDED BY THE CITY OF TECUMSEH, DRAWING NO. CITY.DWG, MARCH 2009.
2. GROUND TOPOGRAPHY BASED OFF 7.5 MINUTE U.S.G.S TOPOGRAPHIC QUADRANGLE MAP AND GROUND SURVEY DATA.

- TCE > 5,000 ug/L
- TCE > 2,000 ug/L
- TCE > 1,000 ug/L
- TCE > 800 ug/L
- TCE > 600 ug/L
- TCE > 400 ug/L
- TCE > 200 ug/L
- Temporary boring (TCE < 200 ug/L)
- Permanent Well

Well MW-4S TCE > 5,000 ug/L adjacent to abandoned sewer

Well MW-9S TCE > 1,000 ug/L adjacent to abandoned sewer

B-1 water TCE = 200 ug/L
MW-1S water TCE = 2,700 ug/L

INSET MAP

APPROXIMATE SCALE IN FEET

APPROXIMATE SCALE IN FEET

3				
2				
1	0/0	02/10/13	REVISED INVESTIGATION LOCATIONS	SEM
NO.	BY	DATE	REVISION	APPD
<p>FORMER TECUMSEH PRODUCTS SITE TECUMSEH, MICHIGAN</p> <p>SITE LAYOUT AND SAMPLE LOCATIONS</p>				
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CHECKED BY:	SEM	AS INDICATED	FILE NO.:	004004.001.02.01.dwg
APPROVED BY:	GC	DATE PRINTED:	FIGURE 1	
DATE:	JANUARY 2014			
			1540 Eisenhower Place Ann Arbor, MI 48108 Phone: 734.971.7080 Fax: 734.971.9022	

Data Sources:
 TRC Environmental Corporation, First Quarter 2014 Progress Report
 TRC Environmental Corporation, Second Quarter 2013 Progress Report
 TRC Environmental Corporation, Remedial Investigation and Groundwater Environmental Indicator Report



Figure 4: Investigation Chronology

RMT April 2009

LEGEND

- FORMER TECUMSEH PRODUCTS SITE BOUNDARY
- PARCEL BOUNDARY
- RAILROAD TRACKS (APPROXIMATE LOCATION)
- 750 APPROXIMATE GROUND TOPOGRAPHY BASED OFF 7.5 MINUTE U.S.G.S. TOPOGRAPHIC QUADRANGLE MAP
- PERIMETER / OFF-SITE INVESTIGATION SOIL BORING LOCATION AND NUMBER
- MW-4S ▲ MONITORING WELL LOCATION AND NUMBER
- MW-SS ▲ DECOMMISSIONED MONITORING WELL LOCATION AND NUMBER
- SS-2+ SOURCE AREA INVESTIGATION BORING LOCATION AND NUMBER
- SG-02 ✖ SOIL GAS SAMPLE LOCATION AND NUMBER
- SG-15 ✖ DECOMMISSIONED SOIL GAS SAMPLE LOCATION AND NUMBER
- STW-2 ✖ STORM WATER SEWER SAMPLE LOCATION AND NUMBER
- WL-01 ▲ APPROXIMATE SURFACE WATER SAMPLE LOCATION
- GP-2 ✖ ATC PHASE II ESA BORING LOCATION AND NUMBER
- SV-10 ✖ SUB-SLAB SOIL GAS SAMPLE NUMBER AND LOCATION
- IA-10 ▲ INDOOR AIR SAMPLE NUMBER AND LOCATION
- FLOODPLAIN / WOODED WETLAND AREA
- PRB LOCATION
- FENCE LINE

NOTES

1. BASE MAP DEVELOPED FROM SITE PLAN PROVIDED BY THE CITY OF TECUMSEH, DRAWING NO. CITY.DWG, MARCH 2009.
2. GROUND TOPOGRAPHY BASED OFF 7.5 MINUTE U.S.G.S TOPOGRAPHIC QUADRANGLE MAP AND GROUND SURVEY DATA.

- TCE > 5,000 ug/L
- TCE > 2,000 ug/L
- TCE > 1,000 ug/L
- TCE > 800 ug/L
- TCE > 600 ug/L
- TCE > 400 ug/L
- TCE > 200 ug/L
- Temporary boring (TCE < 200 ug/L)
- Permanent Well
- Temporary boring with vinyl chloride in groundwater

INSET MAP

APPROXIMATE SCALE IN FEET

APPROXIMATE SCALE IN FEET

3				
2				
1	000	02/19/13	REVISED INVESTIGATION LOCATIONS	SEM
NO.	BY	DATE	REVISION	APPD
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SITE LAYOUT AND SAMPLE LOCATIONS				
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APPROVED BY:	GC	DATE PRINTED:	FIGURE 1	
DATE:	JANUARY 2014			
			1540 Eisenhower Place Ann Arbor, MI 48108 Phone: 734.971.7080 Fax: 734.971.9022	

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 PLOT DEVICE: HP DesignJet 5000

Data Sources:
 TRC Environmental Corporation, First Quarter 2014 Progress Report
 TRC Environmental Corporation, Second Quarter 2013 Progress Report
 TRC Environmental Corporation, Remedial Investigation and Groundwater
 Environmental Indicator Report

Figure 5: Investigation Chronology RMT May-July 2009

LEGEND

- FORMER TECUMSEH PRODUCTS SITE BOUNDARY
- PARCEL BOUNDARY
- RAILROAD TRACKS (APPROXIMATE LOCATION)
- 750 APPROXIMATE GROUND TOPOGRAPHY BASED OFF 7.5 MINUTE U.S.G.S. TOPOGRAPHIC QUADRANGLE MAP
- PERIMETER / OFF-SITE INVESTIGATION SOIL BORING LOCATION AND NUMBER
- MW-4S ▲ MONITORING WELL LOCATION AND NUMBER
- MW-SS ▲ DECOMMISSIONED MONITORING WELL LOCATION AND NUMBER
- SG-2 ▲ SOURCE AREA INVESTIGATION BORING LOCATION AND NUMBER
- SG-02 ■ SOIL GAS SAMPLE LOCATION AND NUMBER
- SG-15 ■ DECOMMISSIONED SOIL GAS SAMPLE LOCATION AND NUMBER
- STW-2 ■ STORM WATER SEWER SAMPLE LOCATION AND NUMBER
- WL-01 ▲ APPROXIMATE SURFACE WATER SAMPLE LOCATION
- GP-2 ■ ATC PHASE II ESA BORING LOCATION AND NUMBER
- SV-10 ■ SUB-SLAB SOIL GAS SAMPLE NUMBER AND LOCATION
- IA-10 ▲ INDOOR AIR SAMPLE NUMBER AND LOCATION
- FLOODPLAIN / WOODED WETLAND AREA
- PRB LOCATION
- FENCE LINE

NOTES

1. BASE MAP DEVELOPED FROM SITE PLAN PROVIDED BY THE CITY OF TECUMSEH, DRAWING NO. CITY.DWG, MARCH 2009.
2. GROUND TOPOGRAPHY BASED OFF 7.5 MINUTE U.S.G.S TOPOGRAPHIC QUADRANGLE MAP AND GROUND SURVEY DATA.

