

US EPA ARCHIVE DOCUMENT

Technical Memorandum

Date: July 15, 2010

To: Jason Smith, Tecumseh Products Company

cc: Lynn Dennison, Tecumseh Products Company
Douglas McClure, Colin, McKenney & Philbrick, PC

From: Graham Crockford/Stacy Metz, RMT

Project No.: 00-08070.06.001

Subject: Summary of Off-Site Soil Gas Investigation Activities – March through April 2010
Former Tecumseh Products Company Site, Tecumseh, Michigan

Introduction

In March 2010, a Preliminary Off-Site Soil Gas Sampling Workplan was submitted to the USEPA for review. This Technical Memorandum provides a summary of off-site soil gas investigation activities conducted between April 2010 and May 2010 in the vicinity of the former Tecumseh Products Company (TPC) manufacturing site located at 100 East Patterson, Lenawee County, Michigan. This summary includes a description of off-site field activities related to the off-site volatilization to indoor air migration pathway; a summary of off-site soil gas sampling data, an evaluation of the data in the context of the investigation objectives, and proposed future activities.

Background

In 2008, a Phase I Environmental Site Assessment (ESA) was conducted by Atwell-Hicks, LLC as part of the sale of the approximately 750,000 square foot manufacturing facility and associated 53-acre property to Consolidated Biscuit Company (CBC). The Phase I ESA Report recommended that a Phase II Subsurface Investigation be conducted to address the identified recognized environmental conditions (RECs). A Phase II ESA was performed by ATC Environmental Consultants (ATC) on behalf of CBC between December 2008 and January 2009. A copy of the Draft Limited Phase II ESA Report was provided to TPC in February 2009. The Phase II ESA Report was finalized on September 4, 2009.

TPC retained RMT, Inc. (RMT) to investigate soil and groundwater conditions at the site and surrounding area. Between February and June 2010, TPC performed on-site and off-site investigations to define the extent of the chlorinated volatile organic compounds (CVOCs) in soil and groundwater. The results of these investigation activities can be found in the September 2009, Current Conditions Report (CCR); the February 12, 2010 Technical Memorandum titled "Status Update – Characterization of Volatile Organic Compounds in Groundwater, Former Tecumseh Products Company Site, Tecumseh, Michigan;" and the July

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14, 2010 Technical Memorandum titled "Summary of Groundwater Investigation Activities – March 2010 through June 2010, Former Tecumseh Products Company Site, Tecumseh, Michigan." Collectively these documents describe and summarize the physical setting of the site, the historical operations, recent sampling data, potentially complete exposure pathways, and voluntary remedial activities undertaken by TPC.

Off-site concentrations of CVOCs in groundwater exceed the proposed groundwater screening levels (GWSLs). Therefore, inhalation of affected indoor air is a potentially relevant pathway, and further evaluation is necessary to determine if this pathway is complete.

Summary of Applicable Criteria and Screening Levels

Off-site concentrations of volatile organic compounds (VOCs) in groundwater are below the Michigan Department of Natural Resources and Environment's (MDNRE's) Part 201 groundwater volatilization to indoor air inhalation (GVIAI) criteria. However, the United States Environmental Protection Agency (USEPA) has indicated that the USEPA draft 2002 vapor intrusion guidance document may be applicable, and MDNRE has recently published a series of documents related to the proposed redesign of Part 201, including the replacement of the GVIAI criteria with groundwater vapor intrusion screening levels (GW_vSLs). RMT has conducted a review of the 2009 MDNRE and the 2002 USEPA guidance documents related to the vapor intrusion migration pathway. This review determined that the proposed MDNRE GW_vSLs are calculated in a manner consistent with the 2002 USEPA guidance document, and are much lower than the current MDNRE GVIAI criteria. Using the 2002 USEPA and the 2009 MDNRE guidance documents and the most recent peer reviewed chemical specific risk values used and/or published by the USEPA, RMT calculated indoor air criteria (IAC), soil gas screening levels (SGSLs) and GWSLs. These criteria were submitted as part of the March 2010 Preliminary Off-Site Soil Gas Sampling Workplan (Workplan) for USEPA review and approval.

USEPA has provided the following feedback regarding the proposed IAC, SGSLs, and GWSLs:

- On March 26, 2010, USEPA provided Comments on Preliminary Off-Site Soil Gas Sampling Workplan – March 2010. These comments indicated that residential IAC had been accepted and that soil gas and groundwater screening levels were still under review, but appeared largely acceptable.
- On April 7, 2010, USEPA provided Comments Regarding On-Site and Off-Site Vapor Intrusion Investigations and Interim Measures. These comments indicated that non-residential IAC should be calculated using the USEPA recommended exposure frequency (250 days per year) and exposure duration (25 years) rather than the MDNRE recommended values. The IAC, sub-slab SGSL, and GWSL calculations have been updated to reflect the recommended changes. The revised calculation sheets are included in Attachment A.
- On May 6, 2010, during a conference call to discuss the preliminary results of the Off-Site Soil Gas Investigation, USEPA indicated that the proposed GWSLs would be

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accepted. USEPA further indicated that the proposed deep soil gas attenuation factor of 0.002, recommended in the 2009 MDNRE guidance document was not acceptable. Based on a March 2008 draft document titled "U.S. EPA Vapor Intrusion Database: Preliminary Evaluation of Attenuation factors," USEPA recommended the use of a deep soil gas attenuation factor of 0.1 which is an order of magnitude more conservative than the value recommended in the 2002 USEPA guidance document. Given the highly variable nature of generic attenuation factors recommended in the various guidance documents, TPC elected to calculate a site-specific attenuation factor using the USEPA Johnson Ettinger Model Spreadsheet (v. 3.1). Using the default building parameters, which are designed to be conservative, an attenuation factor of 0.003 was determined for trichloroethene (TCE) assuming a sandy soil and a sample depth equivalent to the foundation depth (200 centimeters). Site specific DEEP soil gas criteria were calculated using an attenuation factor of 0.003. These site specific criteria are included in Table 1 and calculation sheets can be found in Attachment B.

Summary of Field Activities

RMT initiated the work described in the Workplan with minor modifications to accommodate USEPA comments on March 31, 2010. The investigation activities, which were conducted between March 2010 and May 2010, are described below:

Soil Gas Sample Point Installation

Off-site soil gas monitoring points were installed at 14 locations between March 31, 2010 and April 2, 2010 (Figure 1). As described in the Workplan, these 14 sampling locations are located on the former TPC property or in the right-of-way and are distributed throughout the area of affected shallow groundwater, specifically along the downgradient perimeter of the site and in residential areas that may be affected by off-site migration of VOCs. Residential properties within the extent of groundwater affected by the off-site migration of groundwater are identified on Figure 1. This risk-based approach to the off-site soil gas investigation design is consistent with the June 2008 MDNRE Remediation and Redevelopment Division, Operational Memorandum No. 4, Attachment 4 – Soil Gas and Indoor Air (Op. Memo 4).

Each sampling point was constructed using a Geoprobe®. A 2.5-inch-diameter hole was extended to a depth of 8 to 10 feet below grade. A stainless steel monitoring implant (Geoprobe® Vapor Implant AT8617S) with a 6-inch screened interval was then inserted into the pilot boring. The screened interval was set to a maximum depth of 8.0 to 8.5 feet below ground surface. At eleven locations saturated conditions were encountered. At these locations, the screened interval was set such that the bottom of the screen was 1 foot above the groundwater table. The screened interval was set to a minimum depth of 5.0 to 5.5 feet below ground surface. The suspended monitoring point screen was then backfilled using glass beads, and the remaining annulus was sealed with bentonite chips. One-foot of concrete grout and a 4-inch flush mount cover were used to complete

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each monitoring point. A sufficient length of Teflon tubing (at least 1 foot) was left above the concrete grout seal so that the sampling apparatus could be connected directly to the sample point without a tubing extension. The monitoring points were allowed to equilibrate over the weekend prior to sample collection. See Attachment C for soil boring logs and monitoring point construction diagrams.

Sample Collection Methods

The sample collection method was consistent with the procedures outlined in Op. Memo 4. Sample collection methods are described in detail in the Workplan. Active soil gas samples were collected over a period of 1-hour in 1-liter SUMMA[®] canisters fitted with a dedicated flow controller. Approximately 3 volumes of vapor were purged from each sample point prior to sample collection. An isopropanol tracer was used to verify sample integrity. Following sample collection, RMT returned the SUMMA[®] canisters to the Pace Analytical Laboratory in Minneapolis, Minnesota for analysis. Samples were analyzed by TO-15 for isopropanol (tracer) and the project specific list of VOCs: 1,1-dichloroethane, 1,2-dichloroethane, 1,1-dichloroethene, cis-1,2-dichloroethene, trans-1,2-dichloroethene, tetrachloroethene (PCE), 1,1,1-trichloroethane, TCE, and vinyl chloride.

April 2010 Soil Gas Sample Event

The first round of soil gas samples were collected on April 5, 2010. Samples were collected in accordance with the methods described above at 12 of the 14 sample locations. At two locations, SG-12 and SG-14, water in the sample point prevented sample collection.

May 2010 Soil Gas Re-Sample Event

A soil gas re-sample event was conducted on May 20, 2010 in order to confirm sample results from the April 2010 as discussed below. Samples were collected in accordance with the methods described above at 5 sample locations, SG-01, SG-06, SG-07, SG-09, and SG-13. At two locations, SG-12 and SG-14, water in the sample point prevented sample collection.

Data Analysis

Soil gas data for samples collected on April 5, 2010 and May 20, 2010 can be found on Table 1.

During the April 2010 sample event, TCE was detected at only three locations and ranged in concentration from 7.2 to 396 parts per billion by volume (ppbv). These concentrations were well below the calculated residential SGSL (770 ppbv). Vinyl chloride was not detected in any of the samples. As noted in the attached Table 1, water in the sample point prevented sample collection at SG-12 and SG-14 and a high concentration of isopropanol at SG-09 invalidated the April 2010 analytical data for the other analytes at this location.

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Although isopropanol is a liquid tracer, RMT was able to use the concentration of isopropanol at SG-09 to develop a correlation between the concentration of isopropanol and the relative percentage of ambient air. Based on this correlation, RMT estimated that an isopropanol concentration of 10,000 ppbv is approximately equivalent to a sample that is 1-percent ambient air by volume. MDNRE guidance (Op. Memo 4) specifies a maximum ambient air concentration of 10-percent by volume. Based on this evaluation, levels of isopropanol were slightly elevated (e.g. ambient air concentrations estimated between 1-percent and 10-percent) at two sample locations, SG-01 and SG-06.

In May 2010, RMT conducted a re-sample event. With the following objectives:

- Make a second attempt to collect samples at SG-12 and SG-14;
- Resample SG-09; and
- Conduct confirmation sampling at SG-01 and SG-06.

Based on USEPA concerns regarding the presence of isopropanol in other samples, confirmation sampling was also conducted at two additional sample locations SG-07 and SG-13.

During the May 2010 sample event, samples were collected at five locations; at two locations, SG-12 and SG-14, water was again encountered, preventing sample collection. CVOCs were detected at all five sample locations. TCE, which was detected at all five sample locations, ranged in concentration from 6.1 to 3770 ppbv. Tetrachlorethene (PCE) was detected at three of the five sample locations, and ranged in concentration from 9.5 to 256 ppbv. Detected concentrations of TCE and PCE were above residential SGSLs at SG-01, and the detected concentration of TCE was also above the non-residential SGSL at this location.

A relatively high concentration of isopropanol (335,000 ppbv) was detected at SG-01. The May 2010 concentrations from SG-01 are approximately 30-percent lower than and DUP-01 concentrations. This difference confirms, RMT's estimate that 10,000 ppbv of isopropanol is approximately equivalent to 1-percent ambient air. Concentrations of isopropanol were less than 10,000 ppbv (1-percent ambient air) at all other sample locations.

Summary and Conclusions

This Technical Memorandum provides a summary of off-site soil gas investigation activities conducted between March 2010 and May 2010 in the vicinity of the former TPC site, including boring logs and laboratory data. Key findings and proposed future activities related to the off-site migration of VOCs are listed below:

- In accordance with USEPA comments dated April 7, 2010, the non-residential criteria were recalculated using an exposure frequency of 250 days per year, and an exposure duration of 25 years. The revised criteria are included in Attachment A.
- USEPA raised concerns about the soil gas attenuation factor used to determine generic DEEP soil gas criteria. Therefore RMT calculated a site-specific deep soil gas attenuation

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factor using the Johnson Ettinger Model. The site specific soil gas attenuation factor is 0.003.

- Soil gas results indicate that the calculated GWSLs are highly conservative for this site.
- RMT installed soil gas monitoring points at 14 locations.
- The current sampling and analysis program includes quality control and quality assurance protocols consistent with similar USEPA projects. At the request of USEPA, TPC is in the process of developing a Quality Assurance Project Plan for USEPA review and approval.
- With the exception of SG-01, soil gas concentrations are below site specific SGSLs. Sample location SG-01 is located on the TPC property, directly downgradient of the southern source area. The nearest property is non-residential, and sample location SG-03 is located in front of the nearest residential property (Figure 1). TPC will continue to monitor to soil gas concentration at SG-01.
- Soil gas data from the May 2010 sample event is consistently higher than data from the April 2010 sample event. These differences may reflect seasonality. Quarterly monitoring will be conducted to evaluate natural seasonal variation in soil gas concentration.
- The next sample event is tentatively scheduled for August 2010. A minimum of three sample events will be conducted. SG-12 and SG-14 will remain in the sample program. However since soil gas concentrations along the northeast perimeter of the site, where groundwater concentrations are highest, are all well below SGSLs, soil gas concentrations at SG-12 and SG-14 are expected to be very low or non-detect. Therefore if water in the sample points continues to be a problem, continued attempts to collect soil gas samples in this area are not believed to be necessary.

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Tables:

Table 1: Summary of Chlorinated Volatile Organic Compounds in Off-Site Soil Gas

Figures:

Figure 1: Soil Gas Sample Point Locations

Attachments:

Attachment A: Revised Indoor Air Criteria, Soil Gas Screening Level, and Groundwater
Screening Level Calculations

Attachment B: Site Specific Johnson Ettinger Model Calculations

Attachment C: Soil Boring Logs and Monitoring Point Construction Forms

Attachment D: Laboratory Analytical Data

Tables

Table 1
Summary of Chlorinated Volatile Organic Compounds in Off-Site Soil Gas
Tecumseh Products Company
Tecumseh, Michigan
June 2010

Analyte		1,1-Dichloroethane	1,2-Dichloroethane	1,1-Dichloroethene	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	Tetrachloroethene	1,1,1-Trichloroethane	Trichloroethene	Vinyl Chloride	2-Propanol
Site Specific Residential SGSL ⁽¹⁾		1,300	78	17,000	3,000	5,200	210	310,000	770	360	NC
Site Specific Non-Residential SGSL ⁽¹⁾		4,300	260	24,000	4,300	7,300	690	440,000	2,600	1,200	NC
Units		ppbv	ppbv	ppbv	ppbv	ppbv	ppbv	ppbv	ppbv	ppbv	ppbv
SG-01 (8-8.5')	4/5/2010	5.7	<2.3	4.4	17	<4.4	<2.3	279	396	<2.3	18,100
	5/20/2010 ⁽²⁾	52.4	<4.4	21.6	184	<4.4	52.1	1,690	2,800	<4.4	335,000
SG-01 (DUP-01)	4/5/2010	<2.2	<2.2	<2.2	<2.2	<2.2	<2.2	<2.2	<2.2	<2.2	15,300
	5/20/2010 ⁽²⁾	63	<4.4	31.0	245	22.6	256	2,120	3,770	<4.4	849
SG-02 (5.5-6')	4/5/2010	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	19.6	<4.0	<4.0	27.4
SG-03 (5.5-5')	4/5/2010	<2.6	<2.6	<2.6	<2.6	<5.1	<2.6	<2.6	<2.6	<2.6	53.1
SG-04 (5.5-5')	4/5/2010	<2.6	<2.6	<2.6	<2.6	<4.9	<2.6	<2.6	<2.6	<2.5	52.1
SG-05 (7.5-8')	4/5/2010	<2.6	<2.6	<2.6	<2.6	<4.9	<2.6	28.7	26.6	<2.5	103
SG-06 (8-8.5')	4/5/2010	<2.6	<2.6	<2.6	<2.6	<4.9	<2.6	<2.6	7.2	<2.5	41,200
	5/20/2010	<4.6	<4.6	<4.6	<4.6	<4.6	9.5	6.0	104	<4.6	1,570
SG-07 (8-8.5')	4/5/2010	<75.2	<75.2	<75.2	<75.2	<75.2	<75.2	<75.2	<75.2	<75.2	747
	5/20/2010	<5.0	<5.0	<5.0	<5.0	<5.0	13.8	6.8	145	<5.0	170
SG-08 (6.5-7')	4/5/2010	<2.6	<2.6	<2.6	<2.6	<5.1	<2.6	<2.6	<2.6	<2.6	64.9
SG-09 (5.5-6')	4/5/2010 ⁽³⁾	--	--	--	--	--	--	--	--	--	1,580,000
	5/20/2010	10.6	<4.4	<4.4	<4.4	<4.4	<4.4	123	176	<4.4	24.8
SG-10 (5.5-5')	4/5/2010	<80.6	<80.6	<80.6	<80.6	<80.6	<80.6	<80.6	<80.6	<80.6	<80.6
SG-11 (7.5-6')	4/5/2010	<2.8	<2.8	<2.8	<2.8	<5.4	<2.8	<2.8	<2.8	<2.8	128
SG-12 (5.5-5') ⁽⁴⁾	4/5/2010	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/20/2010	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
SG-13 (5.5-6')	4/5/2010	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	1,750
	5/20/2010	<4.5	<4.5	<4.5	<4.5	<4.5	<4.5	<4.5	6.1	<4.5	9,130
SG-14 (6.5-7') ⁽⁴⁾	4/5/2010	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/20/2010	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

Notes:

1) Site Specific DEEP soil gas screening levels (SGSLs) were calculated used an attenuation factor (0.003). This attenuation factor was determined using the USEPA Johnson and Ettinger Model calculation spreadsheet, Version 3.1. The site specific model used the spreadsheet default parameters conservatively assuming a sand substrate, a depth to foundation of 200 cm (basement), and a sample depth of 200 cm.

2) Elevated concentrations of 2-propanol (tracer) detected; DUP-01 results from 5/20/10 reflect true soil gas concentrations. Tracer concentration from SG-01 and analytical data from DUP-01 suggests that sample was diluted with approximately 30-percent ambient air.

3) Elevated concentrations of 2-propanol (tracer) detected. Analytical data for other analytes are presumed to be invalid (-).

4) Water in sample point prevented sample collection.

Bold font denotes concentrations detected above laboratory reporting limits.

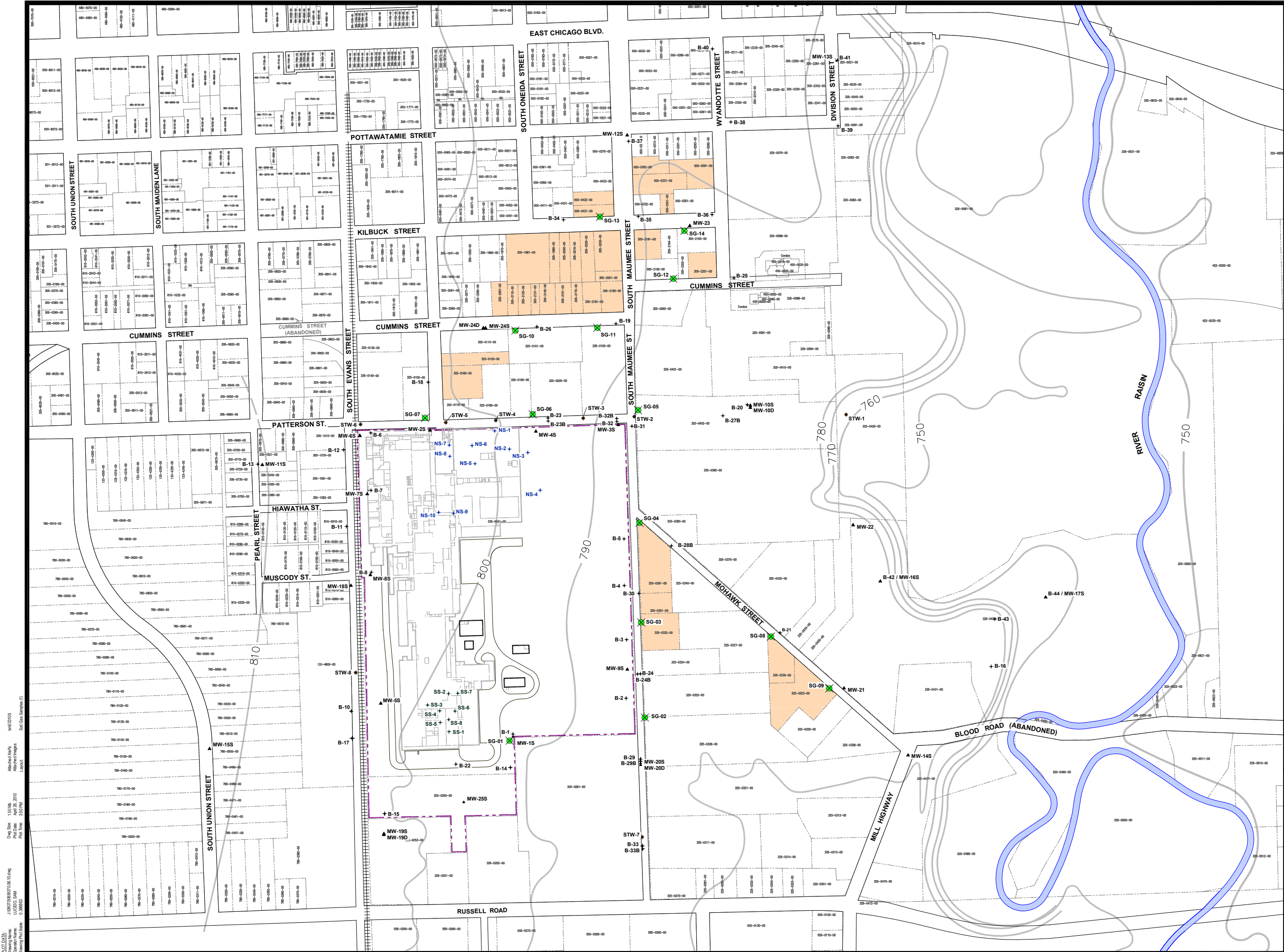
Denotes concentrations above the Calculated Site Specific SGSL.

ppbv - parts per billion by volume

NC - No Criteria

NS - No Sample

Figures

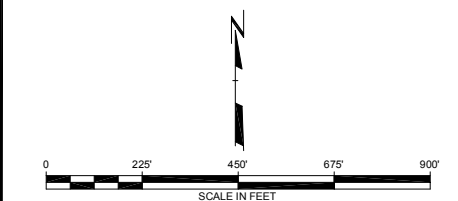


LEGEND

- FORMER TECUMSEH PRODUCTS SITE BOUNDARY
- PARCEL BOUNDARY
- RAILROAD TRACKS (APPROXIMATE LOCATION)
- B-2 + PERIMETER / OFF-SITE INVESTIGATION SOIL BORING LOCATION AND NUMBER
- MW-4S ▲ MONITORING WELL LOCATION AND NUMBER
- NS-6 + NORTHERN SOURCE AREA INVESTIGATION BORING LOCATION AND NUMBER
- SS-2 + SOUTHERN SOURCE AREA INVESTIGATION BORING LOCATION AND NUMBER
- STW-2 + STORM SEWER SAMPLE LOCATION AND NUMBER
- 750 APPROXIMATE GROUND TOPOGRAPHY BASED OFF 7.5 MINUTE U.S.G.S. TOPOGRAPHIC QUADRANGLE MAP
- RESIDENTIAL PROPERTIES WITHIN AREA OF POTENTIAL AFFECTED GROUNDWATER
- SG-02 ✕ SOIL GAS SAMPLE LOCATION AND NUMBER

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.