- TCE > 5,000 ug/L
- TCE > 2,000 ug/L
- TCE > 1,000 ug/L
- TCE > 800 ug/L
- TCE > 600 ug/L
- TCE > 400 ug/L
- TCE > 200 ug/L
- Temporary boring (TCE < 200 ug/L)
- Permanent Well

INSET MAP

APPROXIMATE SCALE IN FEET

APPROXIMATE SCALE IN FEET

3				
2				
1	000	02/19/13	REVISED INVESTIGATION LOCATIONS	SEM
NO.	BY	DATE	REVISION	APPD
FORMER TECUMSEH PRODUCTS SITE TECUMSEH, MICHIGAN				
SITE LAYOUT AND SAMPLE LOCATIONS				
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CHECKED BY:	SEM	AS INDICATED	FILE NO:	004004.0001.02.01.dwg
APPROVED BY:	GC	DATE PRINTED:	FIGURE 1	
DATE:	JANUARY 2014			
			1540 Eisenhower Place Ann Arbor, MI 48108 Phone: 734.971.7080 Fax: 734.971.9022	

Modified: 1/10/13 (pm)
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 Layout: [Name]
 Date: 1/10/13
 File: [Name]
 Plot: [Name]

Data Sources:
 TRC Environmental Corporation, First Quarter 2014 Progress Report
 TRC Environmental Corporation, Second Quarter 2013 Progress Report
 TRC Environmental Corporation, Remedial Investigation and Groundwater Environmental Indicator Report

Figure 6: Investigation Chronology RMT November 2009 – September 2010

LEGEND

- FORMER TECUMSEH PRODUCTS SITE BOUNDARY
- PARCEL BOUNDARY
- RAILROAD TRACKS (APPROXIMATE LOCATION)
- 750 APPROXIMATE GROUND TOPOGRAPHY BASED OFF 7.5 MINUTE U.S.G.S. TOPOGRAPHIC QUADRANGLE MAP
- PERIMETER / OFF-SITE INVESTIGATION SOIL BORING LOCATION AND NUMBER
- MONITORING WELL LOCATION AND NUMBER
- DECOMMISSIONED MONITORING WELL LOCATION AND NUMBER
- SOURCE AREA INVESTIGATION BORING LOCATION AND NUMBER
- SOIL GAS SAMPLE LOCATION AND NUMBER
- DECOMMISSIONED SOIL GAS SAMPLE LOCATION AND NUMBER
- STORM WATER SEWER SAMPLE LOCATION AND NUMBER
- APPROXIMATE SURFACE WATER SAMPLE LOCATION
- ATC PHASE II ESA BORING LOCATION AND NUMBER
- SUB-SLAB SOIL GAS SAMPLE NUMBER AND LOCATION
- INDOOR AIR SAMPLE NUMBER AND LOCATION
- FLOODPLAIN / WOODED WETLAND AREA
- PRB LOCATION
- FENCE LINE

NOTES

1. BASE MAP DEVELOPED FROM SITE PLAN PROVIDED BY THE CITY OF TECUMSEH, DRAWING NO. CITY.DWG, MARCH 2009.
2. GROUND TOPOGRAPHY BASED OFF 7.5 MINUTE U.S.G.S TOPOGRAPHIC QUADRANGLE MAP AND GROUND SURVEY DATA.

- TCE > 5,000 ug/L
- TCE > 2,000 ug/L
- TCE > 1,000 ug/L
- TCE > 800 ug/L
- TCE > 600 ug/L
- TCE > 400 ug/L
- TCE > 200 ug/L
- Temporary boring (TCE < 200 ug/L)
- Permanent Well
- Soil Gas Location (concentrations relative to background)

Passive Soil Gas Survey Results

INSET MAP

APPROXIMATE SCALE IN FEET

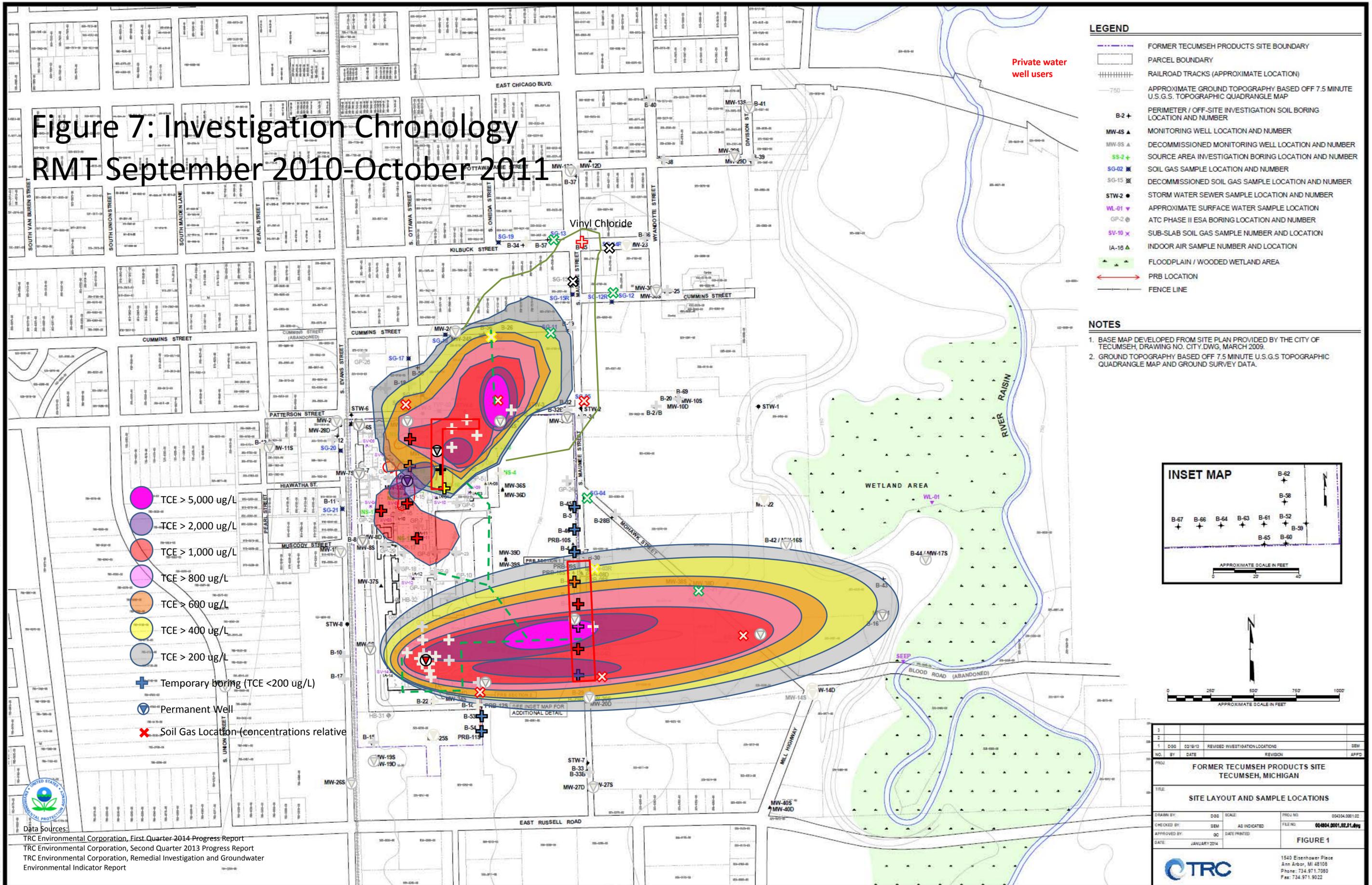
APPROXIMATE SCALE IN FEET

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NO.	BY	DATE	REVISION	APPD.
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DRAWN BY:	DDB	SCALE:	AS INDICATED	FILE NO: 004004.0001.02
CHECKED BY:	SEM	DATE PRINTED:		FILE NO: 004004.0001.02.01.dwg
APPROVED BY:	GC			FIGURE 1
DATE:	JANUARY 2014			
				1540 Eisenhower Place Ann Arbor, MI 48108 Phone: 734.971.7080 Fax: 734.971.9022

Map Date: 01/10/13 (pm)
 Author: J. J. J. J.
 Layout: J. J. J. J.
 Date: 01/10/13 (pm)
 File: 004004.0001.02.01.dwg
 Plot: 01/10/13 (pm)

Data Sources:
 TRC Environmental Corporation, First Quarter 2014 Progress Report
 TRC Environmental Corporation, Second Quarter 2013 Progress Report
 TRC Environmental Corporation, Remedial Investigation and Groundwater Environmental Indicator Report

Figure 7: Investigation Chronology RMT September 2010-October 2011



LEGEND

- FORMER TECUMSEH PRODUCTS SITE BOUNDARY
- PARCEL BOUNDARY
- RAILROAD TRACKS (APPROXIMATE LOCATION)
- APPROXIMATE GROUND TOPOGRAPHY BASED OFF 7.5 MINUTE U.S.G.S. TOPOGRAPHIC QUADRANGLE MAP
- PERIMETER / OFF-SITE INVESTIGATION SOIL BORING LOCATION AND NUMBER
- MONITORING WELL LOCATION AND NUMBER
- DECOMMISSIONED MONITORING WELL LOCATION AND NUMBER
- SOURCE AREA INVESTIGATION BORING LOCATION AND NUMBER
- SOIL GAS SAMPLE LOCATION AND NUMBER
- DECOMMISSIONED SOIL GAS SAMPLE LOCATION AND NUMBER
- STORM WATER SEWER SAMPLE LOCATION AND NUMBER
- APPROXIMATE SURFACE WATER SAMPLE LOCATION
- ATC PHASE II ESA BORING LOCATION AND NUMBER
- SUB-SLAB SOIL GAS SAMPLE NUMBER AND LOCATION
- INDOOR AIR SAMPLE NUMBER AND LOCATION
- FLOODPLAIN / WOODED WETLAND AREA
- PRB LOCATION
- FENCE LINE

NOTES

1. BASE MAP DEVELOPED FROM SITE PLAN PROVIDED BY THE CITY OF TECUMSEH, DRAWING NO. CITY.DWG, MARCH 2009.
2. GROUND TOPOGRAPHY BASED OFF 7.5 MINUTE U.S.G.S TOPOGRAPHIC QUADRANGLE MAP AND GROUND SURVEY DATA.

- TCE > 5,000 ug/L
- TCE > 2,000 ug/L
- TCE > 1,000 ug/L
- TCE > 800 ug/L
- TCE > 600 ug/L
- TCE > 400 ug/L
- TCE > 200 ug/L
- Temporary boring (TCE < 200 ug/L)
- Permanent Well
- Soil Gas Location (concentrations relative)

INSET MAP

3				
2				
1	DDB	02/19/13	REVISED INVESTIGATION LOCATIONS	SEM
NO.	BY	DATE	REVISION	APPD
FORMER TECUMSEH PRODUCTS SITE TECUMSEH, MICHIGAN				
SITE LAYOUT AND SAMPLE LOCATIONS				
DRAWN BY:	DDB	SCALE:	PROJ. NO.:	004304.0001.02
CHECKED BY:	SEM	AS INDICATED	FILE NO.:	004004.0001.02.01.dwg
APPROVED BY:	GC	DATE PRINTED:	FIGURE 1	
DATE:	JANUARY 2014			
			1540 Eisenhower Place Ann Arbor, MI 48108 Phone: 734.971.7080 Fax: 734.971.9022	

Project: 004304.0001.02
 Title: FORMER TECUMSEH PRODUCTS SITE, TECUMSEH, MICHIGAN
 Date: 01/15/14
 Author: DDB
 Checker: SEM
 Approver: GC
 Scale: AS INDICATED
 Project No: 004304.0001.02
 File No: 004004.0001.02.01.dwg
 Date Printed: 01/15/14
 Figure No: 1

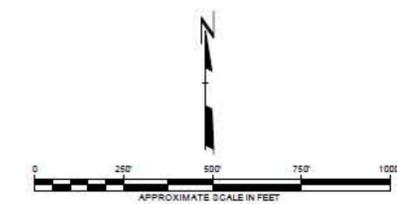
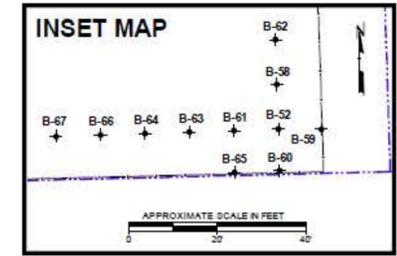
Data Sources:
 TRC Environmental Corporation, First Quarter 2014 Progress Report
 TRC Environmental Corporation, Second Quarter 2013 Progress Report
 TRC Environmental Corporation, Remedial Investigation and Groundwater
 Environmental Indicator Report

Figure 8: Investigation Chronology TRC June 2012-September 2013

- ### LEGEND
- FORMER TECUMSEH PRODUCTS SITE BOUNDARY
 - PARCEL BOUNDARY
 - RAILROAD TRACKS (APPROXIMATE LOCATION)
 - 750 APPROXIMATE GROUND TOPOGRAPHY BASED OFF 7.5 MINUTE U.S.G.S. TOPOGRAPHIC QUADRANGLE MAP
 - PERIMETER / OFF-SITE INVESTIGATION SOIL BORING LOCATION AND NUMBER
 - MONITORING WELL LOCATION AND NUMBER
 - DECOMMISSIONED MONITORING WELL LOCATION AND NUMBER
 - SOURCE AREA INVESTIGATION BORING LOCATION AND NUMBER
 - SOIL GAS SAMPLE LOCATION AND NUMBER
 - DECOMMISSIONED SOIL GAS SAMPLE LOCATION AND NUMBER
 - STORM WATER SEWER SAMPLE LOCATION AND NUMBER
 - APPROXIMATE SURFACE WATER SAMPLE LOCATION
 - ATC PHASE II ESA BORING LOCATION AND NUMBER
 - SUB-SLAB SOIL GAS SAMPLE NUMBER AND LOCATION
 - INDOOR AIR SAMPLE NUMBER AND LOCATION
 - FLOODPLAIN / WOODED WETLAND AREA
 - PRB LOCATION
 - FENCE LINE

- ### NOTES
1. BASE MAP DEVELOPED FROM SITE PLAN PROVIDED BY THE CITY OF TECUMSEH, DRAWING NO. CITY.DWG, MARCH 2009.
 2. GROUND TOPOGRAPHY BASED OFF 7.5 MINUTE U.S.G.S TOPOGRAPHIC QUADRANGLE MAP AND GROUND SURVEY DATA.

- TCE > 5,000 ug/L
- TCE > 2,000 ug/L
- TCE > 1,000 ug/L
- TCE > 800 ug/L
- TCE > 600 ug/L
- TCE > 400 ug/L
- TCE > 200 ug/L
- Temporary boring (TCE < 200 ug/L)
- Permanent Well
- Soil Gas Location (concentrations relative to Passive Soil Gas Survey Results)



3				
2				
1	000	02/19/13	REVISED INVESTIGATION LOCATIONS	SEM
NO.	BY	DATE	REVISION	APPD
FORMER TECUMSEH PRODUCTS SITE TECUMSEH, MICHIGAN				
SITE LAYOUT AND SAMPLE LOCATIONS				
DRAWN BY:	DDB	SCALE:	PROJ. NO:	004304.0001.02
CHECKED BY:	SEM	AS INDICATED	FILE NO:	004004.0001.02.01.dwg
APPROVED BY:	GC	DATE PRINTED:	FIGURE 1	
DATE:	JANUARY 2014			
			1540 Eisenhower Place Ann Arbor, MI 48108 Phone: 734.971.7080 Fax: 734.971.9022	

Map Date: 01/15/14
 Project: 004304
 Scale: 1" = 100'
 Date: 01/15/14
 Author: J. J. [unreadable]
 Checker: [unreadable]
 Approver: [unreadable]