5.					
4.					
3.					
2.					
1.					
NO.	BY	DATE	REVISION		APP'D
FORMER TECUMSEH PRODUCTS SITE TECUMSEH, MICHIGAN					
SOIL GAS SAMPLE POINT LOCATIONS					
DRAWN BY: S.J.L.		DRAWING SCALE:		PROJECT NO: J:108070/0	
CHECKED BY: SEM		AS INDICATED		FILE NO: 8070.06.10.dwg	
APPROVED BY: GC		DATE PRINTED:		FIGURE 1	
DATE: April 2010					
RMT			3754 Ranchero Drive Ann Arbor, MI 48108-2237 Phone: 734-971-7080 • Fax: 734-971-9022		

10807006.06.10.dwg
LUCCIO, SAM
0.386883
Drawing Plot Scale:
Date: April 26, 2010
Plot Time: 3:50 PM
User: J:\0807006
Attached: K:\0807006
Attached Images:
Layout: Soil Gas Samples (1)

Attachment A

Revised Indoor Air Criteria, Soil Gas Screening Level and Groundwater Screening Level Calculations



3754 Ranchero drive
Ann Arbor, MI 48108
(734) 971-7080

SHEET_1__OF__2__

PROJECT / PROPOSAL NAME / LOCATION: Tecumseh Products Company, Tecumseh, Michigan		PROJECT / PROPOSAL NO.
SUBJECT: Longterm Indoor Air Criteria		8070.06
PREPARED BY: S. Metz	DATE: 2/16/10, rev. 1 - 5/17/10	FINAL ☐
CHECKED BY: K. Saucier, rev. 1 - D. VanAntwerp	DATE: 2/18/10, rev. 1 - 5/17/10	REVISION x

Longterm Indoor Air Criteria (IAC) Calculation for Carcinogens (Residential):

$$IAC = (TR * AT * AIR) / (IURF * EF * ED)$$

Target Risk (TR) =	1.00E-05		
Average Time (AT) =	25,550	days	(70 years * 365 days/year)
Adjusted Inhalation Rate (AIR) =	1		(1 = residential, 2 = non-residential)
Inhalation Unit Risk Factor (URF) =	Chemical Specific	(ug/m ³) ⁻¹	
Exposure Frequency (EF) =	350	days/year	(350 = residential, 250 = non-residential)
Exposure Duration (ED) =	30	years	(30 = residential, 25 = non-residential)

Longterm Indoor Air Criteria (IAC) Calculation for Carcinogens (Non-Residential):

$$IAC = (TR * AT * AIR) / (IURF * EF * ED)$$

Target Risk (TR) =	1.00E-05		
Average Time (AT) =	25,550	days	(70 years * 365 days/year)
Adjusted Inhalation Rate (AIR) =	2		(1 = residential, 2 = non-residential)
Inhalation Unit Risk Factor (URF) =	Chemical Specific	(ug/m ³) ⁻¹	
Exposure Frequency (EF) =	250	days/year	(350 = residential, 250 = non-residential)
Exposure Duration (ED) =	25	years	(30 = residential, 25 = non-residential)

Longterm Indoor Air Criteria (IAC) Calculation for Non-Carcinogens (Residential):

$$IAC = (HQ * AT * RfC) / (EF * ED)$$

Hazard Quotient (HQ) =	1		
Average Time (AT) =	10,950	days	(30 years * 365 days/year)
Reference Concentration (RfC) =	Chemical Specific	(ug/m ³)	
Exposure Frequency (EF) =	350	days/year	(350 = residential, 250 = non-residential)
Exposure Duration (ED) =	30	years	(30 = residential, 25 = non-residential)

Longterm Indoor Air Criteria (IAC) Calculation for Non-Carcinogens (Non-Residential):

$$IAC = (HQ * AT * RfC) / (EF * ED)$$

Hazard Quotient (HQ) =	1		
Average Time (AT) =	9,125	days	(25 years * 365 days/year)
Reference Concentration (RfC) =	Chemical Specific	(ug/m ³)	
Exposure Frequency (EF) =	250	days/year	(350 = residential, 250 = non-residential)
Exposure Duration (ED) =	25	years	(30 = residential, 25 = non-residential)



3754 Ranchero drive
Ann Arbor, MI 48108
(734) 971-7080

SHEET 2 OF 2

PROJECT / PROPOSAL NAME / LOCATION: Tecumseh Products Company, Tecumseh, Michigan		PROJECT / PROPOSAL NO.
SUBJECT: Longterm Indoor Air Criteria		8070.06
PREPARED BY: S. Metz	DATE: 2/16/10, rev. 1 - 5/17/10	FINAL ☐
CHECKED BY: K. Saucier, rev. 1 - D. VanAntwerp	DATE: 2/18/10, rev. 1 - 5/17/10	REVISION x

Chemical Specific Values				
Compound	Conversion Factor (ug/m ³ to ppbv)	Unit Risk Factor (ug/m ³) ⁻¹	Reference Concentration (ug/m ³)	Data Source for URF and RfC Values ⁽¹⁾
1,1-Dichloroethane	0.25	1.60E-06	500	RSLs (URF)/ JEM (RfC)
1,2-Dichloroethane	0.25	2.60E-05	2400	IRIS (URF) / RSLs (RfC)
1,1-Dichloroethene	0.25		200	IRIS
cis-1,2-Dichloroethene	0.25		35	JEM
trans-1,2-Dichloroethene	0.25		60	RSLs
Tetrachloroethene	0.15	5.90E-06	270	RSLs
1,1,1-Trichloroethane	0.18		5000	IRIS
Trichloroethene	0.19	2.00E-06		RSLs
Vinyl Chloride	0.39	8.80E-06	100	IRIS
2-Butanone (MEK)	ND		5000	IRIS
Trichlorofluoromethane	ND		700	RSLs

1) See original calculation sheets included in the March 2010 Preliminary Off-Site Soil Gas Sampling Workplan for a summary of available toxicity data. IRIS = USEPA Integrated Risk Information System, RSLs = USEPA Regional Screening Levels for Chemical Contaminants at Superfund Sites, JEM = USEPA Johnson and Ettinger Model Spreadsheet

Calculated Longterm Residential Indoor Air Criteria				
Compound	IAC for Carcinogens (ug/m ³)	IAC for Non-Carcinogens (ug/m ³)	Critical IAC (ug/m ³)	Critical IAC (ppbv)
2-Butanone (MEK)	NA	5214	5214	1735
1,1-Dichloroethane	15	521	15	3.8
1,2-Dichloroethane	0.94	2503	0.94	0.23
1,1-Dichloroethene	NA	209	209	52
cis-1,2-Dichloroethene	NA	37	37	9.1
trans-1,2-Dichloroethene	NA	63	63	16
Tetrachloroethene	4.1	282	4.124	0.62
1,1,1-Trichloroethane	NA	5214	5214	939
Trichloroethene	12	NA	12	2.3
Trichlorofluoromethane	NA	730	730	128
Vinyl Chloride	2.8	104	2.8	1.1

Calculated Longterm Non-Residential Indoor Air Criteria				
Compound	IAC for Carcinogens (ug/m ³)	IAC for Non-Carcinogens (ug/m ³)	Critical IAC (ug/m ³)	Critical IAC (ppbv)
2-Butanone (MEK)	NA	7300	7300	2430
1,1-Dichloroethane	51	730	51	13
1,2-Dichloroethane	3.1	3504	3.1	0.79
1,1-Dichloroethene	NA	292	292	73
cis-1,2-Dichloroethene	NA	51	51	13
trans-1,2-Dichloroethene	NA	88	88	22
Tetrachloroethene	14	394	14	2.1
1,1,1-Trichloroethane	NA	7300	7300	1314
Trichloroethene	41	NA	41	7.8
Trichlorofluoromethane	NA	1022	1022	179
Vinyl Chloride	9.3	146	9.3	3.6



3754 Ranchero drive
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(734) 971-7080

SHEET _1_ OF _1_

PROJECT / PROPOSAL NAME / LOCATION: Tecumseh Products Company, Tecumseh, Michigan		PROJECT / PROPOSAL NO.
SUBJECT: Generic Soil Gas Screening Levels		8070.06
PREPARED BY: S. Metz	DATE: 2/22/10, rev. 1 - 5/17/10	FINAL ☐
CHECKED BY: C. Daining, rev. 1 - D. VanAntwerp	DATE: 3/12/10, rev. 1 - 5/17/10	REVISION x

Generic Soil Gas Screening Level (SGSL) Calculation:

$$\text{SGSL} = \text{IAC} / \alpha$$

Indoor Air Criteria (IAC) = Chemical Specific (ug/m³ or ppbv)
Sub-Slab Attenuation Factor (α) = 0.02 (Default values recommended by MDNRE are 0.02 for sub-slab or 0.002 for deep)
DEEP Attenuation Factor (α) = 0.002

Calculated Generic Residential Sub-Slab Soil Gas Screening Levels				
Compound	Residential Indoor Air Criteria (ug/m ³)	Residential Indoor Air Criteria (ppbv)	Residential Sub-Slab Soil Gas Screening Level (ug/m ³)	Residential Sub-Slab Soil Gas Screening Level (ppbv)
1,1-Dichloroethane	15	3.8	760	190
1,2-Dichloroethane	0.94	0.23	47	12
1,1-Dichloroethene	209	52	10,429	2,607
cis-1,2-Dichloroethene	37	9.1	1,825	456
trans-1,2-Dichloroethene	63	16	3,129	782
Tetrachloroethene	4.1	0.62	206	31
1,1,1-Trichloroethane	5,214	939	260,714	46,929
Trichloroethene	12	2.3	608	116
Vinyl Chloride	2.8	1.1	138	54

Calculated Generic Non-Residential Sub-Slab Soil Gas Screening Levels				
Compound	Non-Residential Indoor Air Criteria (ug/m ³)	Non-Residential Indoor Air Criteria (ppbv)	Non-Residential Sub-Slab Soil Gas Screening Level (ug/m ³)	Non-Residential Sub-Slab Soil Gas Screening Level (ppbv)
1,1-Dichloroethane	51	13	2,555	639
1,2-Dichloroethane	3.1	0.79	157	39
1,1-Dichloroethene	292	73	14,600	3,650
cis-1,2-Dichloroethene	51	13	2,555	639
trans-1,2-Dichloroethene	88	22	4,380	1,095
Tetrachloroethene	14	2.1	693	104
1,1,1-Trichloroethane	7300	1314	365,000	65,700
Trichloroethene	41	7.8	2,044	388
Vinyl Chloride	9.3	3.6	465	180

Calculated Generic Residential DEEP Soil Gas Screening Levels				
Compound	Residential Indoor Air Criteria (ug/m ³)	Residential Indoor Air Criteria (ppbv)	Residential DEEP Soil Gas Screening Level (ug/m ³)	Residential DEEP Soil Gas Screening Level (ppbv)
1,1-Dichloroethane	15	3.8	7,604	1,901
1,2-Dichloroethane	0.94	0.23	468	117
1,1-Dichloroethene	209	52	104,286	26,071
cis-1,2-Dichloroethene	37	9.1	18,250	4,563
trans-1,2-Dichloroethene	63	16	31,286	7,821
Tetrachloroethene	4.1	0.62	2,062	309
1,1,1-Trichloroethane	5,214	939	2,607,143	469,286
Trichloroethene	12	2.3	6,083	1,156
Vinyl Chloride	2.8	1.1	1,383	539

Calculated Generic Non-Residential DEEP Soil Gas Screening Levels				
Compound	Non-Residential Indoor Air Criteria (ug/m ³)	Non-Residential Indoor Air Criteria (ppbv)	Non-Residential DEEP Soil Gas Screening Level (ug/m ³)	Non-Residential DEEP Soil Gas Screening Level (ppbv)
1,1-Dichloroethane	51	13	25,550	6,388
1,2-Dichloroethane	3.1	0.79	1,572	393
1,1-Dichloroethene	292	73	146,000	36,500
cis-1,2-Dichloroethene	51	13	25,550	6,388
trans-1,2-Dichloroethene	88	22	43,800	10,950
Tetrachloroethene	14	2.1	6,929	1,039
1,1,1-Trichloroethane	7300	1314	3,650,000	657,000
Trichloroethene	41	7.8	20,440	3,884
Vinyl Chloride	9.3	3.6	4,650	1,800



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SHEET 1 OF 1

PROJECT / PROPOSAL NAME / LOCATION: Tecumseh Products Company, Tecumseh, Michigan		PROJECT / PROPOSAL NO.
SUBJECT: Generic Groundwater Screening Level		8070.06
PREPARED BY: S. Metz	DATE: 2/22/10, rev. 1 - 5/17/10	FINAL ☐
CHECKED BY: C. Daining, D. VanAntwerp	DATE: 3/12/10, rev. 1 - 5/17/10	REVISION x

Generic Groundwater Screening Level (GWSL) Calculation:

$$\text{GWSL} = \text{IAC} / \alpha \times \text{HLC}' \times \text{TAF} \times 1000 \text{ L/m}^3$$

Indoor Air Criteria (IAC) = Chemical Specific (ug/m³)
Groundwater Attenuation Factor (α) = 0.001 (Default values recommended by MDNRE and USEPA)
Dimensionless Henry's Law Coefficient (HLC') = Chemical Specific
Temperature Adjustment Factor (TAF) = 0.50 (accounts for reduced volatility at avg soil temperatures in MI)

Calculated Generic Groundwater Screening Levels					
Compound	HLC'	Residential IAC (ug/m ³)	Non-Residential IAC (ug/m ³)	Residential GWSL (ug/L)	Non-Residential GWSL (ug/L)
2-Butanone (MEK)	2.29E-03	5214	7300	4,553,961	6,375,546
1,1-Dichloroethane	2.30E-01	15	51	132	445
1,2-Dichloroethane	4.00E-02	0.9	3.1	47	157
1,1-Dichloroethene	1.07E+00	209	292	391	547
cis-1,2-Dichloroethene	1.67E-01	37	51	437	612
trans-1,2-Dichloroethene	3.84E-01	63	88	326	457
Tetrachloroethene	7.53E-01	4.1	14	11	37
1,1,1-Trichloroethane	7.03E-01	5214	7300	14,825	20,756
Trichloroethene	4.21E-01	12	41	58	194
Trichlorofluoromethane	3.97E+00	730	1022	368	515
Vinyl Chloride	1.10E+00	2.8	9.3	5.0	17

Attachment B
Site Specific Johnson Ettinger Model Calculations



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SHEET _1_ OF _1_

PROJECT / PROPOSAL NAME / LOCATION: Tecumseh Products Company, Tecumseh, Michigan		PROJECT / PROPOSAL NO.
SUBJECT: Site Specific Soil Gas Screening Level		8070.06
PREPARED BY: S. Metz	DATE: 7/9/10	FINAL x
CHECKED BY: D. VanAntwerp	DATE: 7/13/10	REVISION □

Site Specific DEEP Soil Gas Screening Level (SGC) Calculation:

$$\text{SGSL} = \text{IAC} / \alpha$$

Indoor Air Criteria (IAC) = Chemical Specific (ug/m³ or ppbv)
JEM DEEP Attenuation Factor (α) = 0.003 Calculated using Johnson Ettinger Model Spreadsheet (v. 3.1) - Attached

Calculated Site Specific Residential DEEP Soil Gas Screening Levels				
Compound	Residential Indoor Air Criteria (ug/m ³)	Residential Indoor Air Criteria (ppbv)	Residential DEEP Soil Gas Screening Level (ug/m ³)	Residential DEEP Soil Gas Screening Level (ppbv)
1,1-Dichloroethane	15	3.8	5,069	1,267
1,2-Dichloroethane	0.94	0.23	312	78
1,1-Dichloroethene	209	52	69,524	17,381
cis-1,2-Dichloroethene	37	9.1	12,167	3,042
trans-1,2-Dichloroethene	63	16	20,857	5,214
Tetrachloroethene	4.1	0.62	1,375	206
1,1,1-Trichloroethane	5,214	939	1,738,095	312,857
Trichloroethene	12	2.3	4,056	771
Vinyl Chloride	2.8	1.1	922	359

Calculated Site Specific Non-Residential DEEP Soil Gas Screening Levels				
Compound	Non-Residential Indoor Air Criteria (ug/m ³)	Non-Residential Indoor Air Criteria (ppbv)	Non-Residential DEEP Soil Gas Screening Level (ug/m ³)	Non-Residential DEEP Soil Gas Screening Level (ppbv)
1,1-Dichloroethane	51	13	17,033	4,258
1,2-Dichloroethane	3.1	0.79	1,048	262
1,1-Dichloroethene	292	73	97,333	24,333
cis-1,2-Dichloroethene	51	13	17,033	4,258
trans-1,2-Dichloroethene	88	22	29,200	7,300
Tetrachloroethene	14	2.1	4,619	693
1,1,1-Trichloroethane	7300	1314	2,433,333	438,000
Trichloroethene	41	7.8	13,627	2,589
Vinyl Chloride	9.3	3.6	3,100	1,200

DATA ENTRY SHEET

SG-SCREEN
Version 3.1; 02/04Reset to
Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu\text{g}/\text{m}^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
79016			8.00E-01	Trichloroethylene

MORE
↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_s ($^{\circ}\text{C}$)	ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vadose zone soil vapor permeability, k_v (cm^2)
200	200	10	S		

MORE
↓

ENTER Vadose zone SCS soil type Lookup Soil Parameters	ENTER Vadose zone soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Vadose zone soil total porosity, n^V (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
S	1.66	0.375	0.054	

MORE
↓

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

CHEMICAL PROPERTIES SHEET

Diffusivity in air, D_a (cm ² /s)	Diffusivity in water, D_w (cm ² /s)	Henry's law constant at reference temperature, H (atm·m ³ /mol)	Henry's law constant reference temperature, T_R (°C)	Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol)	Normal boiling point, T_B (°K)	Critical temperature, T_C (°K)	Unit risk factor, URF (µg/m ³) ⁻¹	Reference conc., RfC (mg/m ³)	Molecular weight, MW (g/mol)
7.90E-02	9.10E-06	1.03E-02	25	7,505	360.36	544.20	2.0E-06	0.0E+00	131.39

END

INTERMEDIATE CALCULATIONS SHEET

Source- building separation, L_T (cm)	Vadose zone soil air-filled porosity, θ_a^V (cm ³ /cm ³)	Vadose zone effective total fluid saturation, S_{te} (cm ³ /cm ³)	Vadose zone soil intrinsic permeability, k_i (cm ²)	Vadose zone soil relative air permeability, k_{rg} (cm ²)	Vadose zone soil effective vapor permeability, k_v (cm ²)	Floor- wall seam perimeter, X_{crack} (cm)	Soil gas conc., $\mu\text{g}/\text{m}^3$	Bldg. ventilation rate, $Q_{building}$ (cm ³ /s)
1	0.321	0.003	9.92E-08	0.998	9.91E-08	4,000	4.52E+03	2.54E+04

Area of enclosed space below grade, A_B (cm ²)	Crack- to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm·m ³ /mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Vadose zone effective diffusion coefficient, D_v^{eff} (cm ² /s)	Diffusion path length, L_d (cm)
1.80E+06	2.22E-04	200	8,557	4.78E-03	2.06E-01	1.75E-04	1.28E-02	1

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu\text{g}/\text{m}^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm ³ /s)	Crack effective diffusion coefficient, D_{crack} (cm ² /s)	Area of crack, A_{crack} (cm ²)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu\text{g}/\text{m}^3$)
200	4.52E+03	0.10	6.84E+01	1.28E-02	4.00E+02	1.55E+58	2.69E-03	1.21E+01

Unit risk factor, URF ($\mu\text{g}/\text{m}^3$) ⁻¹	Reference conc., RFC (mg/m ³)
--	--

2.0E-06	NA
---------	----

END

Site specific
attenuation factor
is 0.00269, round
up to 0.003

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
1.0E-05	NA

MESSAGE SUMMARY BELOW:

MESSAGE: Risk/HQ or risk-based soil concentration is based on a route-to-route extrapolation.