Data Sources:
 TRC Environmental Corporation, First Quarter 2014 Progress Report
 TRC Environmental Corporation, Second Quarter 2013 Progress Report
 TRC Environmental Corporation, Remedial Investigation and Groundwater
 Environmental Indicator Report

Figure 9: Locations of Concern October 2013 to Present

Primary Soil Gas and
Groundwater
Concerns

43 acres of the site
contain only 13
permanent wells

Primary Soil Gas and
Groundwater
Concerns

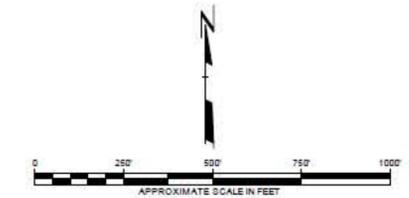
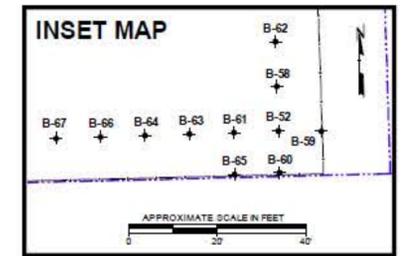
Private water
well users

LEGEND

- FORMER TECUMSEH PRODUCTS SITE BOUNDARY
- PARCEL BOUNDARY
- RAILROAD TRACKS (APPROXIMATE LOCATION)
- APPROXIMATE GROUND TOPOGRAPHY BASED OFF 7.5 MINUTE U.S.G.S. TOPOGRAPHIC QUADRANGLE MAP
- PERIMETER / OFF-SITE INVESTIGATION SOIL BORING LOCATION AND NUMBER
- MONITORING WELL LOCATION AND NUMBER
- DECOMMISSIONED MONITORING WELL LOCATION AND NUMBER
- SOURCE AREA INVESTIGATION BORING LOCATION AND NUMBER
- SOIL GAS SAMPLE LOCATION AND NUMBER
- DECOMMISSIONED SOIL GAS SAMPLE LOCATION AND NUMBER
- STORM WATER SEWER SAMPLE LOCATION AND NUMBER
- APPROXIMATE SURFACE WATER SAMPLE LOCATION
- ATC PHASE II ESA BORING LOCATION AND NUMBER
- SUB-SLAB SOIL GAS SAMPLE NUMBER AND LOCATION
- INDOOR AIR SAMPLE NUMBER AND LOCATION
- FLOODPLAIN / WOODED WETLAND AREA
- PRB LOCATION
- FENCE LINE

- NOTES**
1. BASE MAP DEVELOPED FROM SITE PLAN PROVIDED BY THE CITY OF TECUMSEH, DRAWING NO. CITY.DWG, MARCH 2009.
 2. GROUND TOPOGRAPHY BASED OFF 7.5 MINUTE U.S.G.S TOPOGRAPHIC QUADRANGLE MAP AND GROUND SURVEY DATA.

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- TCE > 2,000 ug/L
- TCE > 1,000 ug/L
- TCE > 800 ug/L
- TCE > 600 ug/L
- TCE > 400 ug/L
- TCE > 200 ug/L
- Temporary boring (TCE < 200 ug/L)
- Permanent Well
- Soil Gas Location (concentrations relative)



3				
2				
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NO.	BY	DATE	REVISION	APPD
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SITE LAYOUT AND SAMPLE LOCATIONS				
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CHECKED BY:	SEM	AS INDICATED	FILE NO:	00404.001.02.01.dwg
APPROVED BY:	GC	DATE PRINTED:	FIGURE 1	
DATE:	JANUARY 2014			
			1540 Eisenhower Place Ann Arbor, MI 48108 Phone: 734.971.7080 Fax: 734.971.9022	

Data Sources:
 TRC Environmental Corporation, First Quarter 2014 Progress Report
 TRC Environmental Corporation, Second Quarter 2013 Progress Report
 TRC Environmental Corporation, Remedial Investigation and Groundwater
 Environmental Indicator Report

M:\Projects\2013\20130113\20130113.dwg
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 Plot Time: 11:20:44
 Plot User: JLM
 Plot Device: HP DesignJet 5000 PS
 Plot Scale: 1:1
 Plot Orientation: Landscape
 Plot Color: Black & White
 Plot Lineweight: 0.25
 Plot Linetype: Solid
 Plot Font: Arial
 Plot Title: FIGURE 9

Figure 10: Position/Depth of Wells Relative to Source Areas

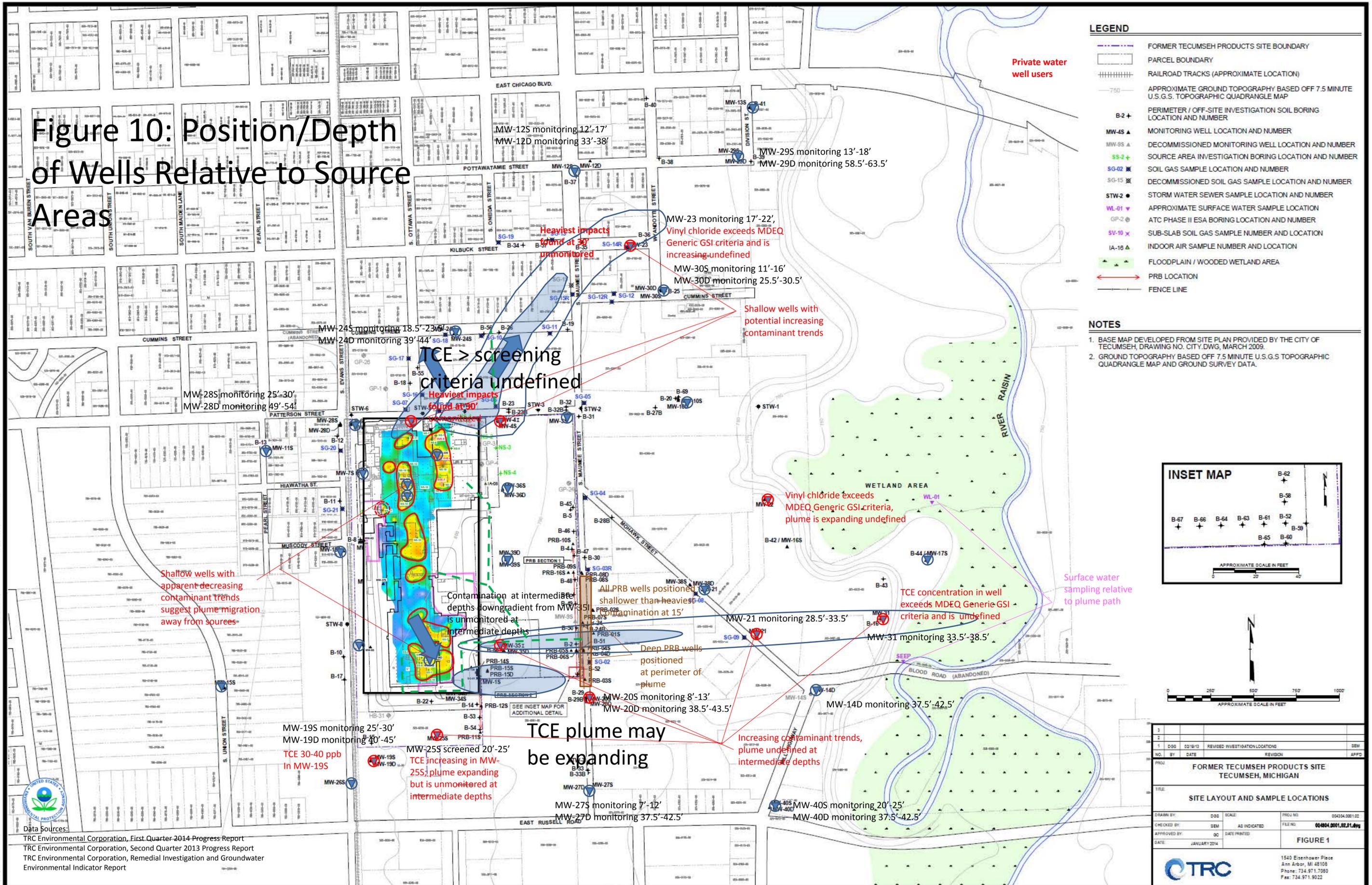


Figure 11: Position of Soil Gas Samples Relative to Wells & Source Areas

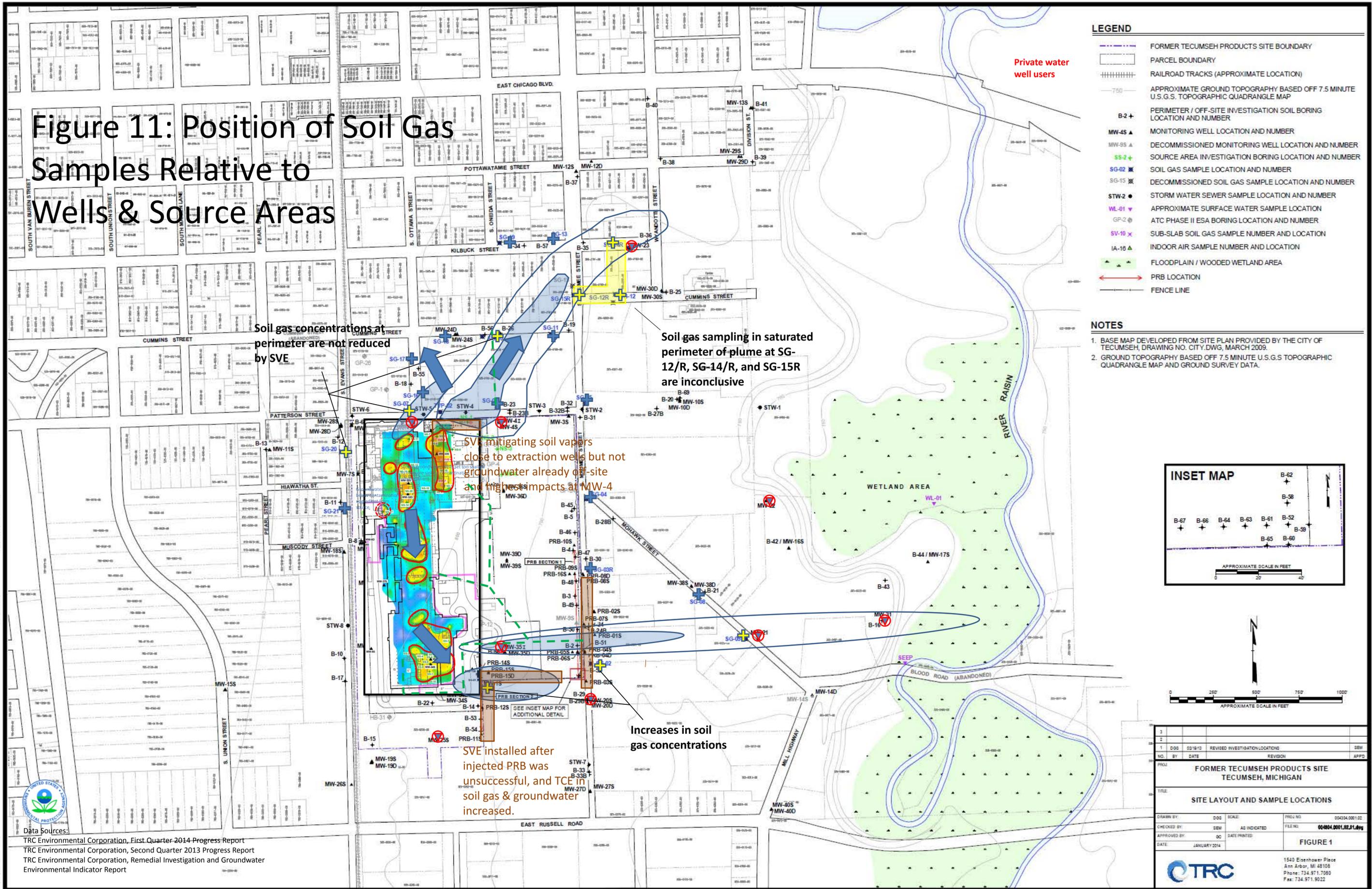
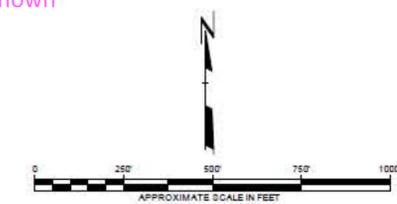
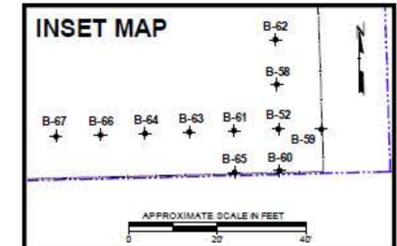


Figure 12: Exposure Concerns From Soil Gas & Groundwater

LEGEND

- FORMER TECUMSEH PRODUCTS SITE BOUNDARY
- PARCEL BOUNDARY
- RAILROAD TRACKS (APPROXIMATE LOCATION)
- 750 APPROXIMATE GROUND TOPOGRAPHY BASED OFF 7.5 MINUTE U.S.G.S. TOPOGRAPHIC QUADRANGLE MAP
- B-2+ PERIMETER / OFF-SITE INVESTIGATION SOIL BORING LOCATION AND NUMBER
- MW-4S MONITORING WELL LOCATION AND NUMBER
- MW-SS DECOMMISSIONED MONITORING WELL LOCATION AND NUMBER
- SG-2+ SOURCE AREA INVESTIGATION BORING LOCATION AND NUMBER
- SG-02 SOIL GAS SAMPLE LOCATION AND NUMBER
- SG-15 DECOMMISSIONED SOIL GAS SAMPLE LOCATION AND NUMBER
- STW-2 STORM WATER SEWER SAMPLE LOCATION AND NUMBER
- WL-01 APPROXIMATE SURFACE WATER SAMPLE LOCATION
- GP-2 ATC PHASE II ESA BORING LOCATION AND NUMBER
- SV-10 SUB-SLAB SOIL GAS SAMPLE NUMBER AND LOCATION
- IA-10 INDOOR AIR SAMPLE NUMBER AND LOCATION
- FLOODPLAIN / WOODED WETLAND AREA
- PRB LOCATION
- FENCE LINE

- NOTES**
1. BASE MAP DEVELOPED FROM SITE PLAN PROVIDED BY THE CITY OF TECUMSEH, DRAWING NO. CITY.DWG, MARCH 2009.
 2. GROUND TOPOGRAPHY BASED OFF 7.5 MINUTE U.S.G.S TOPOGRAPHIC QUADRANGLE MAP AND GROUND SURVEY DATA.



Residences closest to plume require further assessment for vapor intrusion

Heaviest impacts at 30' unmonitored

Intermediate clay assumed to prevent exposure to soil vapors is present at SG-11, but not at B-26. Human exposure evaluation is incomplete.