END

Attachment C
Soil Boring Logs and Monitoring Point Construction Forms



WELL CONSTRUCTION LOG

WELL NO. SG-01

Page 1 of 1

Facility/Project Name: Tecumseh Products Company -Soil Gas Sample Point Installation		Date Drilling Started: 3/31/10	Date Drilling Completed: 3/31/10	Project Number: 8070.06	
Drilling Firm: Terra Probe, Inc.	Drilling Method: Direct Push	Surface Elev. (ft) ---	TOC Elevation (ft) ---	Total Depth (ft bgs) 8.5	Borehole Dia. (in) 2.5
Boring Location: Adjacent to MW-01s on TPC property		Personnel Logged By - John Bacon Driller - Ray Bashaw		Drilling Equipment: Geoprobe	
Civil Town/City/or Village: Tecumseh	County: Lenawee	State: MI	Water Level Observations: While Drilling: Date/Time 3/31/10 00:00 Depth (ft bgs) -- After Drilling: Date/Time 3/31/10 00:00 Depth (ft bgs) NM		

SAMPLE		BLOW COUNTS	DEPTH IN FEET	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	WELL DIAGRAM	COMMENTS
NUMBER AND TYPE	RECOVERY (%)							
1 HA	80		1	GRAVEL AND SAND FILL dry to damp.				
			2	SANDY SILTY CLAY mostly clay, little to some sand, little to some silt, damp.	CL-ML			
			4	WELL GRADED SAND mostly fine to coarse sand, trace to few gravel, damp.	SW			
3 GP	100		8	Same as above.				
				End of boring at 8.5 feet below ground surface.				

SOIL BORING WELL CONSTRUCTION LOG 8070.06.GPJ RMT CORP.GDT 8070.06 7/12/10

Signature:

Firm:

RMT Inc.
3754 Ranchero Drive Ann Arbor, MI 48108

734-971-7080

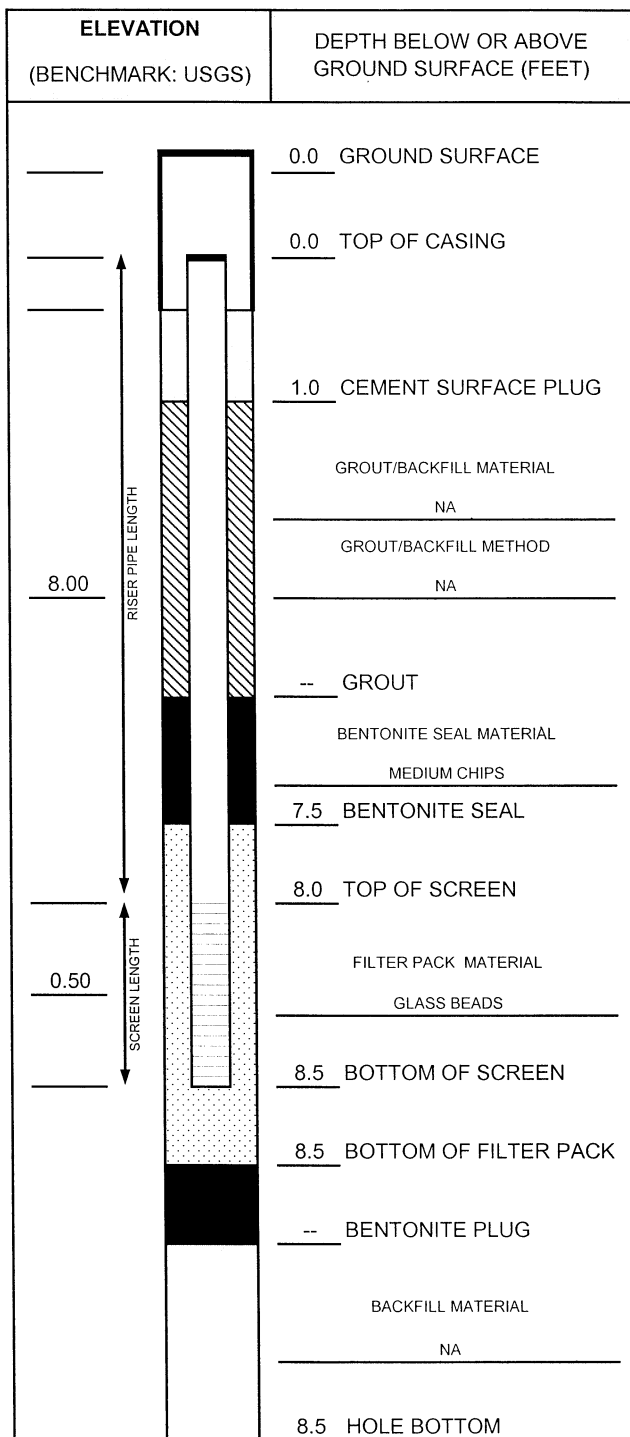
Fax 734-971-9022

Checked By: Brent Ritchie



WELL CONSTRUCTION DIAGRAM

PROJ. NAME: TPC - Off-Site Soil Gas Investigation		WELL ID: SG-01
PROJ. NO: 8070.06	DATE INSTALLED: 3/31/2010	INSTALLED BY: J. Bacon
		CHECKED BY: S. Metz



CASING AND SCREEN DETAILS	
TYPE OF RISER:	1/4-INCH TEFLON TUBING
PIPE SCHEDULE:	NA
PIPE JOINTS:	NA
SOLVENT USED?	NO
SCREEN TYPE:	1/4-INCH STAINLESS STEEL
SCR. SLOT SIZE:	2-PLY WIRE MESH
BOREHOLE DIAMETER:	2.5 IN. FROM 0 TO 8.5 FT.
	IN. FROM TO FT.
SURF. CASING DIAMETER:	4 IN. FROM 0 TO 1 FT.
	IN. FROM TO FT.

WELL DEVELOPMENT	
DEVELOPMENT METHOD:	NA
TIME DEVELOPING:	NA HOURS
WATER REMOVED:	NA GALLONS
WATER ADDED:	NA GALLONS
WATER CLARITY BEFORE / AFTER DEVELOPMENT	
CLARITY BEFORE:	NA
COLOR BEFORE:	NA
CLARITY AFTER:	NA
COLOR AFTER:	NA
ODOR (IF PRESENT):	NA

WATER LEVEL SUMMARY		
MEASUREMENT (FEET)	DATE	TIME
DTB BEFORE DEVELOPING:	NA	T/PVC
DTB AFTER DEVELOPING:	NA	T/PVC
SWE BEFORE DEVELOPING:	NA	T/PVC
SWE AFTER DEVELOPING:	NA	T/PVC
OTHER SWE:		T/PVC
OTHER SWE:		T/PVC

PROTECTIVE CASING DETAILS	
PERMANENT, LEGIBLE WELL LABEL ADDED?	☒ YES ☐ NO
PROTECTIVE COVER INSTALLED?	☒ YES ☐ NO
LOCK KEY NUMBER:	NA

NOTES:



WELL CONSTRUCTION LOG

WELL NO. SG-02

Page 1 of 1

Facility/Project Name: Tecumseh Products Company -Soil Gas Sample Point Installation		Date Drilling Started: 4/2/10	Date Drilling Completed: 4/2/10	Project Number: 8070.06
Drilling Firm: Terra Probe, Inc.	Drilling Method: Direct Push	Surface Elev. (ft) ---	TOC Elevation (ft) ---	Total Depth (ft bgs) 8.0
Boring Location: In ROW on east side of Maumee Street, approximately 1000 feet south of Mohawk Street		Personnel Logged By - John Bacon Driller - Ray Bashaw		Drilling Equipment: Geoprobe
Civil Town/City/or Village: Tecumseh	County: Lenawee	State: MI	Water Level Observations: While Drilling: Date/Time 4/2/10 00:00 ∇ Depth (ft bgs) 7 After Drilling: Date/Time 4/2/10 00:00 Depth (ft bgs) NM	

SAMPLE NUMBER AND TYPE	RECOVERY (%)	BLOW COUNTS	DEPTH IN FEET	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	WELL DIAGRAM	COMMENTS
1 HA	100		1	TOPSOIL AND FILL sand and gravel, organics, asphalt and road base, damp.				
			2					
			3	SANDY SILT mostly silt, some sand, few clay, damp.	ML			
			4					
			5	WELL GRADED SAND mostly fine to coarse sand, few gravel, trace silt, damp to wet.	SW			
			6					
			7	Change to saturated.				
			8					
			8	End of boring at 8.0 feet below ground surface.				

Signature:

Firm:

RMT Inc.
3754 Ranchero Drive Ann Arbor, MI 48108734-971-7080
Fax 734-971-9022

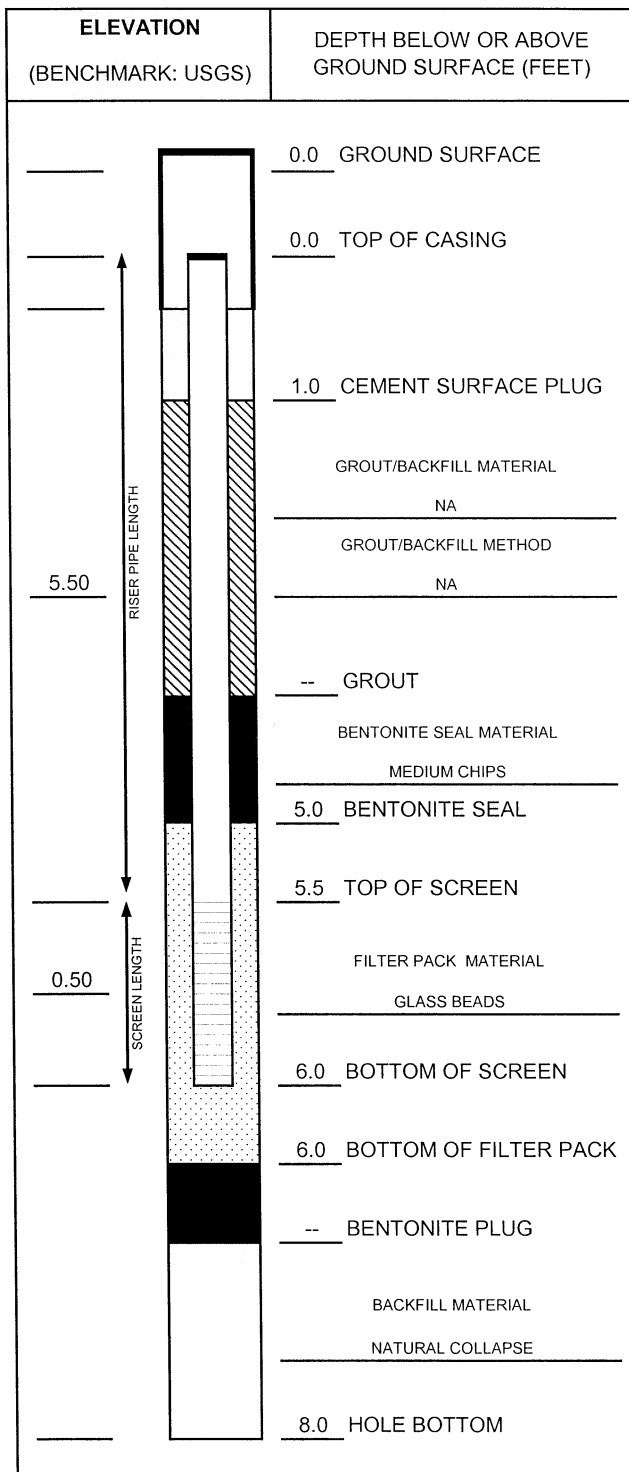
Checked By: Brent Ritchie

SOIL BORING WELL CONSTRUCTION LOG 8070.06.GPJ RMT CORP.GDT 8070.06 7/12/10



WELL CONSTRUCTION DIAGRAM

PROJ. NAME: TPC - Off-Site Soil Gas Investigation		WELL ID: SG-02
PROJ. NO: 8070.06	DATE INSTALLED: 4/2/2010	INSTALLED BY: J. Bacon CHECKED BY: S. Metz



CASING AND SCREEN DETAILS	
TYPE OF RISER:	1/4-INCH TEFLON TUBING
PIPE SCHEDULE:	NA
PIPE JOINTS:	NA
SOLVENT USED?	NO
SCREEN TYPE:	1/4-INCH STAINLESS STEEL
SCR. SLOT SIZE:	2-PLY WIRE MESH
BOREHOLE DIAMETER:	2.5 IN. FROM 0 TO 8 FT.
	IN. FROM TO FT.
SURF. CASING DIAMETER:	4 IN. FROM 0 TO 1 FT.
	IN. FROM TO FT.

WELL DEVELOPMENT	
DEVELOPMENT METHOD:	NA
TIME DEVELOPING:	NA HOURS
WATER REMOVED:	NA GALLONS
WATER ADDED:	NA GALLONS
WATER CLARITY BEFORE / AFTER DEVELOPMENT	
CLARITY BEFORE:	NA
COLOR BEFORE:	NA
CLARITY AFTER:	NA
COLOR AFTER:	NA
ODOR (IF PRESENT):	NA

WATER LEVEL SUMMARY		
MEASUREMENT (FEET)	DATE	TIME
DTB BEFORE DEVELOPING:	NA	T/PVC
DTB AFTER DEVELOPING:	NA	T/PVC
SWE BEFORE DEVELOPING:	NA	T/PVC
SWE AFTER DEVELOPING:	NA	T/PVC
OTHER SWE:		T/PVC
OTHER SWE:		T/PVC

NOTES:

PROTECTIVE CASING DETAILS	
PERMANENT, LEGIBLE WELL LABEL ADDED?	☒ YES ☐ NO
PROTECTIVE COVER INSTALLED?	☒ YES ☐ NO
LOCK KEY NUMBER:	NA



WELL CONSTRUCTION LOG

WELL NO. SG-03

Page 1 of 1

Facility/Project Name: Tecumseh Products Company -Soil Gas Sample Point Installation		Date Drilling Started: 4/2/10	Date Drilling Completed: 4/2/10	Project Number: 8070.06	
Drilling Firm: Terra Probe, Inc.	Drilling Method: Direct Push	Surface Elev. (ft) ---	TOC Elevation (ft) ---	Total Depth (ft bgs) 8.0	Borehole Dia. (in) 2.5
Boring Location: In ROW on east side of Maumee Street, approximately 500 feet south of Mohawk Street		Personnel Logged By - John Bacon Driller - Ray Bashaw		Drilling Equipment: Geoprobe	
Civil Town/City/or Village: Tecumseh	County: Lenawee	State: MI	Water Level Observations: While Drilling: Date/Time 4/2/10 00:00 ∇ Depth (ft bgs) 6.5 After Drilling: Date/Time 4/2/10 00:00 Depth (ft bgs) NM		

SAMPLE		BLOW COUNTS	DEPTH IN FEET	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	WELL DIAGRAM	COMMENTS
NUMBER AND TYPE	RECOVERY (%)							
1 HA	100			TOPSOIL AND FILL sand and gravel, organics, damp.				
				SANDY SILT mostly silt, some sand, trace clay, damp.				
				Same as above.	ML			
2 GP	90			WELL GRADED SAND mostly fine to coarse sand, trace gravel, trace silt, saturated.	SW			
				End of boring at 8.0 feet below ground surface.				

SOIL BORING WELL CONSTRUCTION LOG 8070.06.GPJ RMT CORP.GDT 8070.06 7/12/10

Signature:

Firm:

RMT Inc.
3754 Ranchero Drive Ann Arbor, MI 48108734-971-7080
Fax 734-971-9022

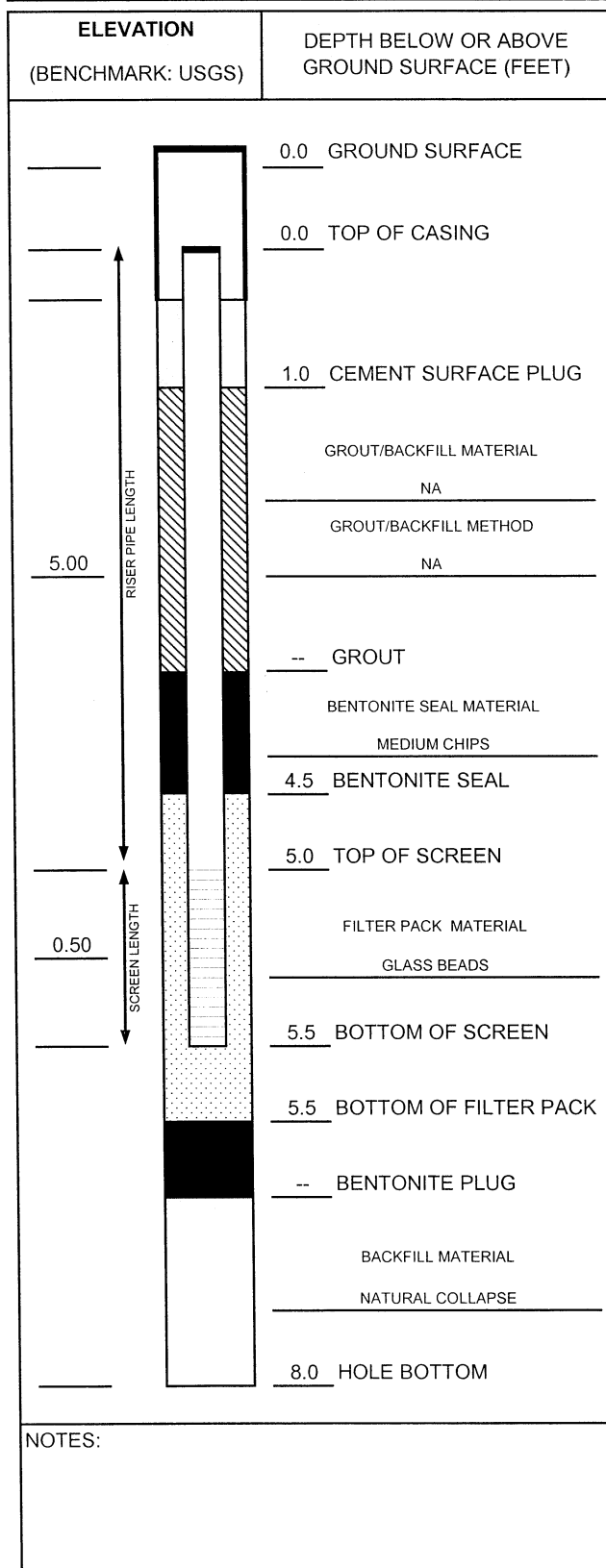
Checked By:

Brent Ritchie



WELL CONSTRUCTION DIAGRAM

PROJ. NAME: TPC - Off-Site Soil Gas Investigation		WELL ID: SG-03	
PROJ. NO: 8070.06	DATE INSTALLED: 4/2/2010	INSTALLED BY: J. Bacon	CHECKED BY: S. Metz



CASING AND SCREEN DETAILS	
TYPE OF RISER:	1/4-INCH TEFLON TUBING
PIPE SCHEDULE:	NA
PIPE JOINTS:	NA
SOLVENT USED?	NO
SCREEN TYPE:	1/4-INCH STAINLESS STEEL
SCR. SLOT SIZE:	2-PLY WIRE MESH
BOREHOLE DIAMETER:	2.5 IN. FROM 0 TO 8 FT.
	IN. FROM TO FT.
SURF. CASING DIAMETER:	4 IN. FROM 0 TO 1 FT.
	IN. FROM TO FT.