Heaviest impacts found at 30' unmonitored

MW-23 is screened shallower than heaviest impact at B-35s. Vinyl chloride concentrations are increasing and exceed MDEQ Generic GSI criteria. The impact and extent are undefined

Vinyl chloride concentration in MW-22 exceeds MDEQ Generic-GSI criteria, and plume is expanding and undefined

TCE concentration in MW-31 exceeds MDEQ Generic GSI criteria and is undefined, with TCE concentration upgradient increasing from 1,000 ppb to 1,500 ppb through 2013

Surface water concentrations in front of plume are unknown

Martin's Home Center requires Vapor Intrusion Investigation

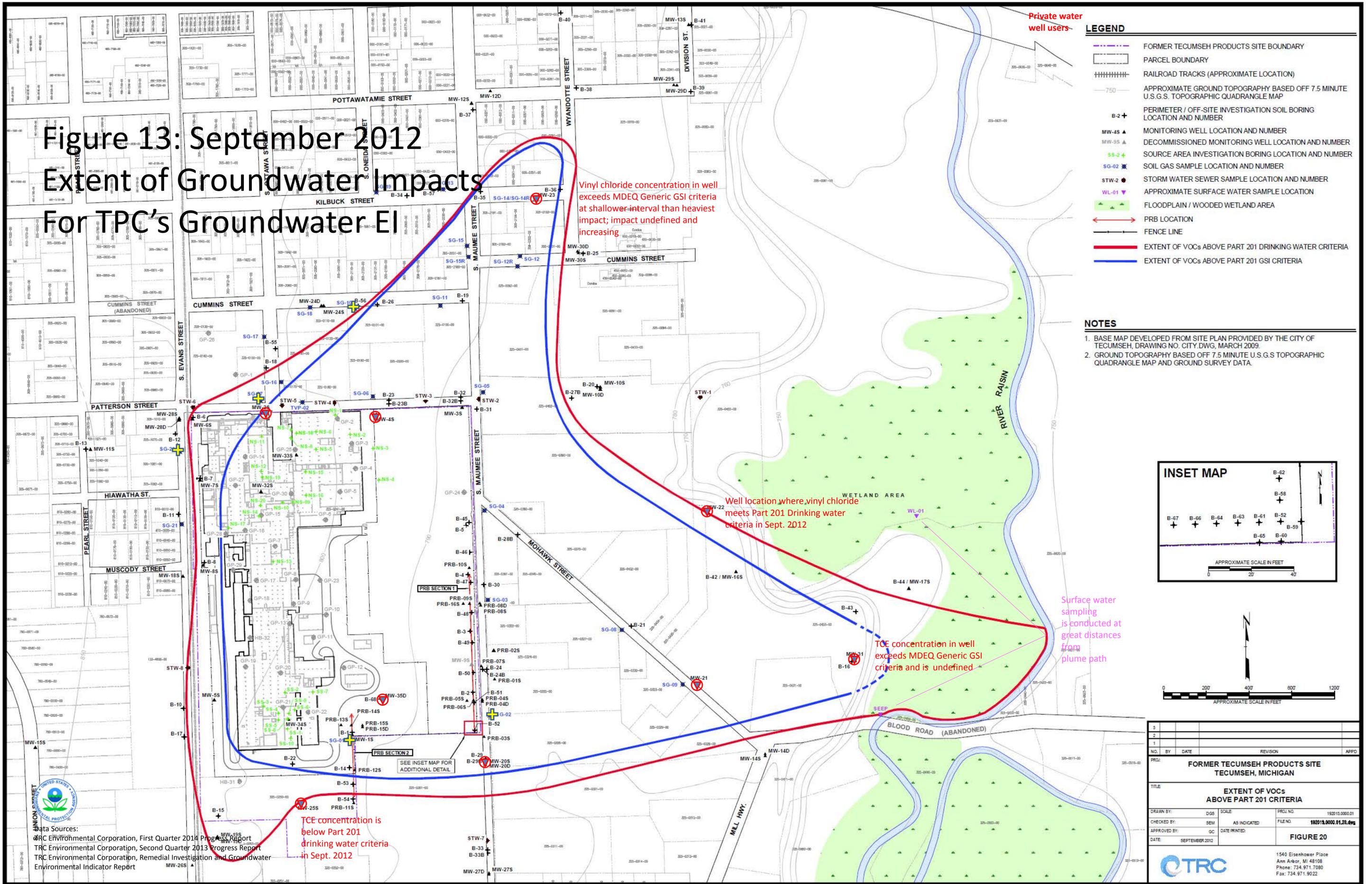
TCE concentration in shallow MW-190 is increasing, and plume appears to be expanding undefined at deeper intervals.

Map Date: 01/15/14
 File Name: 004004.0001.02.dwg
 Project: Former Tecumseh Products Site
 Scale: As Indicated
 Date: 01/15/14
 Author: TRC Environmental Corporation
 Checker: TRC Environmental Corporation
 Plotter: HP DesignJet T1100e

Data Sources:
 TRC Environmental Corporation, First Quarter 2014 Progress Report
 TRC Environmental Corporation, Second Quarter 2013 Progress Report
 TRC Environmental Corporation, Remedial Investigation and Groundwater Environmental Indicator Report

3				
2				
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NO.	BY	DATE	REVISION	APPD
FORMER TECUMSEH PRODUCTS SITE TECUMSEH, MICHIGAN				
SITE LAYOUT AND SAMPLE LOCATIONS				
DRAWN BY:	DDB	SCALE:	PROJ. NO:	004004.0001.02
CHECKED BY:	SEM	AS INDICATED	FILE NO:	004004.0001.02.01.dwg
APPROVED BY:	GC	DATE PRINTED:		
DATE:	JANUARY 2014	FIGURE 1		
			1540 Eisenhower Place Ann Arbor, MI 48108 Phone: 734.971.7080 Fax: 734.971.9022	

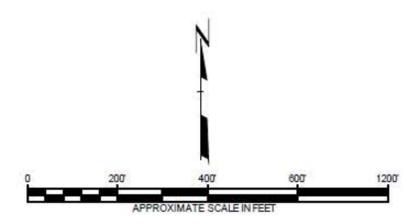
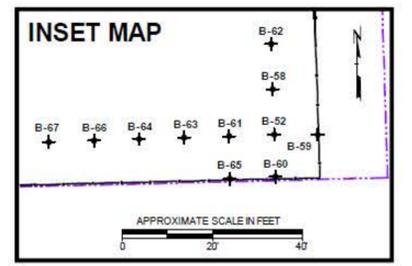
Figure 13: September 2012 Extent of Groundwater Impacts For TPC's Groundwater EI



LEGEND

- FORMER TECUMSEH PRODUCTS SITE BOUNDARY
- PARCEL BOUNDARY
- ||||| RAILROAD TRACKS (APPROXIMATE LOCATION)
- 750 APPROXIMATE GROUND TOPOGRAPHY BASED OFF 7.5 MINUTE U.S.G.S. TOPOGRAPHIC QUADRANGLE MAP
- B-2+ PERIMETER / OFF-SITE INVESTIGATION SOIL BORING LOCATION AND NUMBER
- MW-4S ▲ MONITORING WELL LOCATION AND NUMBER
- MW-9S ▲ DECOMMISSIONED MONITORING WELL LOCATION AND NUMBER
- SG-2 ▲ SOURCE AREA INVESTIGATION BORING LOCATION AND NUMBER
- SG-02 ■ SOIL GAS SAMPLE LOCATION AND NUMBER
- STW-2 ◆ STORM WATER SEWER SAMPLE LOCATION AND NUMBER
- WL-01 ▼ APPROXIMATE SURFACE WATER SAMPLE LOCATION
- FLOODPLAIN / WOODED WETLAND AREA
- PRB LOCATION
- EXTENT OF VOCs ABOVE PART 201 DRINKING WATER CRITERIA
- EXTENT OF VOCs ABOVE PART 201 GSI CRITERIA

- ### NOTES
1. BASE MAP DEVELOPED FROM SITE PLAN PROVIDED BY THE CITY OF TECUMSEH, DRAWING NO. CITY.DWG, MARCH 2009.
 2. GROUND TOPOGRAPHY BASED OFF 7.5 MINUTE U.S.G.S TOPOGRAPHIC QUADRANGLE MAP AND GROUND SURVEY DATA.