WELL DEVELOPMENT	
DEVELOPMENT METHOD:	NA
TIME DEVELOPING:	NA HOURS
WATER REMOVED:	NA GALLONS
WATER ADDED:	NA GALLONS
WATER CLARITY BEFORE / AFTER DEVELOPMENT	
CLARITY BEFORE:	NA
COLOR BEFORE:	NA
CLARITY AFTER:	NA
COLOR AFTER:	NA
ODOR (IF PRESENT):	NA

WATER LEVEL SUMMARY			
MEASUREMENT (FEET)		DATE	TIME
DTB BEFORE DEVELOPING:	NA T/PVC		
DTB AFTER DEVELOPING:	NA T/PVC		
SWE BEFORE DEVELOPING:	NA T/PVC		
SWE AFTER DEVELOPING:	NA T/PVC		
OTHER SWE:	T/PVC		
OTHER SWE:	T/PVC		

PROTECTIVE CASING DETAILS	
PERMANENT, LEGIBLE WELL LABEL ADDED?	☒ YES ☐ NO
PROTECTIVE COVER INSTALLED?	☒ YES ☐ NO
LOCK KEY NUMBER:	NA



WELL CONSTRUCTION LOG

WELL NO. SG-04

Page 1 of 1

Facility/Project Name: Tecumseh Products Company -Soil Gas Sample Point Installation		Date Drilling Started: 4/2/10	Date Drilling Completed: 4/2/10	Project Number: 8070.06
Drilling Firm: Terra Probe, Inc.	Drilling Method: Direct Push	Surface Elev. (ft) ---	TOC Elevation (ft) ---	Total Depth (ft bgs) 8.0
Boring Location: In ROW on southeast corner of Maumee Street and Mohawk Street		Personnel Logged By - John Bacon Driller - Ray Bashaw		Drilling Equipment: Geoprobe
Civil Town/City/or Village: Tecumseh	County: Lenawee	State: MI	Water Level Observations: While Drilling: Date/Time 4/2/10 00:00 ∇ Depth (ft bgs) 6.5 After Drilling: Date/Time 4/2/10 00:00 Depth (ft bgs) NM	

SAMPLE		BLOW COUNTS	DEPTH IN FEET	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	WELL DIAGRAM	COMMENTS
NUMBER AND TYPE	RECOVERY (%)							
1 HA	100		1	TOPSOIL AND FILL sand and gravel, organics, damp.				
			2	SANDY SILT mostly silt, some sand, trace clay, damp.				
2 GP	80		3		ML			
			4					
			5	WELL GRADED SAND mostly fine to coarse sand, trace gravel, trace silt, damp to wet.				
			6					
			7	Change to saturated.	SW			
			8	End of boring at 8.0 feet below ground surface.				

SOIL BORING WELL CONSTRUCTION LOG 8070.06.GPJ RMT CORP GDT 8070.06 7/12/10

Signature:

Firm:

RMT Inc.
3754 Ranchero Drive Ann Arbor, MI 48108734-971-7080
Fax 734-971-9022

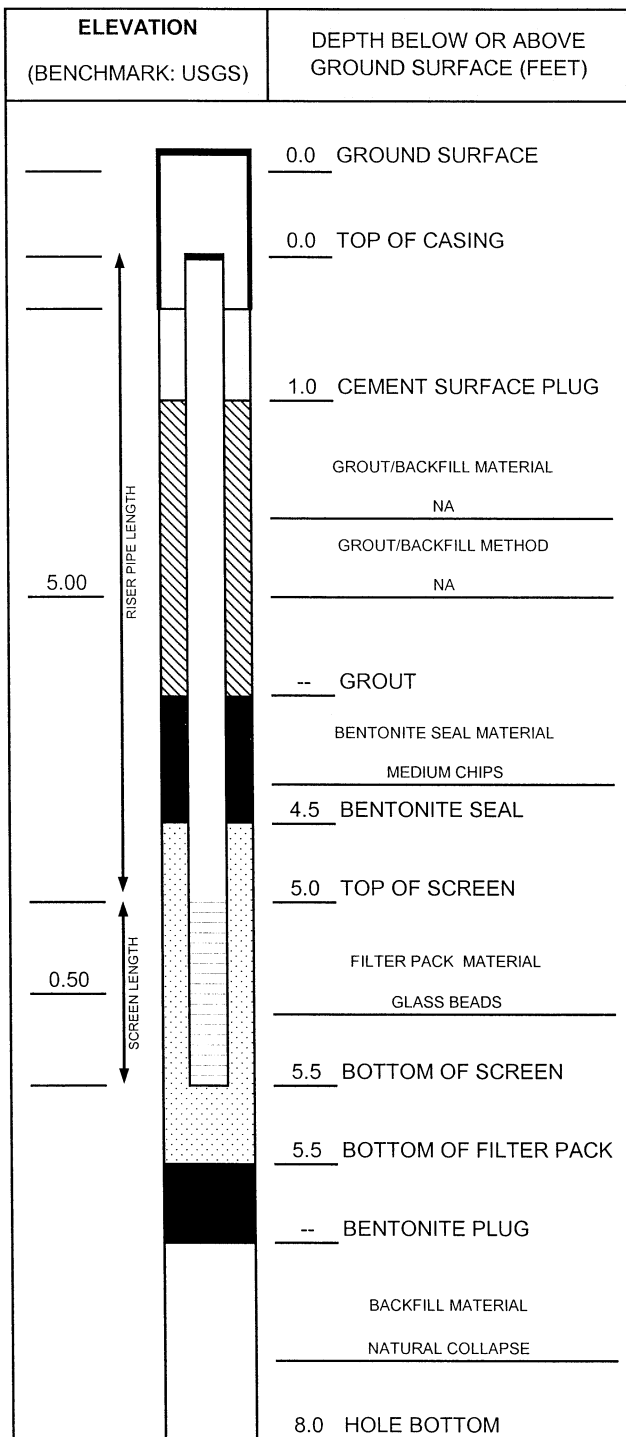
Checked By:

Brent Ritchie



WELL CONSTRUCTION DIAGRAM

PROJ. NAME: TPC - Off-Site Soil Gas Investigation		WELL ID: SG-04
PROJ. NO: 8070.06	DATE INSTALLED: 4/2/2010	INSTALLED BY: J. Bacon CHECKED BY: S. Metz



CASING AND SCREEN DETAILS	
TYPE OF RISER:	1/4-INCH TEFLON TUBING
PIPE SCHEDULE:	NA
PIPE JOINTS:	NA
SOLVENT USED?	NO
SCREEN TYPE:	1/4-INCH STAINLESS STEEL
SCR. SLOT SIZE:	2-PLY WIRE MESH
BOREHOLE DIAMETER:	2.5 IN. FROM 0 TO 8 FT.
	IN. FROM TO FT.
SURF. CASING DIAMETER:	4 IN. FROM 0 TO 1 FT.
	IN. FROM TO FT.

WELL DEVELOPMENT	
DEVELOPMENT METHOD:	NA
TIME DEVELOPING:	NA HOURS
WATER REMOVED:	NA GALLONS
WATER ADDED:	NA GALLONS
WATER CLARITY BEFORE / AFTER DEVELOPMENT	
CLARITY BEFORE:	NA
COLOR BEFORE:	NA
CLARITY AFTER:	NA
COLOR AFTER:	NA
ODOR (IF PRESENT):	NA

WATER LEVEL SUMMARY		
MEASUREMENT (FEET)	DATE	TIME
DTB BEFORE DEVELOPING:	NA	T/PVC
DTB AFTER DEVELOPING:	NA	T/PVC
SWE BEFORE DEVELOPING:	NA	T/PVC
SWE AFTER DEVELOPING:	NA	T/PVC
OTHER SWE:		T/PVC
OTHER SWE:		T/PVC

PROTECTIVE CASING DETAILS	
PERMANENT, LEGIBLE WELL LABEL ADDED?	☒ YES ☐ NO
PROTECTIVE COVER INSTALLED?	☒ YES ☐ NO
LOCK KEY NUMBER:	NA

NOTES:



WELL CONSTRUCTION LOG

WELL NO. SG-05

Page 1 of 1

Facility/Project Name: Tecumseh Products Company -Soil Gas Sample Point Installation		Date Drilling Started: 4/1/10	Date Drilling Completed: 4/1/10	Project Number: 8070.06	
Drilling Firm: Terra Probe, Inc.	Drilling Method: Direct Push	Surface Elev. (ft) ---	TOC Elevation (ft) ---	Total Depth (ft bgs) 10.0	Borehole Dia. (in) 2.5
Boring Location: On former TPC Emerson Building Property, near northeast corner of Patterson Street and Maumee Street		Personnel Logged By - John Bacon Driller - Ray Bashaw		Drilling Equipment: Geoprobe	
Civil Town/City/or Village: Tecumseh	County: Lenawee	State: MI	Water Level Observations: While Drilling: Date/Time 4/1/10 00:00 ∇ Depth (ft bgs) 3.5 After Drilling: Date/Time 4/1/10 00:00 Depth (ft bgs) NM		

SAMPLE		BLOW COUNTS	DEPTH IN FEET	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	WELL DIAGRAM	COMMENTS
NUMBER AND TYPE	RECOVERY (%)							
1 HA	100		1	TOPSOIL AND FILL sand and gravel, grass, organics, damp.				
			2	SANDY SILT mostly silt, some sand, trace clay, damp.	ML			
			3	∇ Change to saturated.				
			4	POORLY GRADED SAND mostly fine to medium sand, trace silt, saturated.	SP			
			5	SILTY CLAY mostly silt and clay, trace sand, low plasticity, damp.	CL-ML			
			6					
			7					
			8	POORLY GRADED SAND mostly fine to medium sand, moist.	SP			
			9	Same as above.				
			10	WELL GRADED SAND mostly fine to coarse sand, trace gravel, saturated.	SW			
				End of boring at 10.0 feet below ground surface.				

SOIL BORING WELL CONSTRUCTION LOG 8070.06.GPJ RMT CORP.GDT 8070.06 7/12/10

Signature:

Firm:

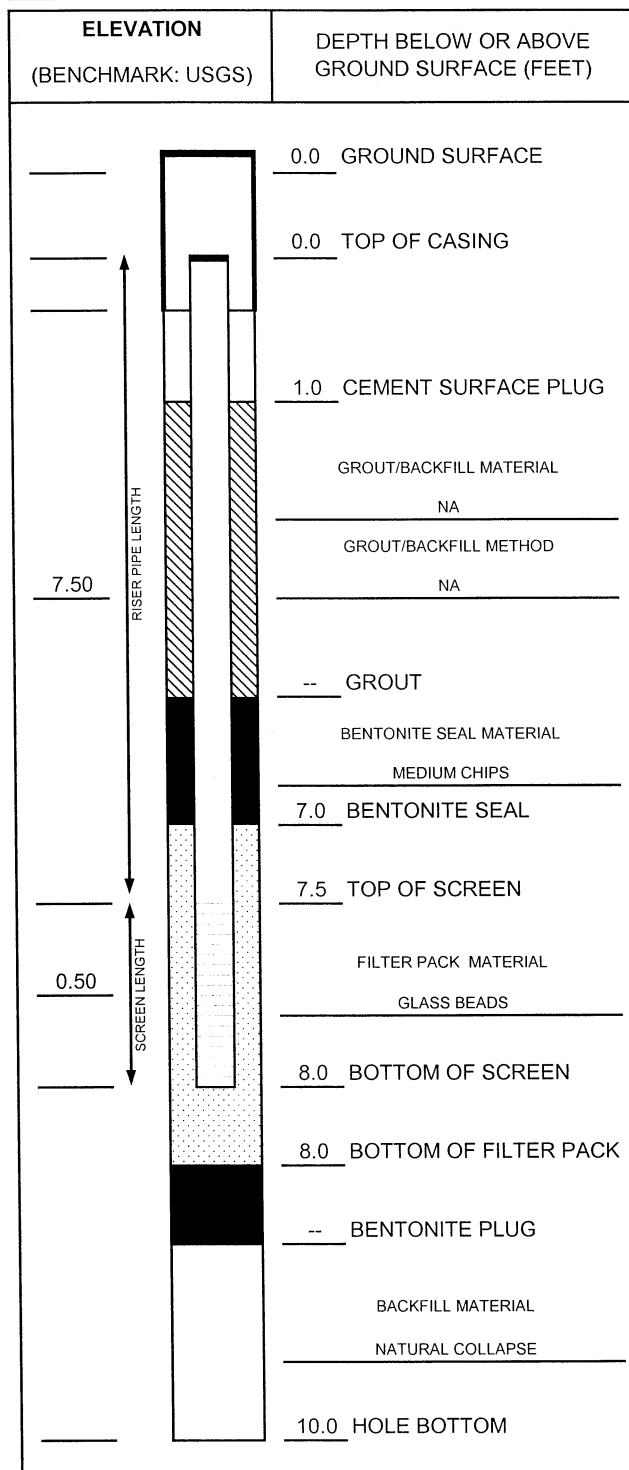
RMT Inc.
3754 Ranchero Drive Ann Arbor, MI 48108734-971-7080
Fax 734-971-9022

Checked By:

Brent Ritchie

RMT**WELL CONSTRUCTION DIAGRAM**

PROJ. NAME: TPC - Off-Site Soil Gas Investigation		WELL ID: SG-05
PROJ. NO: 8070.06	DATE INSTALLED: 4/1/2010	INSTALLED BY: J. Bacon CHECKED BY: S. Metz



CASING AND SCREEN DETAILS	
TYPE OF RISER:	1/4-INCH TEFLON TUBING
PIPE SCHEDULE:	NA
PIPE JOINTS:	NA
SOLVENT USED?	NO
SCREEN TYPE:	1/4-INCH STAINLESS STEEL
SCR. SLOT SIZE:	2-PLY WIRE MESH
BOREHOLE DIAMETER:	2.5 IN. FROM 0 TO 10 FT.
	IN. FROM TO FT.
SURF. CASING DIAMETER:	4 IN. FROM 0 TO 1 FT.
	IN. FROM TO FT.

WELL DEVELOPMENT	
DEVELOPMENT METHOD:	NA
TIME DEVELOPING:	NA HOURS
WATER REMOVED:	NA GALLONS
WATER ADDED:	NA GALLONS
WATER CLARITY BEFORE / AFTER DEVELOPMENT	
CLARITY BEFORE:	NA
COLOR BEFORE:	NA
CLARITY AFTER:	NA
COLOR AFTER:	NA
ODOR (IF PRESENT):	NA

WATER LEVEL SUMMARY		
MEASUREMENT (FEET)	DATE	TIME
DTB BEFORE DEVELOPING:	NA	T/PVC
DTB AFTER DEVELOPING:	NA	T/PVC
SWE BEFORE DEVELOPING:	NA	T/PVC
SWE AFTER DEVELOPING:	NA	T/PVC
OTHER SWE:		T/PVC
OTHER SWE:		T/PVC

PROTECTIVE CASING DETAILS	
PERMANENT, LEGIBLE WELL LABEL ADDED?	☒ YES ☐ NO
PROTECTIVE COVER INSTALLED?	☒ YES ☐ NO
LOCK KEY NUMBER:	NA

NOTES:



WELL CONSTRUCTION LOG

WELL NO. SG-06

Page 1 of 1

Facility/Project Name: Tecumseh Products Company -Soil Gas Sample Point Installation		Date Drilling Started: 4/1/10	Date Drilling Completed: 4/1/10	Project Number: 8070.06	
Drilling Firm: Terra Probe, Inc.	Drilling Method: Direct Push	Surface Elev. (ft) ---	TOC Elevation (ft) ---	Total Depth (ft bgs) 8.5	Borehole Dia. (in) 2.5
Boring Location: In ROW across from MW-04s on Patterson Street, adjacent to substation		Personnel Logged By - John Bacon Driller - Ray Bashaw		Drilling Equipment: Geoprobe	
Civil Town/City/or Village: Tecumseh	County: Lenawee	State: MI	Water Level Observations: While Drilling: Date/Time 4/1/10 00:00 Depth (ft bgs) -- After Drilling: Date/Time 4/1/10 00:00 Depth (ft bgs) NM		

SAMPLE		BLOW COUNTS	DEPTH IN FEET	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	WELL DIAGRAM	COMMENTS
NUMBER AND TYPE	RECOVERY (%)							
1 HA	90		1	TOPSOIL AND FILL sand and gravel, organics, damp.				
			2	SILTY CLAY mostly clay, some silt, few sand, trace gravel, low plasticity, damp.	CL-ML			
			4	Same as above.				
			5	WELL GRADED SAND mostly fine to coarse sand, few silt, trace gravel, damp.	SW			
			6					
			7					
3 GP	100		8	Same as above.				
				End of boring at 8.5 feet below ground surface.				

SOIL BORING WELL CONSTRUCTION LOG 8070.06.GPJ RMT CORP.GDT 8070.06 7/12/10

Signature:

Firm:

RMT Inc.
3754 Ranchero Drive Ann Arbor, MI 48108

734-971-7080

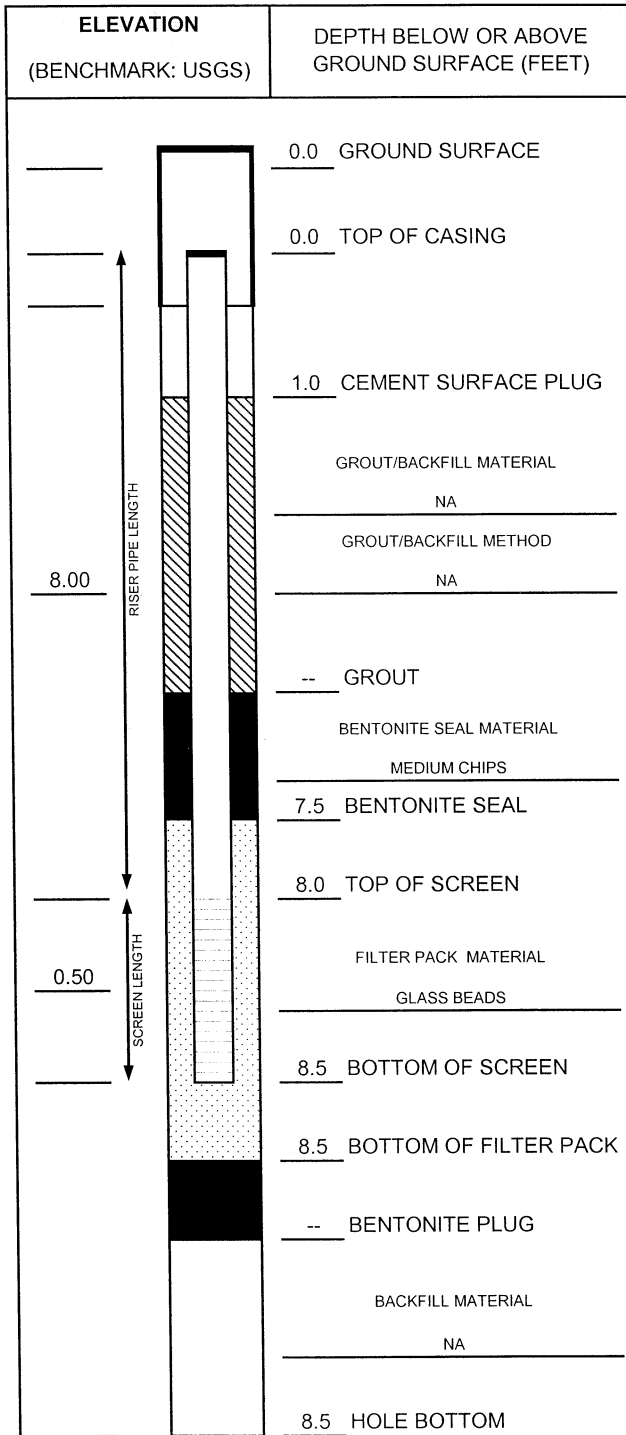
Fax 734-971-9022

Checked By: Brent Ritchie



WELL CONSTRUCTION DIAGRAM

PROJ. NAME: TPC - Off-Site Soil Gas Investigation		WELL ID: SG-06	
PROJ. NO: 8070.06	DATE INSTALLED: 4/1/2010	INSTALLED BY: J. Bacon	CHECKED BY: S. Metz



CASING AND SCREEN DETAILS	
TYPE OF RISER:	1/4-INCH TEFLON TUBING
PIPE SCHEDULE:	NA
PIPE JOINTS:	NA
SOLVENT USED?	NO
SCREEN TYPE:	1/4-INCH STAINLESS STEEL
SCR. SLOT SIZE:	2-PLY WIRE MESH
BOREHOLE DIAMETER:	2.5 IN. FROM 0 TO 8.5 FT.
	IN. FROM TO FT.
SURF. CASING DIAMETER:	4 IN. FROM 0 TO 1 FT.
	IN. FROM TO FT.

WELL DEVELOPMENT	
DEVELOPMENT METHOD:	NA
TIME DEVELOPING:	NA HOURS
WATER REMOVED:	NA GALLONS
WATER ADDED:	NA GALLONS
WATER CLARITY BEFORE / AFTER DEVELOPMENT	
CLARITY BEFORE:	NA
COLOR BEFORE:	NA
CLARITY AFTER:	NA
COLOR AFTER:	NA
ODOR (IF PRESENT):	NA

WATER LEVEL SUMMARY		
MEASUREMENT (FEET)	DATE	TIME
DTB BEFORE DEVELOPING:	NA	T/PVC
DTB AFTER DEVELOPING:	NA	T/PVC
SWE BEFORE DEVELOPING:	NA	T/PVC
SWE AFTER DEVELOPING:	NA	T/PVC
OTHER SWE:		T/PVC
OTHER SWE:		T/PVC

PROTECTIVE CASING DETAILS	
PERMANENT, LEGIBLE WELL LABEL ADDED?	☒ YES ☐ NO
PROTECTIVE COVER INSTALLED?	☒ YES ☐ NO
LOCK KEY NUMBER:	NA

NOTES:



WELL CONSTRUCTION LOG

WELL NO. SG-07

Page 1 of 1

Facility/Project Name: Tecumseh Products Company -Soil Gas Sample Point Installation		Date Drilling Started: 4/1/10	Date Drilling Completed: 4/1/10	Project Number: 8070.06	
Drilling Firm: Terra Probe, Inc.	Drilling Method: Direct Push	Surface Elev. (ft) ---	TOC Elevation (ft) ---	Total Depth (ft bgs) 8.5	Borehole Dia. (in) 2.5
Boring Location: Northwest corner of Patterson Street and Ottawa Street		Personnel Logged By - John Bacon Driller - Ray Bashaw		Drilling Equipment: Geoprobe	
Civil Town/City/or Village: Tecumseh	County: Lenawee	State: MI	Water Level Observations: While Drilling: Date/Time 4/1/10 00:00 Depth (ft bgs) -- After Drilling: Date/Time 4/1/10 00:00 Depth (ft bgs) NM		

SAMPLE	NUMBER AND TYPE	RECOVERY (%)	BLOW COUNTS	DEPTH IN FEET	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	WELL DIAGRAM	COMMENTS
	1	HA	85	1	TOPSOIL AND FILL sand and gravel, organics, cement.				
				2	LEAN CLAY mostly clay, few sand, few gravel, low plasticity, damp.	CL			
				4	WELL GRADED SAND WITH GRAVEL mostly fine to coarse sand, some medium to coarse gravel, damp.	SW			
				6					
				7					
				8	Same as above.				
					End of boring at 8.5 feet below ground surface.				