Vinyl chloride concentration in well exceeds MDEQ Generic GSI criteria at shallower interval than heaviest impact; impact undefined and increasing

Well location where vinyl chloride meets Part 201 Drinking water criteria in Sept. 2012

TCE concentration in well exceeds MDEQ Generic GSI criteria and is undefined

Surface water sampling is conducted at great distances from plume path

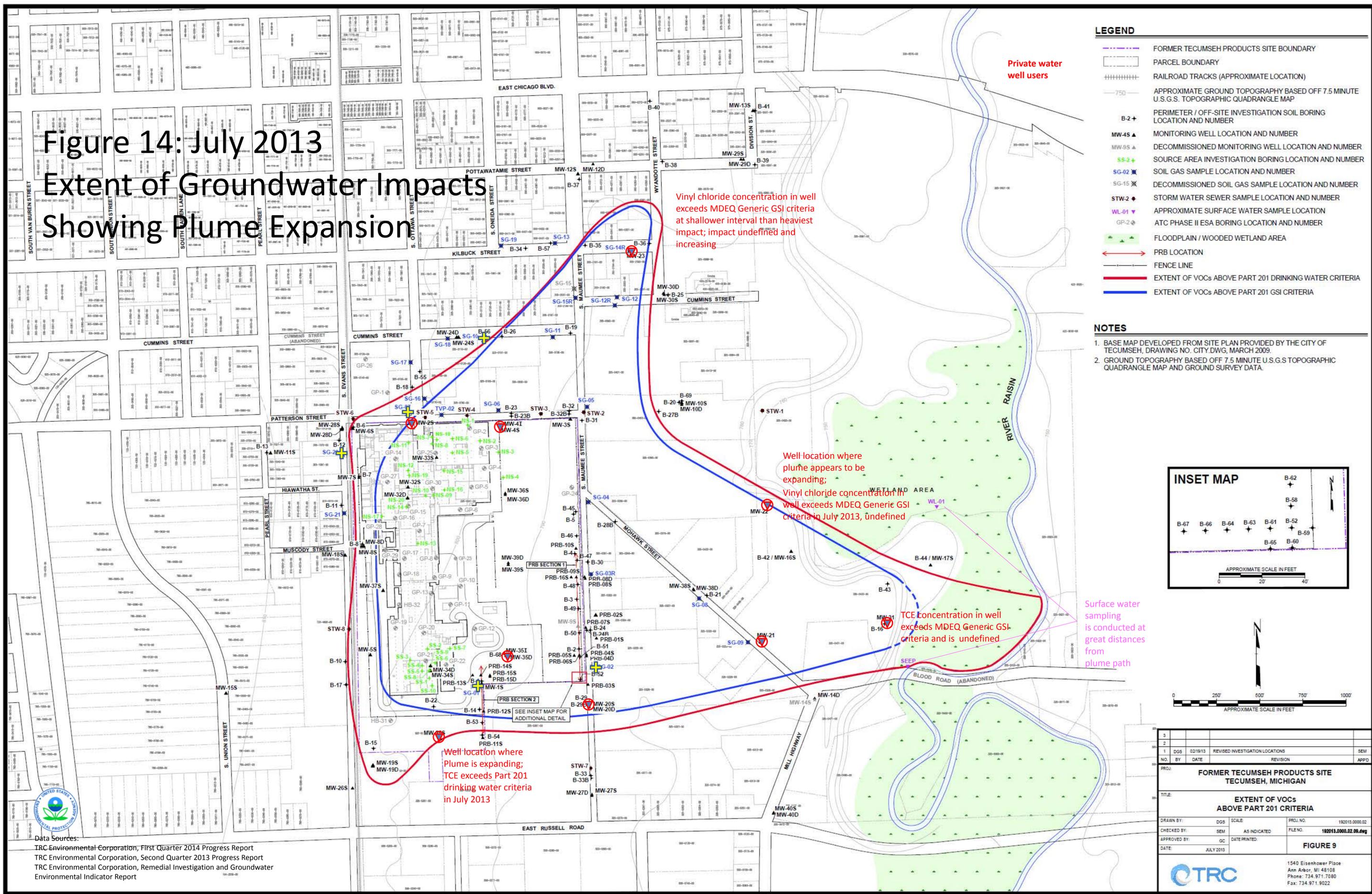
TCE concentration is below Part 201 drinking water criteria in Sept. 2012

Drawing No. 192013.0000.01.dwg
 Date: September 2012
 Project: Former Tecumseh Products Site
 Title: Extent of VOCs Above Part 201 Criteria
 Author: TRC Environmental Corporation
 Check: TRC Environmental Corporation
 Plot Date: September 2012
 Plot Time: 09:21 AM
 Plot Scale: 1:1
 Plot Size: 11x17
 Plot Orientation: Landscape
 Plot Color: Black
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 Plot Fill Resolution: 0.0
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 Plot Fill Dither: True
 Plot Fill Interpolate: True
 Plot Fill Smooth: True
 Plot Fill Stretch: True
 Plot Fill Transparenc: True
 Plot Fill UseColor: True
 Plot Fill UseFont: True
 Plot Fill UseLine: True
 Plot Fill UsePattern: True
 Plot Fill UseSize: True
 Plot Fill UseStyle: True
 Plot Fill UseUnits: True
 Plot Fill UseWeight: True
 Plot Fill UseWidth: True
 Plot Fill UseHeight: True
 Plot Fill UseDepth: True
 Plot Fill UseVolume: True
 Plot Fill UseArea: True
 Plot Fill UsePerimeter: True
 Plot Fill UseLength: True
 Plot Fill UseCircumference: True
 Plot Fill UseDiameter: True
 Plot Fill UseRadius: True
 Plot Fill UseArea: True
 Plot Fill UsePerimeter: True
 Plot Fill UseLength: True
 Plot Fill UseCircumference: True
 Plot Fill UseDiameter: True
 Plot Fill UseRadius: True

Data Sources:
 TRC Environmental Corporation, First Quarter 2014 Progress Report
 TRC Environmental Corporation, Second Quarter 2013 Progress Report
 TRC Environmental Corporation, Remedial Investigation and Groundwater Environmental Indicator Report

NO.	BY	DATE	REVISION	APPD.
1				
2				
3				
PROJ: FORMER TECUMSEH PRODUCTS SITE TECUMSEH, MICHIGAN TITLE: EXTENT OF VOCs ABOVE PART 201 CRITERIA DRAWN BY: DGS CHECKED BY: SEM APPROVED BY: GC DATE: SEPTEMBER 2012 SCALE: AS INDICATED DATE PRINTED: PROJ. NO: 192013.0000.01 FILE NO: 192013.0000.01.21.dwg FIGURE 20				
1540 Eisenhower Place Ann Arbor, MI 48108 Phone: 734.971.7080 Fax: 734.971.9022				

**Figure 14: July 2013
Extent of Groundwater Impacts
Showing Plume Expansion**

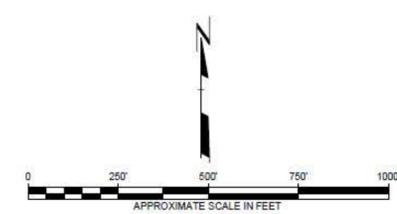
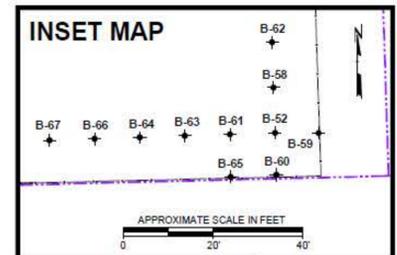


LEGEND

- FORMER TECUMSEH PRODUCTS SITE BOUNDARY
- PARCEL BOUNDARY
- RAILROAD TRACKS (APPROXIMATE LOCATION)
- APPROXIMATE GROUND TOPOGRAPHY BASED OFF 7.5 MINUTE U.S.G.S. TOPOGRAPHIC QUADRANGLE MAP
- PERIMETER / OFF-SITE INVESTIGATION SOIL BORING LOCATION AND NUMBER
- MONITORING WELL LOCATION AND NUMBER
- DECOMMISSIONED MONITORING WELL LOCATION AND NUMBER
- SOURCE AREA INVESTIGATION BORING LOCATION AND NUMBER
- SOIL GAS SAMPLE LOCATION AND NUMBER
- DECOMMISSIONED SOIL GAS SAMPLE LOCATION AND NUMBER
- STORM WATER SEWER SAMPLE LOCATION AND NUMBER
- APPROXIMATE SURFACE WATER SAMPLE LOCATION
- ATC PHASE II ESA BORING LOCATION AND NUMBER
- FLOODPLAIN / WOODED WETLAND AREA
- PRB LOCATION
- FENCE LINE
- EXTENT OF VOCs ABOVE PART 201 DRINKING WATER CRITERIA
- EXTENT OF VOCs ABOVE PART 201 GSI CRITERIA

NOTES

- BASE MAP DEVELOPED FROM SITE PLAN PROVIDED BY THE CITY OF TECUMSEH, DRAWING NO. CITY.DWG, MARCH 2009.
- GROUND TOPOGRAPHY BASED OFF 7.5 MINUTE U.S.G.S TOPOGRAPHIC QUADRANGLE MAP AND GROUND SURVEY DATA.



Vinyl chloride concentration in well exceeds MDEQ Generic GSI criteria at shallower interval than heaviest impact; impact undefined and increasing

Well location where plume appears to be expanding; Vinyl chloride concentration in well exceeds MDEQ Generic GSI criteria in July 2013, undefined

TCE concentration in well exceeds MDEQ Generic GSI criteria and is undefined

Surface water sampling is conducted at great distances from plume path

Well location where Plume is expanding; TCE exceeds Part 201 drinking water criteria in July 2013

Date: 07/23/13
 Drawing Name: 192013.0000.02.09.dwg
 Drawing Title: Extent of VOCs Above Part 201 Drinking Water Criteria
 Author: J. J. [unreadable]
 Date: 07/23/13
 Plot Date: 07/23/13
 Plot Time: 02:25 AM
 Layout: 192013.0000.02.09.dwg

Data Sources:
 TRC Environmental Corporation, First Quarter 2014 Progress Report
 TRC Environmental Corporation, Second Quarter 2013 Progress Report
 TRC Environmental Corporation, Remedial Investigation and Groundwater Environmental Indicator Report

3				
2				
1	DGS	02/19/13	REVISED INVESTIGATION LOCATIONS	SEM
NO.	BY	DATE	REVISION	APPD.
PROJ: FORMER TECUMSEH PRODUCTS SITE TECUMSEH, MICHIGAN				
TITLE: EXTENT OF VOCs ABOVE PART 201 CRITERIA				
DRAWN BY:	DGS	SCALE:	PROJ. NO.:	192013.0000.02
CHECKED BY:	SEM	AS INDICATED	FILE NO.:	192013.0000.02.09.dwg
APPROVED BY:	QC	DATE PRINTED:		
DATE:	JULY 2013	FIGURE 9		

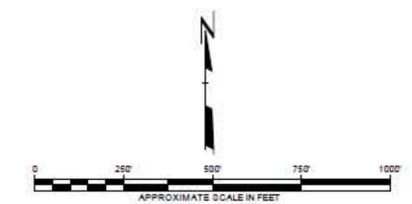
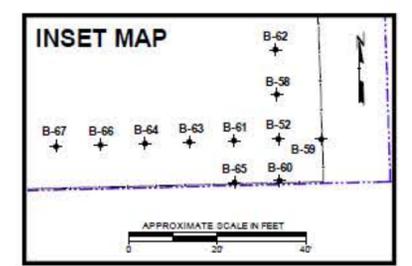
TRC
 1540 Eisenhower Place
 Ann Arbor, MI 48108
 Phone: 734.971.7080
 Fax: 734.971.9022

Figure 15: Current Permanent Wells

LEGEND

- FORMER TECUMSEH PRODUCTS SITE BOUNDARY
- PARCEL BOUNDARY
- RAILROAD TRACKS (APPROXIMATE LOCATION)
- 750 APPROXIMATE GROUND TOPOGRAPHY BASED OFF 7.5 MINUTE U.S.G.S. TOPOGRAPHIC QUADRANGLE MAP
- PERIMETER / OFF-SITE INVESTIGATION SOIL BORING LOCATION AND NUMBER
- MONITORING WELL LOCATION AND NUMBER
- DECOMMISSIONED MONITORING WELL LOCATION AND NUMBER
- SOURCE AREA INVESTIGATION BORING LOCATION AND NUMBER
- SOIL GAS SAMPLE LOCATION AND NUMBER
- DECOMMISSIONED SOIL GAS SAMPLE LOCATION AND NUMBER
- STORM WATER SEWER SAMPLE LOCATION AND NUMBER
- APPROXIMATE SURFACE WATER SAMPLE LOCATION
- ATC PHASE II ESA BORING LOCATION AND NUMBER
- SUB-SLAB SOIL GAS SAMPLE NUMBER AND LOCATION
- INDOOR AIR SAMPLE NUMBER AND LOCATION
- FLOODPLAIN / WOODED WETLAND AREA
- PRB LOCATION
- FENCE LINE

- ### NOTES
1. BASE MAP DEVELOPED FROM SITE PLAN PROVIDED BY THE CITY OF TECUMSEH, DRAWING NO. CITY.DWG, MARCH 2009.
 2. GROUND TOPOGRAPHY BASED OFF 7.5 MINUTE U.S.G.S TOPOGRAPHIC QUADRANGLE MAP AND GROUND SURVEY DATA.



Monitoring Well Requested by EPA

Monitoring Well Installed by TPC through mid-2012

Map Date: 01/15/14
 Project: Former Tecumseh Products Site
 Drawing: Figure 15 - Current Permanent Wells
 Scale: 1" = 100'
 Date: 01/15/14
 Author: J. [Name]
 Checker: [Name]
 Designer: [Name]

Data Sources:
 TRC Environmental Corporation, First Quarter 2014 Progress Report
 TRC Environmental Corporation, Second Quarter 2013 Progress Report
 TRC Environmental Corporation, Remedial Investigation and Groundwater Environmental Indicator Report

NO.	DATE	REVISION	APPD.
1	02/19/13	REVISED INVESTIGATION LOCATIONS	SEM
2			
3			
FORMER TECUMSEH PRODUCTS SITE TECUMSEH, MICHIGAN			
SITE LAYOUT AND SAMPLE LOCATIONS			
DRAWN BY:	DOB	SCALE:	PROJ. NO. 004304.001.02
CHECKED BY:	SEM	AS INDICATED	FILE NO. 004004.001.02.01.dwg
APPROVED BY:	GC	DATE PRINTED:	FIGURE 1
DATE:	JANUARY 2014		
		1540 Eisenhower Place Ann Arbor, MI 48108 Phone: 734.971.7080 Fax: 734.971.9022	