SOIL BORING WELL CONSTRUCTION LOG 8070.06.GPJ RMT CORP.GDT 8070.06 7/12/10

Signature:

Firm:

RMT Inc.
3754 Ranchero Drive Ann Arbor, MI 48108

734-971-7080

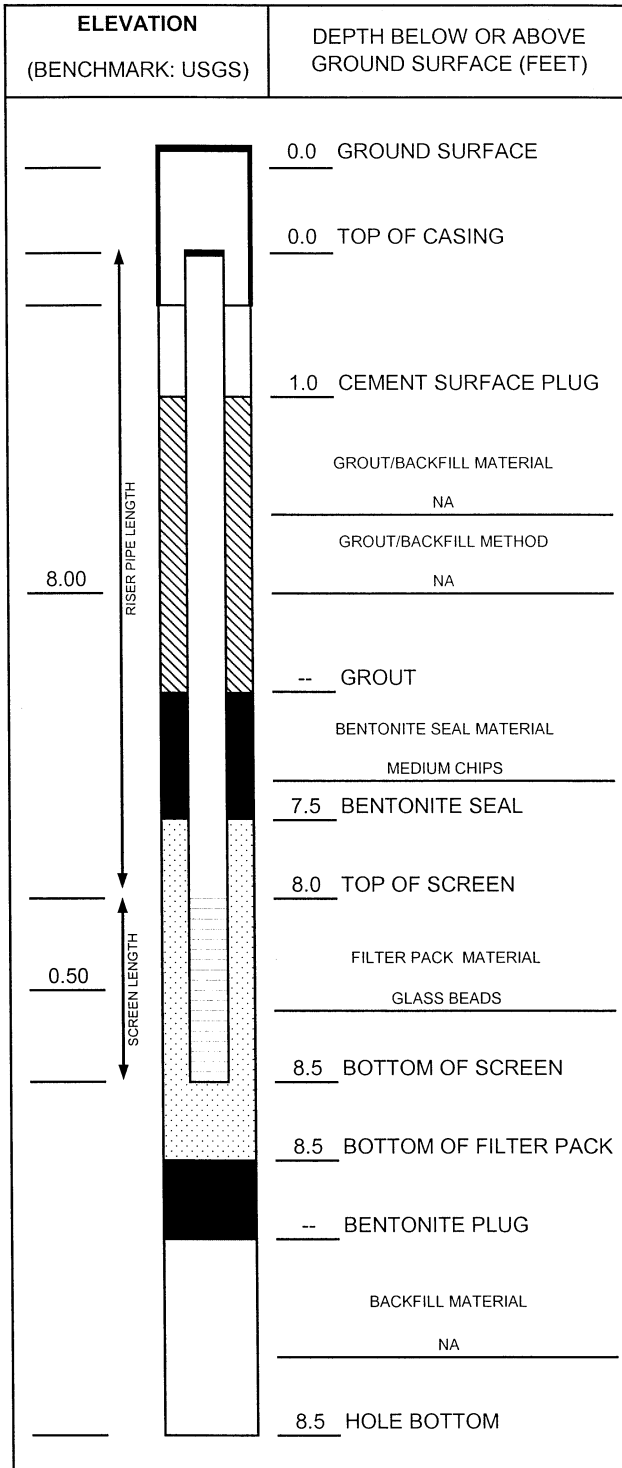
Fax 734-971-9022

Checked By: Brent Ritchie



WELL CONSTRUCTION DIAGRAM

PROJ. NAME: TPC - Off-Site Soil Gas Investigation		WELL ID: SG-07
PROJ. NO: 8070.06	DATE INSTALLED: 4/1/2010	INSTALLED BY: J. Bacon CHECKED BY: S. Metz



CASING AND SCREEN DETAILS	
TYPE OF RISER:	1/4-INCH TEFLON TUBING
PIPE SCHEDULE:	NA
PIPE JOINTS:	NA
SOLVENT USED?	NO
SCREEN TYPE:	1/4-INCH STAINLESS STEEL
SCR. SLOT SIZE:	2-PLY WIRE MESH
BOREHOLE DIAMETER:	2.5 IN. FROM 0 TO 8.5 FT.
SURF. CASING DIAMETER:	4 IN. FROM 0 TO 1 FT.

WELL DEVELOPMENT	
DEVELOPMENT METHOD:	NA
TIME DEVELOPING:	NA HOURS
WATER REMOVED:	NA GALLONS
WATER ADDED:	NA GALLONS
WATER CLARITY BEFORE / AFTER DEVELOPMENT	
CLARITY BEFORE:	NA
COLOR BEFORE:	NA
CLARITY AFTER:	NA
COLOR AFTER:	NA
ODOR (IF PRESENT):	NA

WATER LEVEL SUMMARY		
MEASUREMENT (FEET)	DATE	TIME
DTB BEFORE DEVELOPING:	NA	T/PVC
DTB AFTER DEVELOPING:	NA	T/PVC
SWE BEFORE DEVELOPING:	NA	T/PVC
SWE AFTER DEVELOPING:	NA	T/PVC
OTHER SWE:		T/PVC
OTHER SWE:		T/PVC

NOTES:

PROTECTIVE CASING DETAILS	
PERMANENT, LEGIBLE WELL LABEL ADDED?	☒ YES ☐ NO
PROTECTIVE COVER INSTALLED?	☒ YES ☐ NO
LOCK KEY NUMBER:	NA



WELL CONSTRUCTION LOG

WELL NO. SG-08

Page 1 of 1

Facility/Project Name: Tecumseh Products Company -Soil Gas Sample Point Installation		Date Drilling Started: 4/2/10	Date Drilling Completed: 4/2/10	Project Number: 8070.06
Drilling Firm: Terra Probe, Inc.	Drilling Method: Direct Push	Surface Elev. (ft) ---	TOC Elevation (ft) ---	Total Depth (ft bgs) 8.5
Boring Location: In ROW on southwest side of Mohawk Street, approximately 850 southeast of Maumee Street		Personnel Logged By - John Bacon Driller - Ray Bashaw		Drilling Equipment: Geoprobe
Civil Town/City/or Village: Tecumseh	County: Lenawee	State: MI	Water Level Observations: While Drilling: Date/Time 4/2/10 00:00 ▽ Depth (ft bgs) 8 After Drilling: Date/Time 4/2/10 00:00 Depth (ft bgs) NM	

SAMPLE		BLOW COUNTS	DEPTH IN FEET	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	WELL DIAGRAM	COMMENTS
NUMBER AND TYPE	RECOVERY (%)							
1 HA	100		1	TOPSOIL AND FILL sand and gravel, organics, damp.				
		2						
			3	WELL GRADED SAND WITH GRAVEL mostly fine to coarse sand, some gravel, trace silt, damp.				
		4						
			5	Same as above.	SW			
		6						
2 GP	85		7					
		8						
			8	Change to saturated.				
				End of boring at 8.5 feet below ground surface.				

SOIL BORING WELL CONSTRUCTION LOG 8070.06.GPJ RMT CORP.GDT 8070.06 7/12/10

Signature:

Brent Ritchie

Firm:

RMT Inc.
3754 Ranchero Drive Ann Arbor, MI 48108

734-971-7080
Fax 734-971-9022

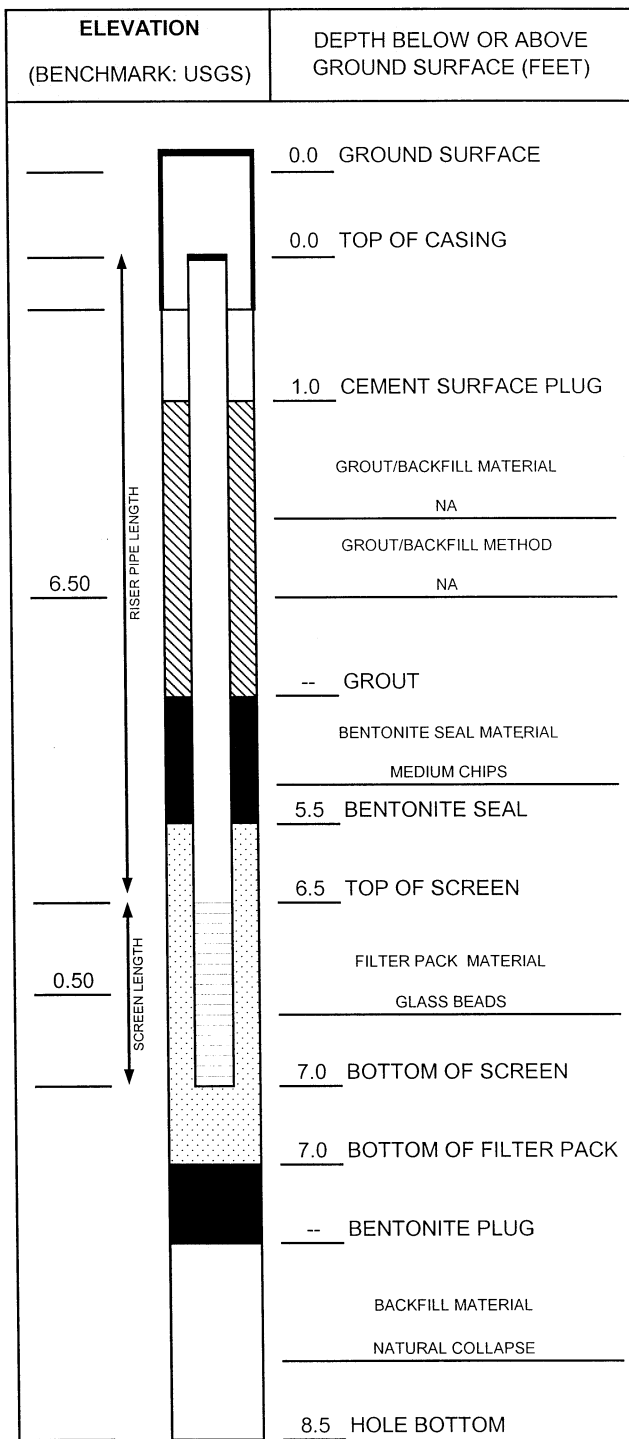
Checked By:

Brent Ritchie



WELL CONSTRUCTION DIAGRAM

PROJ. NAME: TPC - Off-Site Soil Gas Investigation		WELL ID: SG-08	
PROJ. NO: 8070.06	DATE INSTALLED: 4/2/2010	INSTALLED BY: J. Bacon	CHECKED BY: S. Metz



CASING AND SCREEN DETAILS	
TYPE OF RISER:	1/4-INCH TEFLON TUBING
PIPE SCHEDULE:	NA
PIPE JOINTS:	NA
SOLVENT USED?	NO
SCREEN TYPE:	1/4-INCH STAINLESS STEEL
SCR. SLOT SIZE:	2-PLY WIRE MESH
BOREHOLE DIAMETER:	2.5 IN. FROM 0 TO 8.5 FT.
	IN. FROM TO FT.
SURF. CASING DIAMETER:	4 IN. FROM 0 TO 1 FT.
	IN. FROM TO FT.

WELL DEVELOPMENT	
DEVELOPMENT METHOD:	NA
TIME DEVELOPING:	NA HOURS
WATER REMOVED:	NA GALLONS
WATER ADDED:	NA GALLONS
WATER CLARITY BEFORE / AFTER DEVELOPMENT	
CLARITY BEFORE:	NA
COLOR BEFORE:	NA
CLARITY AFTER:	NA
COLOR AFTER:	NA
ODOR (IF PRESENT):	NA

WATER LEVEL SUMMARY			
MEASUREMENT (FEET)		DATE	TIME
DTB BEFORE DEVELOPING:	NA	T/PVC	
DTB AFTER DEVELOPING:	NA	T/PVC	
SWE BEFORE DEVELOPING:	NA	T/PVC	
SWE AFTER DEVELOPING:	NA	T/PVC	
OTHER SWE:		T/PVC	
OTHER SWE:		T/PVC	

PROTECTIVE CASING DETAILS	
PERMANENT, LEGIBLE WELL LABEL ADDED?	☒ YES ☐ NO
PROTECTIVE COVER INSTALLED?	☒ YES ☐ NO
LOCK KEY NUMBER:	NA

NOTES:



WELL CONSTRUCTION LOG

WELL NO. SG-09

Page 1 of 1

Facility/Project Name: Tecumseh Products Company -Soil Gas Sample Point Installation		Date Drilling Started: 4/2/10	Date Drilling Completed: 4/2/10	Project Number: 8070.06
Drilling Firm: Terra Probe, Inc.	Drilling Method: Direct Push	Surface Elev. (ft) ---	TOC Elevation (ft) ---	Total Depth (ft bgs) 8.0
Boring Location: In ROW on southwest side of Mohawk Street, approximately 450 northwest of Blood Road		Personnel Logged By - John Bacon Driller - Ray Bashaw		Drilling Equipment: Geoprobe
Civil Town/City/or Village: Tecumseh	County: Lenawee	State: MI	Water Level Observations: While Drilling: Date/Time 4/2/10 00:00 ∇ Depth (ft bgs) 7 After Drilling: Date/Time 4/2/10 00:00 Depth (ft bgs) NM	

SAMPLE	NUMBER AND TYPE	RECOVERY (%)	BLOW COUNTS	DEPTH IN FEET	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	WELL DIAGRAM	COMMENTS
	1	HA	100	0	TOPSOIL AND FILL sand and gravel, organics, aged asphalt and road base, damp.				
				1					
				2					
				3	SANDY SILT mostly silt, some sand, few clay, damp.				
				4		ML			
				5	WELL GRADED SAND mostly fine to coarse sand, few gravel, trace silt, damp.				
				6		SW			
				7	∇ Change to saturated.				
				8	End of boring at 8.0 feet below ground surface.				

Signature:

Firm:

RMT Inc.
3754 Ranchero Drive Ann Arbor, MI 48108734-971-7080
Fax 734-971-9022

Checked By:

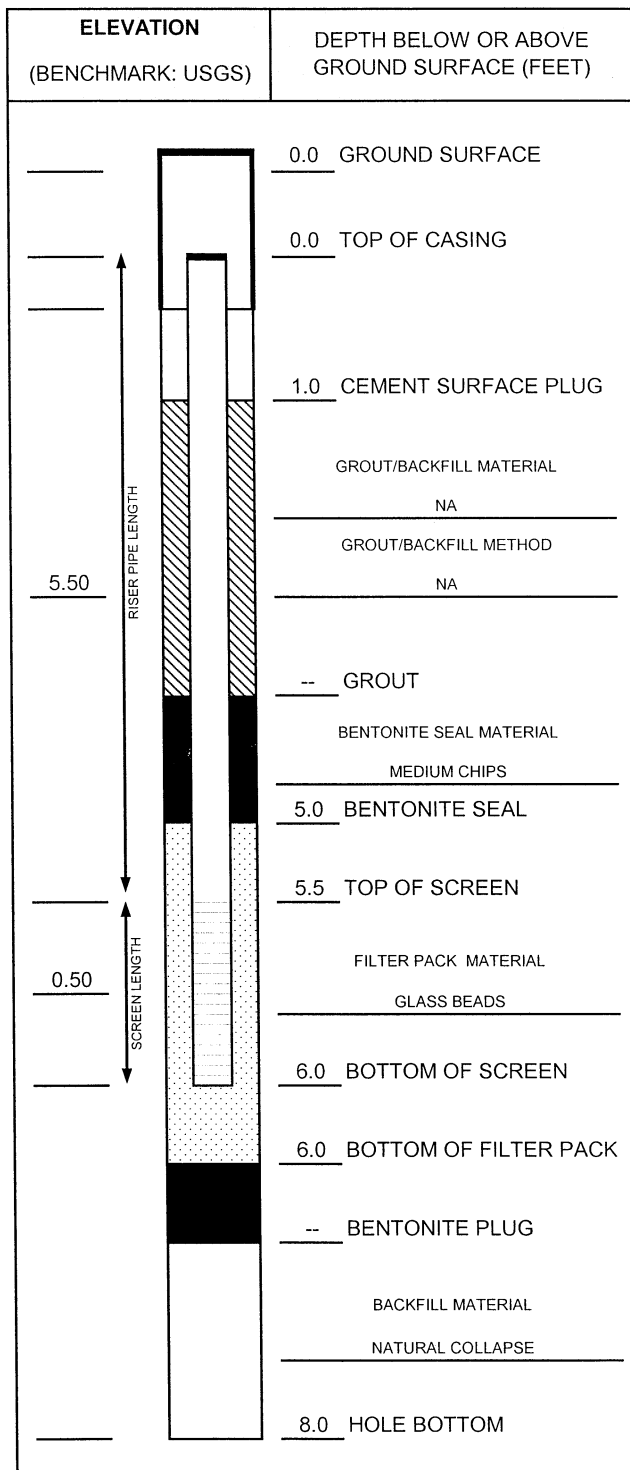
Brent Ritchie

SOIL BORING WELL CONSTRUCTION LOG 8070.06.GPJ RMT CORP.GDT 8070.06 7/12/10



WELL CONSTRUCTION DIAGRAM

PROJ. NAME: TPC - Off-Site Soil Gas Investigation		WELL ID: SG-09
PROJ. NO: 8070.06	DATE INSTALLED: 4/2/2010	INSTALLED BY: J. Bacon CHECKED BY: S. Metz



CASING AND SCREEN DETAILS	
TYPE OF RISER:	1/4-INCH TEFLON TUBING
PIPE SCHEDULE:	NA
PIPE JOINTS:	NA
SOLVENT USED?	NO
SCREEN TYPE:	1/4-INCH STAINLESS STEEL
SCR. SLOT SIZE:	2-PLY WIRE MESH
BOREHOLE DIAMETER:	2.5 IN. FROM 0 TO 8 FT.
	IN. FROM TO FT.
SURF. CASING DIAMETER:	4 IN. FROM 0 TO 1 FT.
	IN. FROM TO FT.

WELL DEVELOPMENT	
DEVELOPMENT METHOD:	NA
TIME DEVELOPING:	NA HOURS
WATER REMOVED:	NA GALLONS
WATER ADDED:	NA GALLONS
WATER CLARITY BEFORE / AFTER DEVELOPMENT	
CLARITY BEFORE:	NA
COLOR BEFORE:	NA
CLARITY AFTER:	NA
COLOR AFTER:	NA
ODOR (IF PRESENT):	NA

WATER LEVEL SUMMARY		
MEASUREMENT (FEET)	DATE	TIME
DTB BEFORE DEVELOPING:	NA	T/PVC
DTB AFTER DEVELOPING:	NA	T/PVC
SWE BEFORE DEVELOPING:	NA	T/PVC
SWE AFTER DEVELOPING:	NA	T/PVC
OTHER SWE:		T/PVC
OTHER SWE:		T/PVC

PROTECTIVE CASING DETAILS	
PERMANENT, LEGIBLE WELL LABEL ADDED?	☒ YES ☐ NO
PROTECTIVE COVER INSTALLED?	☒ YES ☐ NO
LOCK KEY NUMBER:	NA

NOTES:



WELL CONSTRUCTION LOG

WELL NO. SG-10

Page 1 of 1

Facility/Project Name: Tecumseh Products Company -Soil Gas Sample Point Installation		Date Drilling Started: 4/1/10	Date Drilling Completed: 4/1/10	Project Number: 8070.06
Drilling Firm: Terra Probe, Inc.	Drilling Method: Direct Push	Surface Elev. (ft) ---	TOC Elevation (ft) ---	Total Depth (ft bgs) 8.5
Boring Location: In ROW on south side of Cummins Street, approximately 400 feet east of Ottawa Street		Personnel Logged By - John Bacon Driller - Ray Bashaw		Drilling Equipment: Geoprobe
Civil Town/City/or Village: Tecumseh	County: Lenawee	State: MI	Water Level Observations: While Drilling: Date/Time 4/1/10 00:00 ▽ Depth (ft bgs) 6.5 After Drilling: Date/Time 4/1/10 00:00 Depth (ft bgs) NM	

SAMPLE		BLOW COUNTS	DEPTH IN FEET	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	WELL DIAGRAM	COMMENTS
NUMBER AND TYPE	RECOVERY (%)							
1 HA	100		1	TOPSOIL AND FILL sand and gravel, organics.				
			2	SANDY SILT mostly silt, some sand, trace clay, damp.				
2 GP	85		3		ML			
			4					
			5	WELL GRADED SAND WITH GRAVEL mostly fine to coarse sand, some gravel, trace silt, damp.				
			6					
			7	▽ Change to saturated.	SW			
			8					
				End of boring at 8.5 feet below ground surface.				

SOIL BORING WELL CONSTRUCTION LOG 8070.06.GPJ RMT CORP.GDT 8070.06 7/12/10

Signature:

Ray Bashaw

Firm:

RMT Inc.
3754 Ranchero Drive Ann Arbor, MI 48108

734-971-7080

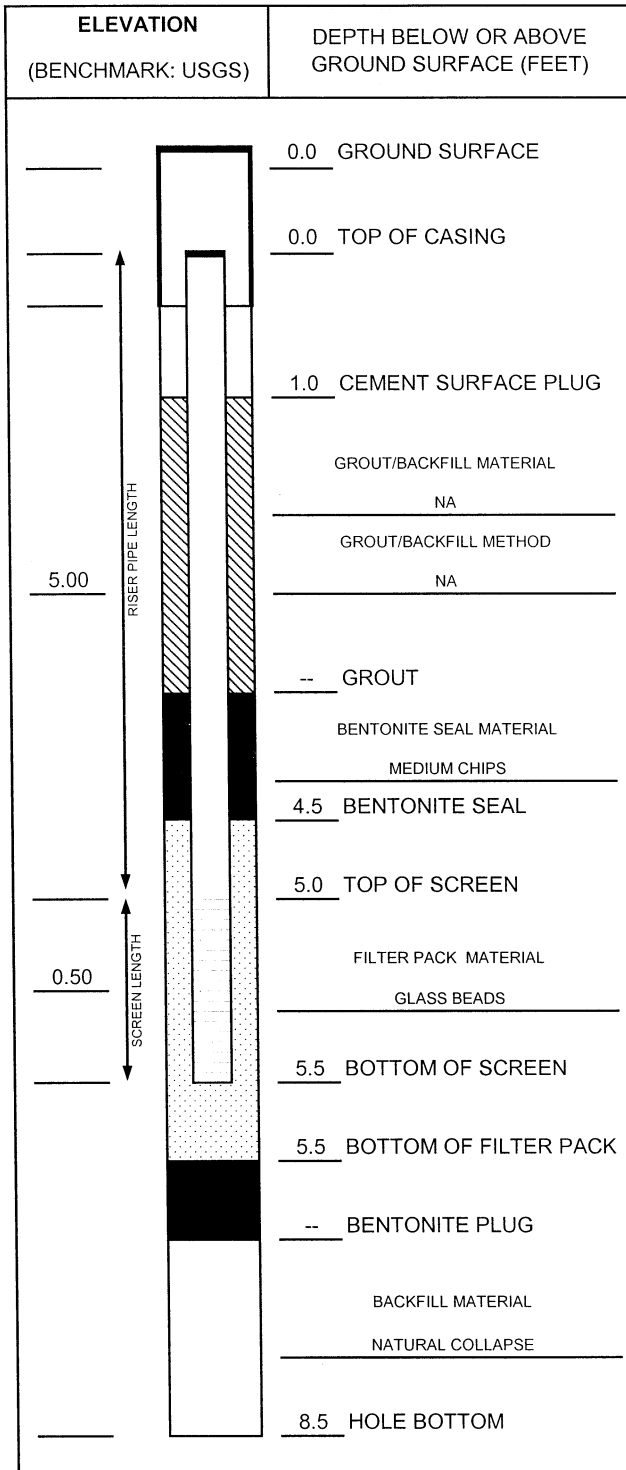
Fax 734-971-9022

Checked By: Brent Ritchie



WELL CONSTRUCTION DIAGRAM

PROJ. NAME: TPC - Off-Site Soil Gas Investigation		WELL ID: SG-10
PROJ. NO: 8070.06	DATE INSTALLED: 4/1/2010	INSTALLED BY: J. Bacon
		CHECKED BY: S. Metz



CASING AND SCREEN DETAILS	
TYPE OF RISER:	1/4-INCH TEFLON TUBING
PIPE SCHEDULE:	NA
PIPE JOINTS:	NA
SOLVENT USED?	NO
SCREEN TYPE:	1/4-INCH STAINLESS STEEL
SCR. SLOT SIZE:	2-PLY WIRE MESH
BOREHOLE DIAMETER:	2.5 IN. FROM 0 TO 8.5 FT.
	IN. FROM TO FT.
SURF. CASING DIAMETER:	4 IN. FROM 0 TO 1 FT.
	IN. FROM TO FT.

WELL DEVELOPMENT	
DEVELOPMENT METHOD:	NA
TIME DEVELOPING:	NA HOURS
WATER REMOVED:	NA GALLONS
WATER ADDED:	NA GALLONS
WATER CLARITY BEFORE / AFTER DEVELOPMENT	
CLARITY BEFORE:	NA
COLOR BEFORE:	NA
CLARITY AFTER:	NA
COLOR AFTER:	NA
ODOR (IF PRESENT):	NA

WATER LEVEL SUMMARY		
MEASUREMENT (FEET)	DATE	TIME
DTB BEFORE DEVELOPING:	NA	T/PVC
DTB AFTER DEVELOPING:	NA	T/PVC
SWE BEFORE DEVELOPING:	NA	T/PVC
SWE AFTER DEVELOPING:	NA	T/PVC
OTHER SWE:		T/PVC
OTHER SWE:		T/PVC

PROTECTIVE CASING DETAILS	
PERMANENT, LEGIBLE WELL LABEL ADDED?	☒ YES ☐ NO
PROTECTIVE COVER INSTALLED?	☒ YES ☐ NO
LOCK KEY NUMBER:	NA

NOTES:



WELL CONSTRUCTION LOG

WELL NO. SG-11

Page 1 of 1

Facility/Project Name: Tecumseh Products Company -Soil Gas Sample Point Installation		Date Drilling Started: 4/1/10	Date Drilling Completed: 4/1/10	Project Number: 8070.06
Drilling Firm: Terra Probe, Inc.	Drilling Method: Direct Push	Surface Elev. (ft) ---	TOC Elevation (ft) ---	Total Depth (ft bgs) 8.5
Boring Location: In ROW on south side of Cummins Street, approximately 150 feet west of Maumee Street		Personnel Logged By - John Bacon Driller - Ray Bashaw		Drilling Equipment: Geoprobe
Civil Town/City/or Village: Tecumseh	County: Lenawee	State: MI	Water Level Observations: While Drilling: Date/Time 4/1/10 00:00 ▽ Depth (ft bgs) 7 After Drilling: Date/Time 4/1/10 00:00 Depth (ft bgs) NM	

SAMPLE NUMBER AND TYPE	RECOVERY (%)	BLOW COUNTS	DEPTH IN FEET	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	WELL DIAGRAM	COMMENTS
1 HA	75		1	TOPSOIL AND FILL sand and gravel, organics, damp.				
			2					
			3	SANDY SILT mostly silt, some sand, trace clay, damp.				
			4					
			5	Same as above.	ML			
			6					
	75		7	WELL GRADED SAND WITH GRAVEL mostly fine to coarse sand, some gravel, trace silt, damp. Change to saturated.				
			8					
3 GP	100			Same as above.	SW			
				End of boring at 8.5 feet below ground surface.				

SOIL BORING WELL CONSTRUCTION LOG 8070.06.GPJ RMT CORP.GDT 8070.06 7/12/10

Signature:

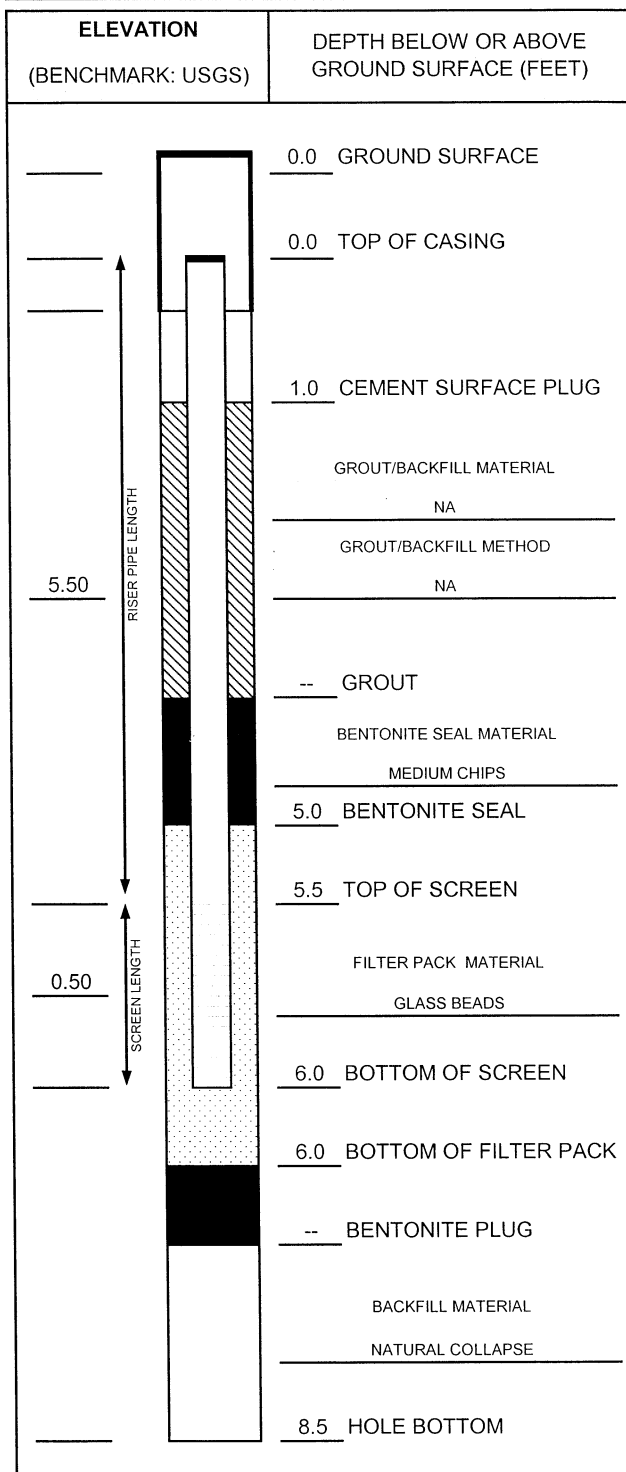
Firm:

RMT Inc.
3754 Ranchero Drive Ann Arbor, MI 48108734-971-7080
Fax 734-971-9022

Checked By: Brent Fitchie

RMT**WELL CONSTRUCTION DIAGRAM**

PROJ. NAME: TPC - Off-Site Soil Gas Investigation		WELL ID: SG-11
PROJ. NO: 8070.06	DATE INSTALLED: 4/1/2010	INSTALLED BY: J. Bacon CHECKED BY: S. Metz



CASING AND SCREEN DETAILS	
TYPE OF RISER:	1/4-INCH TEFLON TUBING
PIPE SCHEDULE:	NA
PIPE JOINTS:	NA
SOLVENT USED?	NO
SCREEN TYPE:	1/4-INCH STAINLESS STEEL
SCR. SLOT SIZE:	2-PLY WIRE MESH
BOREHOLE DIAMETER:	2.5 IN. FROM 0 TO 8.5 FT.
	IN. FROM TO FT.
SURF. CASING DIAMETER:	4 IN. FROM 0 TO 1 FT.
	IN. FROM TO FT.

WELL DEVELOPMENT	
DEVELOPMENT METHOD:	NA
TIME DEVELOPING:	NA HOURS
WATER REMOVED:	NA GALLONS
WATER ADDED:	NA GALLONS
WATER CLARITY BEFORE / AFTER DEVELOPMENT	
CLARITY BEFORE:	NA
COLOR BEFORE:	NA
CLARITY AFTER:	NA
COLOR AFTER:	NA
ODOR (IF PRESENT):	NA

WATER LEVEL SUMMARY		
MEASUREMENT (FEET)	DATE	TIME
DTB BEFORE DEVELOPING:	NA	T/PVC
DTB AFTER DEVELOPING:	NA	T/PVC
SWE BEFORE DEVELOPING:	NA	T/PVC
SWE AFTER DEVELOPING:	NA	T/PVC
OTHER SWE:		T/PVC
OTHER SWE:		T/PVC

PROTECTIVE CASING DETAILS	
PERMANENT, LEGIBLE WELL LABEL ADDED?	☒ YES ☐ NO
PROTECTIVE COVER INSTALLED?	☒ YES ☐ NO
LOCK KEY NUMBER:	NA

NOTES:



WELL CONSTRUCTION LOG

WELL NO. SG-12

Page 1 of 1

Facility/Project Name: Tecumseh Products Company -Soil Gas Sample Point Installation		Date Drilling Started: 4/2/10	Date Drilling Completed: 4/2/10	Project Number: 8070.06
Drilling Firm: Terra Probe, Inc.	Drilling Method: Direct Push	Surface Elev. (ft) ---	TOC Elevation (ft) ---	Total Depth (ft bgs) 8.0
Boring Location: In ROW on north side of Cummins Street, approximately 150 feet east of Maumee Street		Personnel Logged By - John Bacon Driller - Ray Bashaw		Drilling Equipment: Geoprobe
Civil Town/City/or Village: Tecumseh	County: Lenawee	State: MI	Water Level Observations: While Drilling: Date/Time 4/2/10 00:00 ▽ Depth (ft bgs) 6.5 After Drilling: Date/Time 4/2/10 00:00 Depth (ft bgs) NM	

SAMPLE		BLOW COUNTS	DEPTH IN FEET	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	WELL DIAGRAM	COMMENTS	
NUMBER AND TYPE	RECOVERY (%)								
 1 HA 2 GP	100		0	TOPSOIL AND FILL sand and gravel, organics, asphalt, damp.					
				1	SANDY SILT mostly silt, some sand, trace clay, damp.				
				2		ML			
				3					
				4	WELL GRADED SAND mostly fine to coarse sand, damp to wet.				
				5	Same as above.	SW			
				6	▽ Change to saturated.				
				7	SILTY CLAY mostly silt and clay, trace sand, low plasticity, saturated.	CL-ML			
			8	End of boring at 8.0 feet below ground surface.					

SOIL BORING WELL CONSTRUCTION LOG 8070.06.GPJ RMT CORP.GDT 8070.06 7/12/10

Signature:

Firm:

RMT Inc.
3754 Ranchero Drive Ann Arbor, MI 48108

734-971-7080

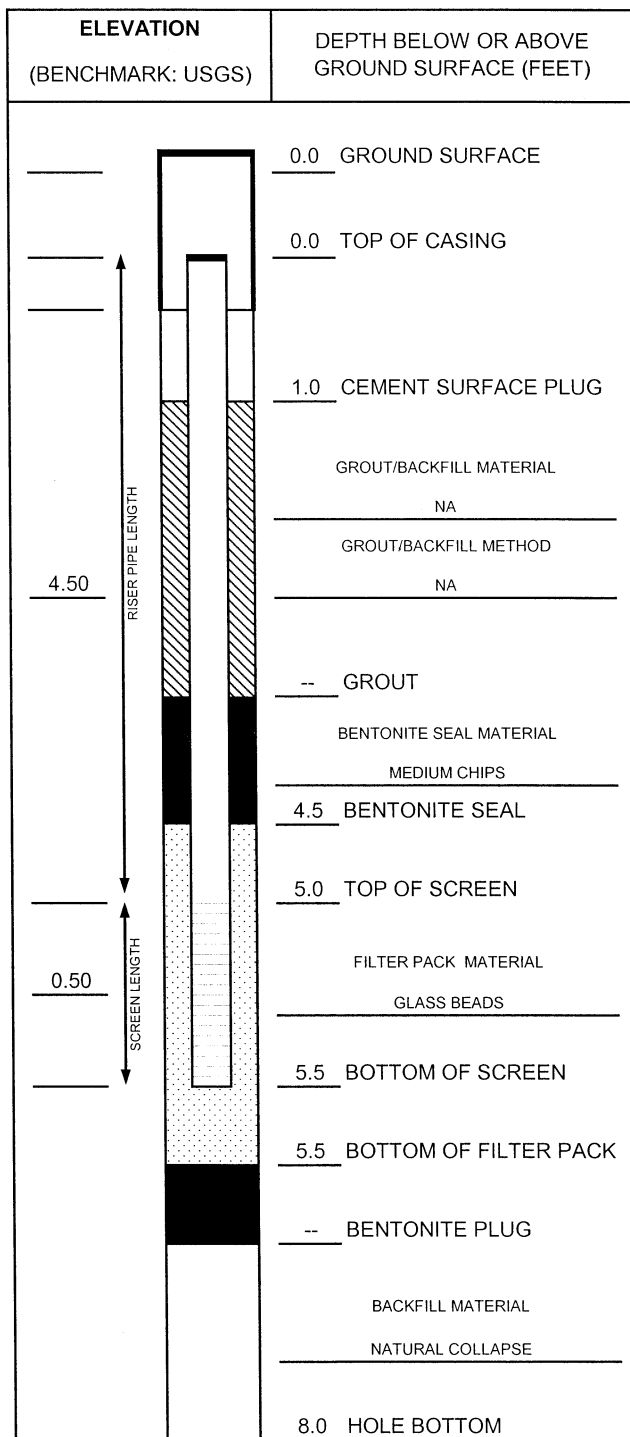
Fax 734-971-9022

Checked By:

Brent Ritchie

RMT**WELL CONSTRUCTION DIAGRAM**

PROJ. NAME: TPC - Off-Site Soil Gas Investigation		WELL ID: SG-12
PROJ. NO: 8070.06	DATE INSTALLED: 4/2/2010	INSTALLED BY: J. Bacon CHECKED BY: S. Metz



NOTES:

CASING AND SCREEN DETAILS

TYPE OF RISER: 1/4-INCH TEFLON TUBING

PIPE SCHEDULE: NA

PIPE JOINTS: NA

SOLVENT USED? NO

SCREEN TYPE: 1/4-INCH STAINLESS STEEL

SCR. SLOT SIZE: 2-PLY WIRE MESH

BOREHOLE DIAMETER: 2.5 IN. FROM 0 TO 8 FT.

IN. FROM TO FT.

SURF. CASING DIAMETER: 4 IN. FROM 0 TO 1 FT.

IN. FROM TO FT.

WELL DEVELOPMENT

DEVELOPMENT METHOD: NA

TIME DEVELOPING: NA HOURS

WATER REMOVED: NA GALLONS

WATER ADDED: NA GALLONS

WATER CLARITY BEFORE / AFTER DEVELOPMENT

CLARITY BEFORE: NA

COLOR BEFORE: NA

CLARITY AFTER: NA

COLOR AFTER: NA

ODOR (IF PRESENT): NA

WATER LEVEL SUMMARY

MEASUREMENT (FEET)	DATE	TIME
DTB BEFORE DEVELOPING:	NA	T/PVC
DTB AFTER DEVELOPING:	NA	T/PVC
SWE BEFORE DEVELOPING:	NA	T/PVC
SWE AFTER DEVELOPING:	NA	T/PVC
OTHER SWE:		T/PVC
OTHER SWE:		T/PVC

PROTECTIVE CASING DETAILSPERMANENT, LEGIBLE WELL LABEL ADDED? ☒ YES ☐ NOPROTECTIVE COVER INSTALLED? ☒ YES ☐ NO

LOCK KEY NUMBER: NA



WELL CONSTRUCTION LOG

WELL NO. SG-13

Page 1 of 1

Facility/Project Name: Tecumseh Products Company -Soil Gas Sample Point Installation		Date Drilling Started: 4/1/10	Date Drilling Completed: 4/1/10	Project Number: 8070.06
Drilling Firm: Terra Probe, Inc.	Drilling Method: Direct Push	Surface Elev. (ft) ---	TOC Elevation (ft) ---	Total Depth (ft bgs) 8.0
Boring Location: In ROW on north side of Kilbuck Street, approximately 150 feet west of Maumee Street		Personnel Logged By - John Bacon Driller - Ray Bashaw		Drilling Equipment: Geoprobe
Civil Town/City/or Village: Tecumseh	County: Lenawee	State: MI	Water Level Observations: While Drilling: Date/Time 4/1/10 00:00 ∇ Depth (ft bgs) 7 After Drilling: Date/Time 4/1/10 00:00 Depth (ft bgs) NM	

SAMPLE		BLOW COUNTS	DEPTH IN FEET	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	WELL DIAGRAM	COMMENTS
NUMBER AND TYPE	RECOVERY (%)							
1 HA	100		1	TOPSOIL AND FILL sand and gravel, organics, damp.				
			2	SANDY SILT mostly silt, some sand, trace clay, damp.				
2 GP	85		3		ML			
			4					
			5	Same as above.				
			6	WELL GRADED SAND mostly fine to coarse sand, trace silt, trace gravel, damp.				
			7	Change to saturated.	SW			
			8	End of boring at 8.0 feet below ground surface.				

SOIL BORING WELL CONSTRUCTION LOG 8070.06.GPJ RMT CORP.GDT 8070.06 7/12/10

Signature:

Firm:

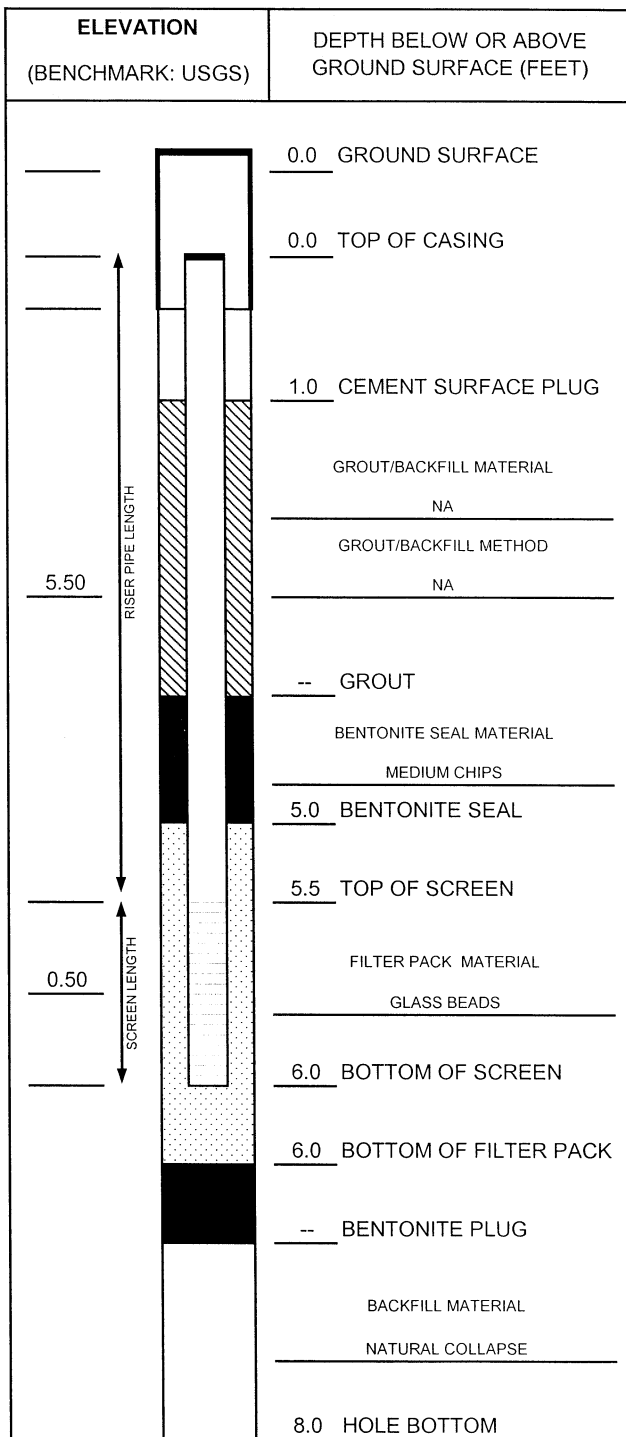
RMT Inc.
3754 Ranchero Drive Ann Arbor, MI 48108734-971-7080
Fax 734-971-9022

Checked By:

Brent Ritchie

RMT**WELL CONSTRUCTION DIAGRAM**

PROJ. NAME: TPC - Off-Site Soil Gas Investigation		WELL ID: SG-13
PROJ. NO: 8070.06	DATE INSTALLED: 4/1/2010	INSTALLED BY: J. Bacon CHECKED BY: S. Metz



NOTES:

CASING AND SCREEN DETAILS		
TYPE OF RISER:	1/4-INCH TEFLON TUBING	
PIPE SCHEDULE:	NA	
PIPE JOINTS:	NA	
SOLVENT USED?	NO	
SCREEN TYPE:	1/4-INCH STAINLESS STEEL	
SCR. SLOT SIZE:	2-PLY WIRE MESH	
BOREHOLE DIAMETER:	2.5 IN. FROM 0 TO 8 FT.	
	IN. FROM TO FT.	
SURF. CASING DIAMETER:	4 IN. FROM 0 TO 1 FT.	
	IN. FROM TO FT.	
WELL DEVELOPMENT		
DEVELOPMENT METHOD:	NA	
TIME DEVELOPING:	NA HOURS	
WATER REMOVED:	NA GALLONS	
WATER ADDED:	NA GALLONS	
WATER CLARITY BEFORE / AFTER DEVELOPMENT		
CLARITY BEFORE:	NA	
COLOR BEFORE:	NA	
CLARITY AFTER:	NA	
COLOR AFTER:	NA	
ODOR (IF PRESENT):	NA	
WATER LEVEL SUMMARY		
MEASUREMENT (FEET)	DATE	TIME
DTB BEFORE DEVELOPING:	NA	T/PVC
DTB AFTER DEVELOPING:	NA	T/PVC
SWE BEFORE DEVELOPING:	NA	T/PVC
SWE AFTER DEVELOPING:	NA	T/PVC
OTHER SWE:	T/PVC	
OTHER SWE:	T/PVC	
PROTECTIVE CASING DETAILS		
PERMANENT, LEGIBLE WELL LABEL ADDED?	☒ YES	☐ NO
PROTECTIVE COVER INSTALLED?	☒ YES	☐ NO
LOCK KEY NUMBER:	NA	



WELL CONSTRUCTION LOG

WELL NO. SG-14

Page 1 of 1

Facility/Project Name: Tecumseh Products Company -Soil Gas Sample Point Installation		Date Drilling Started: 4/1/10	Date Drilling Completed: 4/1/10	Project Number: 8070.06	
Drilling Firm: Terra Probe, Inc.	Drilling Method: Direct Push	Surface Elev. (ft) ---	TOC Elevation (ft) ---	Total Depth (ft bgs) 8.0	Borehole Dia. (in) 2.5
Boring Location: In ROW on south side of Kilbuck Street, adjacent to MW-23		Personnel Logged By - John Bacon Driller - Ray Bashaw		Drilling Equipment: Geoprobe	
Civil Town/City/or Village: Tecumseh	County: Lenawee	State: MI	Water Level Observations: While Drilling: Date/Time 4/1/10 00:00 ∇ Depth (ft bgs) 3 After Drilling: Date/Time 4/1/10 00:00 Depth (ft bgs) NM		

SAMPLE		BLOW COUNTS	DEPTH IN FEET	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	WELL DIAGRAM	COMMENTS
NUMBER AND TYPE	RECOVERY (%)							
1 HA	100		0	TOPSOIL AND FILL sand and gravel, organics, damp to moist.				
			1					
			2					
			3	SILTY CLAY mostly silt and clay, few sand, trace gravel, low plasticity, damp to wet. Change to saturated.	CL-ML			
			4					
			5	SILTY SAND mostly fine to coarse sand, some silt, few clay, damp to wet. Same as above.	SM			
			6					
			7					
			8	Change to saturated. End of boring at 8.0 feet below ground surface.				

SOIL BORING WELL CONSTRUCTION LOG 8070.06.GPJ RMT CORP.GDT 8070.06 7/12/10

Signature:

Checked By:

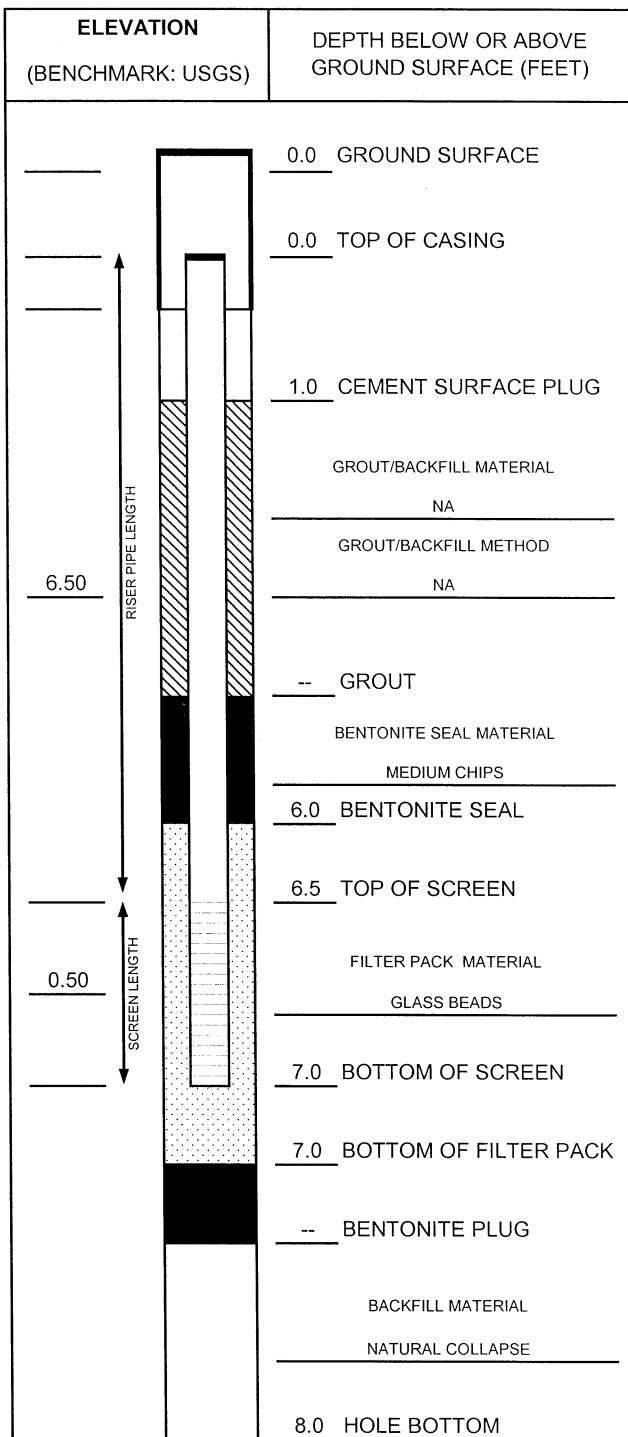
Brent Ritchie

Firm:

RMT Inc.
3754 Ranchero Drive Ann Arbor, MI 48108734-971-7080
Fax 734-971-9022

RMT**WELL CONSTRUCTION DIAGRAM**

PROJ. NAME: TPC - Off-Site Soil Gas Investigation		WELL ID: SG-14
PROJ. NO: 8070.06	DATE INSTALLED: 4/1/2010	INSTALLED BY: J. Bacon CHECKED BY: S. Metz



NOTES:

CASING AND SCREEN DETAILS

TYPE OF RISER: 1/4-INCH TEFLON TUBING

PIPE SCHEDULE: NA

PIPE JOINTS: NA

SOLVENT USED? NO

SCREEN TYPE: 1/4-INCH STAINLESS STEEL

SCR. SLOT SIZE: 2-PLY WIRE MESH

BOREHOLE DIAMETER: 2.5 IN. FROM 0 TO 8 FT.

IN. FROM TO FT.

SURF. CASING DIAMETER: 4 IN. FROM 0 TO 1 FT.

IN. FROM TO FT.

WELL DEVELOPMENT

DEVELOPMENT METHOD: NA

TIME DEVELOPING: NA HOURS

WATER REMOVED: NA GALLONS

WATER ADDED: NA GALLONS

WATER CLARITY BEFORE / AFTER DEVELOPMENT

CLARITY BEFORE: NA

COLOR BEFORE: NA

CLARITY AFTER: NA

COLOR AFTER: NA

ODOR (IF PRESENT): NA

WATER LEVEL SUMMARY

MEASUREMENT (FEET)		DATE	TIME
DTB BEFORE DEVELOPING:	NA	T/PVC	
DTB AFTER DEVELOPING:	NA	T/PVC	
SWE BEFORE DEVELOPING:	NA	T/PVC	
SWE AFTER DEVELOPING:	NA	T/PVC	
OTHER SWE:		T/PVC	
OTHER SWE:		T/PVC	

PROTECTIVE CASING DETAILSPERMANENT, LEGIBLE WELL LABEL ADDED? ☒ YES ☐ NOPROTECTIVE COVER INSTALLED? ☒ YES ☐ NO

LOCK KEY NUMBER: NA

Attachment D
Laboratory Analytical Data

March 2010 Data

April 21, 2010

Ms. Stacy Metz
RMT, INC
3754 Ranchero Dr.
Ann Arbor, MI 48108

RE: Project: 02751.06 TPC-Soil Gas
Pace Project No.: 10125863

Dear Ms. Metz:

Enclosed are the analytical results for sample(s) received by the laboratory on April 07, 2010. The results relate only to the samples included in this report. Results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Colin Schuft

colin.schuft@pacelabs.com
Project Manager

Enclosures

REPORT OF LABORATORY ANALYSIS

Page 1 of 15

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CERTIFICATIONS

Project: 02751.06 TPC-Soil Gas

Pace Project No.: 10125863

Minnesota Certification IDs

1700 Elm Street SE, Suite 200 Minneapolis, MN 55414

Alaska Certification #: UST-078

Washington Certification #: C754

Tennessee Certification #: 02818

Pennsylvania Certification #: 68-00563

Oregon Certification #: MN200001

North Dakota Certification #: R-036

North Carolina Certification #: 530

New York Certification #: 11647

New Jersey Certification #: MN-002

Montana Certification #: MT CERT0092

Minnesota Certification #: 027-053-137

Michigan DEQ Certification #: 9909

Maine Certification #: 2007029

Louisiana Certification #: LA080009

Louisiana Certification #: 03086

Kansas Certification #: E-10167

Iowa Certification #: 368

Illinois Certification #: 200011

Florida/NELAP Certification #: E87605

California Certification #: 01155CA

Arizona Certification #: AZ-0014

Wisconsin Certification #: 999407970

US EPA ARCHIVE DOCUMENT

REPORT OF LABORATORY ANALYSIS

Page 2 of 15

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SAMPLE SUMMARY

Project: 02751.06 TPC-Soil Gas

Pace Project No.: 10125863

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10125863001	SG-01	Air	04/05/10 10:12	04/07/10 10:00
10125863002	SG-02	Air	04/05/10 11:28	04/07/10 10:00
10125863003	SG-03	Air	04/05/10 11:01	04/07/10 10:00
10125863004	SG-04	Air	04/05/10 11:54	04/07/10 10:00
10125863005	SG-05	Air	04/05/10 12:44	04/07/10 10:00
10125863006	SG-06	Air	04/05/10 12:47	04/07/10 10:00
10125863007	SG-07	Air	04/05/10 13:21	04/07/10 10:00
10125863008	SG-08	Air	04/05/10 16:04	04/07/10 10:00
10125863009	SG-09	Air	04/05/10 16:18	04/07/10 10:00
10125863010	SG-10	Air	04/05/10 14:08	04/07/10 10:00
10125863011	SG-11	Air	04/05/10 14:39	04/07/10 10:00
10125863012	DUP-01	Air	04/05/10 00:00	04/07/10 10:00
10125863013	SG-13	Air	04/05/10 15:40	04/07/10 10:00

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REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: 02751.06 TPC-Soil Gas

Pace Project No.: 10125863

Lab ID	Sample ID	Method	Analysts	Analytes Reported
10125863001	SG-01	TO-15	CJR	10
10125863002	SG-02	TO-15	CJR	10
10125863003	SG-03	TO-15	CJR	10
10125863004	SG-04	TO-15	CJR	10
10125863005	SG-05	TO-15	CJR	10
10125863006	SG-06	TO-15	CJR	10
10125863007	SG-07	TO-15	CJR	10
10125863008	SG-08	TO-15	CJR	10
10125863009	SG-09	TO-15	CJR	10
10125863010	SG-10	TO-15	CJR	10
10125863011	SG-11	TO-15	CJR	10
10125863012	DUP-01	TO-15	CJR	10
10125863013	SG-13	TO-15	CJR	10

US EPA ARCHIVE DOCUMENT

REPORT OF LABORATORY ANALYSIS

Page 4 of 15

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PROJECT NARRATIVE

Project: 02751.06 TPC-Soil Gas
Pace Project No.: 10125863

Method: TO-15
Description: TO15 MSV AIR
Client: RMT, INC
Date: April 21, 2010

General Information:

13 samples were analyzed for TO-15. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

Analyte Comments:

QC Batch: AIR/10092

A3: The sample was analyzed by serial dilution.

- DUP-01 (Lab ID: 10125863012)
 - 2-Propanol
- SG-01 (Lab ID: 10125863001)
 - 2-Propanol
- SG-06 (Lab ID: 10125863006)
 - 2-Propanol
- SG-09 (Lab ID: 10125863009)
 - 2-Propanol
- SG-13 (Lab ID: 10125863013)
 - 2-Propanol

E: Analyte concentration exceeded the calibration range. The reported result is estimated.

- SG-01 (Lab ID: 10125863001)
 - 1,1,1-Trichloroethane
 - Trichloroethene

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: 02751.06 TPC-Soil Gas

Pace Project No.: 10125863

Method: TO-15

Description: TO15 MSV AIR

Client: RMT, INC

Date: April 21, 2010

Analyte Comments:

QC Batch: AIR/10092

E: Analyte concentration exceeded the calibration range. The reported result is estimated.

- SG-05 (Lab ID: 10125863005)
 - 2-Propanol
- SG-09 (Lab ID: 10125863009)
 - 2-Propanol

QC Batch: AIR/10101

D3: Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

- SG-10 (Lab ID: 10125863010)
 - Vinyl chloride

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

Page 6 of 15

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ANALYTICAL RESULTS

Project: 02751.06 TPC-Soil Gas
Pace Project No.: 10125863

Sample: SG-01		Lab ID: 10125863001	Collected: 04/05/10 10:12		Received: 04/07/10 10:00		Matrix: Air	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR		Analytical Method: TO-15						
1,1-Dichloroethane	5.7	ppbv	2.3	4.43		04/19/10 18:03	75-34-3	
1,2-Dichloroethane	ND	ppbv	2.3	4.43		04/19/10 18:03	107-06-2	
1,1-Dichloroethene	4.4	ppbv	2.3	4.43		04/19/10 18:03	75-35-4	
cis-1,2-Dichloroethene	17.0	ppbv	2.3	4.43		04/19/10 18:03	156-59-2	
trans-1,2-Dichloroethene	ND	ppbv	4.4	4.43		04/19/10 18:03	156-60-5	
2-Propanol	18100	ppbv	1280	2558.87		04/21/10 00:40	67-63-0	A3
Tetrachloroethene	ND	ppbv	2.3	4.43		04/19/10 18:03	127-18-4	
1,1,1-Trichloroethane	279	ppbv	2.3	4.43		04/19/10 18:03	71-55-6	E
Trichloroethene	396	ppbv	2.3	4.43		04/19/10 18:03	79-01-6	E
Vinyl chloride	ND	ppbv	2.3	4.43		04/19/10 18:03	75-01-4	

Sample: SG-02		Lab ID: 10125863002	Collected: 04/05/10 11:28		Received: 04/07/10 10:00		Matrix: Air	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR		Analytical Method: TO-15						
1,1-Dichloroethane	ND	ppbv	4.0	8.06		04/20/10 22:10	75-34-3	
1,2-Dichloroethane	ND	ppbv	4.0	8.06		04/20/10 22:10	107-06-2	
1,1-Dichloroethene	ND	ppbv	4.0	8.06		04/20/10 22:10	75-35-4	
cis-1,2-Dichloroethene	ND	ppbv	4.0	8.06		04/20/10 22:10	156-59-2	
trans-1,2-Dichloroethene	ND	ppbv	4.0	8.06		04/20/10 22:10	156-60-5	
2-Propanol	27.4	ppbv	4.0	8.06		04/20/10 22:10	67-63-0	
Tetrachloroethene	ND	ppbv	4.0	8.06		04/20/10 22:10	127-18-4	
1,1,1-Trichloroethane	19.6	ppbv	4.0	8.06		04/20/10 22:10	71-55-6	
Trichloroethene	ND	ppbv	4.0	8.06		04/20/10 22:10	79-01-6	
Vinyl chloride	ND	ppbv	4.0	8.06		04/20/10 22:10	75-01-4	

Sample: SG-03		Lab ID: 10125863003	Collected: 04/05/10 11:01		Received: 04/07/10 10:00		Matrix: Air	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR		Analytical Method: TO-15						
1,1-Dichloroethane	ND	ppbv	2.6	5.08		04/19/10 19:02	75-34-3	
1,2-Dichloroethane	ND	ppbv	2.6	5.08		04/19/10 19:02	107-06-2	
1,1-Dichloroethene	ND	ppbv	2.6	5.08		04/19/10 19:02	75-35-4	
cis-1,2-Dichloroethene	ND	ppbv	2.6	5.08		04/19/10 19:02	156-59-2	
trans-1,2-Dichloroethene	ND	ppbv	5.1	5.08		04/19/10 19:02	156-60-5	
2-Propanol	53.1	ppbv	2.5	5.08		04/19/10 19:02	67-63-0	
Tetrachloroethene	ND	ppbv	2.6	5.08		04/19/10 19:02	127-18-4	
1,1,1-Trichloroethane	ND	ppbv	2.6	5.08		04/19/10 19:02	71-55-6	
Trichloroethene	ND	ppbv	2.6	5.08		04/19/10 19:02	79-01-6	
Vinyl chloride	ND	ppbv	2.6	5.08		04/19/10 19:02	75-01-4	

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ANALYTICAL RESULTS

Project: 02751.06 TPC-Soil Gas
Pace Project No.: 10125863

Sample: SG-04		Lab ID: 10125863004	Collected: 04/05/10 11:54	Received: 04/07/10 10:00	Matrix: Air			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR		Analytical Method: TO-15						
1,1-Dichloroethane	ND	ppbv	2.6	4.91		04/19/10 19:32	75-34-3	
1,2-Dichloroethane	ND	ppbv	2.6	4.91		04/19/10 19:32	107-06-2	
1,1-Dichloroethene	ND	ppbv	2.6	4.91		04/19/10 19:32	75-35-4	
cis-1,2-Dichloroethene	ND	ppbv	2.6	4.91		04/19/10 19:32	156-59-2	
trans-1,2-Dichloroethene	ND	ppbv	4.9	4.91		04/19/10 19:32	156-60-5	
2-Propanol	52.1	ppbv	2.5	4.91		04/19/10 19:32	67-63-0	
Tetrachloroethene	ND	ppbv	2.6	4.91		04/19/10 19:32	127-18-4	
1,1,1-Trichloroethane	ND	ppbv	2.6	4.91		04/19/10 19:32	71-55-6	
Trichloroethene	ND	ppbv	2.6	4.91		04/19/10 19:32	79-01-6	
Vinyl chloride	ND	ppbv	2.5	4.91		04/19/10 19:32	75-01-4	

Sample: SG-05		Lab ID: 10125863005	Collected: 04/05/10 12:44	Received: 04/07/10 10:00	Matrix: Air			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR		Analytical Method: TO-15						
1,1-Dichloroethane	ND	ppbv	2.6	4.91		04/19/10 20:02	75-34-3	
1,2-Dichloroethane	ND	ppbv	2.6	4.91		04/19/10 20:02	107-06-2	
1,1-Dichloroethene	ND	ppbv	2.6	4.91		04/19/10 20:02	75-35-4	
cis-1,2-Dichloroethene	ND	ppbv	2.6	4.91		04/19/10 20:02	156-59-2	
trans-1,2-Dichloroethene	ND	ppbv	4.9	4.91		04/19/10 20:02	156-60-5	
2-Propanol	103	ppbv	2.5	4.91		04/19/10 20:02	67-63-0	E
Tetrachloroethene	ND	ppbv	2.6	4.91		04/19/10 20:02	127-18-4	
1,1,1-Trichloroethane	28.7	ppbv	2.6	4.91		04/19/10 20:02	71-55-6	
Trichloroethene	26.6	ppbv	2.6	4.91		04/19/10 20:02	79-01-6	
Vinyl chloride	ND	ppbv	2.5	4.91		04/19/10 20:02	75-01-4	

Sample: SG-06		Lab ID: 10125863006	Collected: 04/05/10 12:47	Received: 04/07/10 10:00	Matrix: Air			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR		Analytical Method: TO-15						
1,1-Dichloroethane	ND	ppbv	2.6	4.91		04/19/10 20:31	75-34-3	
1,2-Dichloroethane	ND	ppbv	2.6	4.91		04/19/10 20:31	107-06-2	
1,1-Dichloroethene	ND	ppbv	2.6	4.91		04/19/10 20:31	75-35-4	
cis-1,2-Dichloroethene	ND	ppbv	2.6	4.91		04/19/10 20:31	156-59-2	
trans-1,2-Dichloroethene	ND	ppbv	4.9	4.91		04/19/10 20:31	156-60-5	
2-Propanol	41200	ppbv	1420	2835.95		04/20/10 23:39	67-63-0	A3
Tetrachloroethene	ND	ppbv	2.6	4.91		04/19/10 20:31	127-18-4	
1,1,1-Trichloroethane	ND	ppbv	2.6	4.91		04/19/10 20:31	71-55-6	
Trichloroethene	7.2	ppbv	2.6	4.91		04/19/10 20:31	79-01-6	
Vinyl chloride	ND	ppbv	2.5	4.91		04/19/10 20:31	75-01-4	

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ANALYTICAL RESULTS

Project: 02751.06 TPC-Soil Gas
Pace Project No.: 10125863

Sample: SG-07		Lab ID: 10125863007	Collected: 04/05/10 13:21	Received: 04/07/10 10:00	Matrix: Air			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR		Analytical Method: TO-15						
1,1-Dichloroethane	ND	ppbv	75.2	150.38		04/20/10 23:09	75-34-3	
1,2-Dichloroethane	ND	ppbv	75.2	150.38		04/20/10 23:09	107-06-2	
1,1-Dichloroethene	ND	ppbv	75.2	150.38		04/20/10 23:09	75-35-4	
cis-1,2-Dichloroethene	ND	ppbv	75.2	150.38		04/20/10 23:09	156-59-2	
trans-1,2-Dichloroethene	ND	ppbv	75.2	150.38		04/20/10 23:09	156-60-5	
2-Propanol	747	ppbv	75.2	150.38		04/20/10 23:09	67-63-0	
Tetrachloroethene	ND	ppbv	75.2	150.38		04/20/10 23:09	127-18-4	
1,1,1-Trichloroethane	ND	ppbv	75.2	150.38		04/20/10 23:09	71-55-6	
Trichloroethene	ND	ppbv	75.2	150.38		04/20/10 23:09	79-01-6	
Vinyl chloride	ND	ppbv	75.2	150.38		04/20/10 23:09	75-01-4	

Sample: SG-08		Lab ID: 10125863008	Collected: 04/05/10 16:04	Received: 04/07/10 10:00	Matrix: Air			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR		Analytical Method: TO-15						
1,1-Dichloroethane	ND	ppbv	2.6	5.08		04/19/10 21:30	75-34-3	
1,2-Dichloroethane	ND	ppbv	2.6	5.08		04/19/10 21:30	107-06-2	
1,1-Dichloroethene	ND	ppbv	2.6	5.08		04/19/10 21:30	75-35-4	
cis-1,2-Dichloroethene	ND	ppbv	2.6	5.08		04/19/10 21:30	156-59-2	
trans-1,2-Dichloroethene	ND	ppbv	5.1	5.08		04/19/10 21:30	156-60-5	
2-Propanol	64.9	ppbv	2.5	5.08		04/19/10 21:30	67-63-0	
Tetrachloroethene	ND	ppbv	2.6	5.08		04/19/10 21:30	127-18-4	
1,1,1-Trichloroethane	ND	ppbv	2.6	5.08		04/19/10 21:30	71-55-6	
Trichloroethene	ND	ppbv	2.6	5.08		04/19/10 21:30	79-01-6	
Vinyl chloride	ND	ppbv	2.6	5.08		04/19/10 21:30	75-01-4	

Sample: SG-09		Lab ID: 10125863009	Collected: 04/05/10 16:18	Received: 04/07/10 10:00	Matrix: Air			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR		Analytical Method: TO-15						
1,1-Dichloroethane	ND	ppbv	2.6	5.08		04/19/10 21:59	75-34-3	
1,2-Dichloroethane	ND	ppbv	2.6	5.08		04/19/10 21:59	107-06-2	
1,1-Dichloroethene	ND	ppbv	2.6	5.08		04/19/10 21:59	75-35-4	
cis-1,2-Dichloroethene	ND	ppbv	2.6	5.08		04/19/10 21:59	156-59-2	
trans-1,2-Dichloroethene	ND	ppbv	5.1	5.08		04/19/10 21:59	156-60-5	
2-Propanol	1580000	ppbv	3250	6502.81		04/21/10 01:40	67-63-0	A3,E
Tetrachloroethene	ND	ppbv	2.6	5.08		04/19/10 21:59	127-18-4	
1,1,1-Trichloroethane	ND	ppbv	2.6	5.08		04/19/10 21:59	71-55-6	
Trichloroethene	ND	ppbv	2.6	5.08		04/19/10 21:59	79-01-6	
Vinyl chloride	ND	ppbv	2.6	5.08		04/19/10 21:59	75-01-4	

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ANALYTICAL RESULTS

Project: 02751.06 TPC-Soil Gas
Pace Project No.: 10125863

Sample: SG-10		Lab ID: 10125863010	Collected: 04/05/10 14:08	Received: 04/07/10 10:00	Matrix: Air			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR		Analytical Method: TO-15						
1,1-Dichloroethane	ND	ppbv	80.6	161.24		04/20/10 22:39	75-34-3	
1,2-Dichloroethane	ND	ppbv	80.6	161.24		04/20/10 22:39	107-06-2	
1,1-Dichloroethene	ND	ppbv	80.6	161.24		04/20/10 22:39	75-35-4	
cis-1,2-Dichloroethene	ND	ppbv	80.6	161.24		04/20/10 22:39	156-59-2	
trans-1,2-Dichloroethene	ND	ppbv	80.6	161.24		04/20/10 22:39	156-60-5	
2-Propanol	ND	ppbv	80.6	161.24		04/20/10 22:39	67-63-0	
Tetrachloroethene	ND	ppbv	80.6	161.24		04/20/10 22:39	127-18-4	
1,1,1-Trichloroethane	ND	ppbv	80.6	161.24		04/20/10 22:39	71-55-6	
Trichloroethene	ND	ppbv	80.6	161.24		04/20/10 22:39	79-01-6	
Vinyl chloride	ND	ppbv	80.6	161.24		04/20/10 22:39	75-01-4	D3

Sample: SG-11		Lab ID: 10125863011	Collected: 04/05/10 14:39	Received: 04/07/10 10:00	Matrix: Air			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR		Analytical Method: TO-15						
1,1-Dichloroethane	ND	ppbv	2.8	5.45		04/19/10 23:57	75-34-3	
1,2-Dichloroethane	ND	ppbv	2.8	5.45		04/19/10 23:57	107-06-2	
1,1-Dichloroethene	ND	ppbv	2.8	5.45		04/19/10 23:57	75-35-4	
cis-1,2-Dichloroethene	ND	ppbv	2.8	5.45		04/19/10 23:57	156-59-2	
trans-1,2-Dichloroethene	ND	ppbv	5.4	5.45		04/19/10 23:57	156-60-5	
2-Propanol	128	ppbv	2.7	5.45		04/19/10 23:57	67-63-0	
Tetrachloroethene	ND	ppbv	2.8	5.45		04/19/10 23:57	127-18-4	
1,1,1-Trichloroethane	ND	ppbv	2.8	5.45		04/19/10 23:57	71-55-6	
Trichloroethene	ND	ppbv	2.8	5.45		04/19/10 23:57	79-01-6	
Vinyl chloride	ND	ppbv	2.8	5.45		04/19/10 23:57	75-01-4	

Sample: DUP-01		Lab ID: 10125863012	Collected: 04/05/10 00:00	Received: 04/07/10 10:00	Matrix: Air			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR		Analytical Method: TO-15						
1,1-Dichloroethane	ND	ppbv	2.2	4.43		04/20/10 00:26	75-34-3	
1,2-Dichloroethane	ND	ppbv	2.2	4.43		04/20/10 00:26	107-06-2	
1,1-Dichloroethene	ND	ppbv	2.2	4.43		04/20/10 00:26	75-35-4	
cis-1,2-Dichloroethene	ND	ppbv	2.2	4.43		04/20/10 00:26	156-59-2	
trans-1,2-Dichloroethene	ND	ppbv	2.2	4.43		04/20/10 00:26	156-60-5	
2-Propanol	15300	ppbv	1280	2558.87		04/21/10 00:10	67-63-0	A3
Tetrachloroethene	ND	ppbv	2.2	4.43		04/20/10 00:26	127-18-4	
1,1,1-Trichloroethane	ND	ppbv	2.2	4.43		04/20/10 00:26	71-55-6	
Trichloroethene	ND	ppbv	2.2	4.43		04/20/10 00:26	79-01-6	
Vinyl chloride	ND	ppbv	2.2	4.43		04/20/10 00:26	75-01-4	

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ANALYTICAL RESULTS

Project: 02751.06 TPC-Soil Gas

Pace Project No.: 10125863

Sample: SG-13		Lab ID: 10125863013	Collected: 04/05/10 15:40	Received: 04/07/10 10:00	Matrix: Air			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR		Analytical Method: TO-15						
1,1-Dichloroethane	ND	ppbv	2.5	5.08		04/20/10 00:56	75-34-3	
1,2-Dichloroethane	ND	ppbv	2.5	5.08		04/20/10 00:56	107-06-2	
1,1-Dichloroethene	ND	ppbv	2.5	5.08		04/20/10 00:56	75-35-4	
cis-1,2-Dichloroethene	ND	ppbv	2.5	5.08		04/20/10 00:56	156-59-2	
trans-1,2-Dichloroethene	ND	ppbv	2.5	5.08		04/20/10 00:56	156-60-5	
2-Propanol	1750	ppbv	406	812.85		04/21/10 01:10	67-63-0	A3
Tetrachloroethene	ND	ppbv	2.5	5.08		04/20/10 00:56	127-18-4	
1,1,1-Trichloroethane	ND	ppbv	2.5	5.08		04/20/10 00:56	71-55-6	
Trichloroethene	ND	ppbv	2.5	5.08		04/20/10 00:56	79-01-6	
Vinyl chloride	ND	ppbv	2.5	5.08		04/20/10 00:56	75-01-4	

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QUALITY CONTROL DATA

Project: 02751.06 TPC-Soil Gas
Pace Project No.: 10125863

QC Batch:	AIR/10092	Analysis Method:	TO-15
QC Batch Method:	TO-15	Analysis Description:	TO15 MSV AIR
Associated Lab Samples:	10125863001, 10125863003, 10125863004, 10125863005, 10125863006, 10125863008, 10125863009, 10125863011, 10125863012, 10125863013		

METHOD BLANK: 774958 Matrix: Air

Associated Lab Samples: 10125863001, 10125863003, 10125863004, 10125863005, 10125863006, 10125863008, 10125863009, 10125863011, 10125863012, 10125863013

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1-Trichloroethane	ppbv	ND	0.52	04/19/10 10:12	
1,1-Dichloroethane	ppbv	ND	0.52	04/19/10 10:12	
1,1-Dichloroethene	ppbv	ND	0.52	04/19/10 10:12	
1,2-Dichloroethane	ppbv	ND	0.52	04/19/10 10:12	
2-Propanol	ppbv	ND	0.50	04/19/10 10:12	
cis-1,2-Dichloroethene	ppbv	ND	0.52	04/19/10 10:12	
Tetrachloroethene	ppbv	ND	0.52	04/19/10 10:12	
trans-1,2-Dichloroethene	ppbv	ND	1.0	04/19/10 10:12	
Trichloroethene	ppbv	ND	0.52	04/19/10 10:12	
Vinyl chloride	ppbv	ND	0.51	04/19/10 10:12	

LABORATORY CONTROL SAMPLE: 774959

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1-Trichloroethane	ppbv	10	9.8	98	60-125	
1,1-Dichloroethane	ppbv	10	9.5	95	54-127	
1,1-Dichloroethene	ppbv	10	9.4	94	52-129	
1,2-Dichloroethane	ppbv	10	10.5	105	54-125	
2-Propanol	ppbv	10	12.1	121	63-125	
cis-1,2-Dichloroethene	ppbv	10	9.0	90	64-125	
Tetrachloroethene	ppbv	10	10.1	101	61-132	
trans-1,2-Dichloroethene	ppbv	10	8.9	89	52-130	
Trichloroethene	ppbv	10	8.3	83	72-147	
Vinyl chloride	ppbv	10	9.1	91	56-136	

US EPA ARCHIVE DOCUMENT

QUALITY CONTROL DATA

Project: 02751.06 TPC-Soil Gas
Pace Project No.: 10125863

QC Batch: AIR/10101 Analysis Method: TO-15
QC Batch Method: TO-15 Analysis Description: TO15 MSV AIR
Associated Lab Samples: 10125863002, 10125863007, 10125863010

METHOD BLANK: 776361 Matrix: Air
Associated Lab Samples: 10125863002, 10125863007, 10125863010

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1-Trichloroethane	ppbv	ND	0.50	04/20/10 14:19	
1,1-Dichloroethane	ppbv	ND	0.50	04/20/10 14:19	
1,1-Dichloroethene	ppbv	ND	0.50	04/20/10 14:19	
1,2-Dichloroethane	ppbv	ND	0.50	04/20/10 14:19	
2-Propanol	ppbv	ND	0.50	04/20/10 14:19	
cis-1,2-Dichloroethene	ppbv	ND	0.50	04/20/10 14:19	
Tetrachloroethene	ppbv	ND	0.50	04/20/10 14:19	
trans-1,2-Dichloroethene	ppbv	ND	0.50	04/20/10 14:19	
Trichloroethene	ppbv	ND	0.50	04/20/10 14:19	
Vinyl chloride	ppbv	ND	0.50	04/20/10 14:19	

LABORATORY CONTROL SAMPLE: 776362

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1-Trichloroethane	ppbv	10	10	100	60-125	
1,1-Dichloroethane	ppbv	10	9.5	95	54-127	
1,1-Dichloroethene	ppbv	10	9.7	97	52-129	
1,2-Dichloroethane	ppbv	10	10.1	101	54-125	
2-Propanol	ppbv	10	11.1	111	63-125	
cis-1,2-Dichloroethene	ppbv	10	9.2	92	64-125	
Tetrachloroethene	ppbv	10	10.8	108	61-132	
trans-1,2-Dichloroethene	ppbv	10	9.4	94	52-130	
Trichloroethene	ppbv	10	10.1	101	72-147	
Vinyl chloride	ppbv	10	10	100	56-136	

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QUALIFIERS

Project: 02751.06 TPC-Soil Gas
Pace Project No.: 10125863

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

Pace Analytical is NELAP accredited. Contact your Pace PM for the current list of accredited analytes.

U - Indicates the compound was analyzed for, but not detected.

ANALYTE QUALIFIERS

- | | |
|----|--|
| A3 | The sample was analyzed by serial dilution. |
| D3 | Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference. |
| E | Analyte concentration exceeded the calibration range. The reported result is estimated. |

US EPA ARCHIVE DOCUMENT

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 02751.06 TPC-Soil Gas

Pace Project No.: 10125863

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10125863001	SG-01	TO-15	AIR/10092		
10125863002	SG-02	TO-15	AIR/10101		
10125863003	SG-03	TO-15	AIR/10092		
10125863004	SG-04	TO-15	AIR/10092		
10125863005	SG-05	TO-15	AIR/10092		
10125863006	SG-06	TO-15	AIR/10092		
10125863007	SG-07	TO-15	AIR/10101		
10125863008	SG-08	TO-15	AIR/10092		
10125863009	SG-09	TO-15	AIR/10092		
10125863010	SG-10	TO-15	AIR/10101		
10125863011	SG-11	TO-15	AIR/10092		
10125863012	DUP-01	TO-15	AIR/10092		
10125863013	SG-13	TO-15	AIR/10092		

US EPA ARCHIVE DOCUMENT

Date: 04/21/2010 02:21 PM

REPORT OF LABORATORY ANALYSIS

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Pace Analytical Services, Inc.
1700 Elm Street – Suite 200
Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444

ANALYTICAL RESULTS

Client: RMT, INC
Phone: 608-662-5352

Lab Project Number: 10125863

Project Name: 02751.06 TPC-Soil Gas

Lab Sample No: 10125863001
Client Sample ID: SG-01

ProjSampleNum: 10125863001
Matrix: Air

Date Collected: 04/05/10 10:12
Date Received: 04/07/10 10:00

Parameters	Report Limit ppbv	Results ppbv	Report Limit ug/m3	Results ug/m3	DF	Analyzed	CAS No.
Air							
TO-15							
1,1,1-Trichloroethane	2.3	279	13	1550	4.43	04/19/10 18:03 CJR	71-55-6
1,1-Dichloroethane	2.3	5.7	9.5	23.5	4.43	04/19/10 18:03 CJR	75-34-3
1,1-Dichloroethene	2.3	4.4	9.3	17.7	4.43	04/19/10 18:03 CJR	75-35-4
1,2-Dichloroethane	2.3	ND	9.5	ND	4.43	04/19/10 18:03 CJR	107-06-2
2-Propanol	1280	18100	3200	45200	2558.87	04/21/10 0:40 CJR	67-63-0
cis-1,2-Dichloroethene	2.3	17.0	9.3	68.5	4.43	04/19/10 18:03 CJR	156-59-2
Tetrachloroethene	2.3	ND	16	ND	4.43	04/19/10 18:03 CJR	127-18-4
trans-1,2-Dichloroethene	4.4	ND	18	ND	4.43	04/19/10 18:03 CJR	156-60-5
Trichloroethene	2.3	396	13	2160	4.43	04/19/10 18:03 CJR	79-01-6
Vinyl chloride	2.3	ND	6	ND	4.43	04/19/10 18:03 CJR	75-01-4

Lab Sample No: 10125863002
Client Sample ID: SG-02

ProjSampleNum: 10125863002
Matrix: Air

Date Collected: 04/05/10 11:28
Date Received: 04/07/10 10:00

Parameters	Report Limit ppbv	Results ppbv	Report Limit ug/m3	Results ug/m3	DF	Analyzed	CAS No.
Air							
TO-15							
1,1,1-Trichloroethane	4	19.6	22	109	8.06	04/20/10 22:10 CJR	71-55-6
1,1-Dichloroethane	4	ND	16	ND	8.06	04/20/10 22:10 CJR	75-34-3
1,1-Dichloroethene	4	ND	16	ND	8.06	04/20/10 22:10 CJR	75-35-4
1,2-Dichloroethane	4	ND	16	ND	8.06	04/20/10 22:10 CJR	107-06-2
2-Propanol	4	27.4	10	68.5	8.06	04/20/10 22:10 CJR	67-63-0
cis-1,2-Dichloroethene	4	ND	16	ND	8.06	04/20/10 22:10 CJR	156-59-2
Tetrachloroethene	4	ND	28	ND	8.06	04/20/10 22:10 CJR	127-18-4
trans-1,2-Dichloroethene	4	ND	16	ND	8.06	04/20/10 22:10 CJR	156-60-5
Trichloroethene	4	ND	22	ND	8.06	04/20/10 22:10 CJR	79-01-6
Vinyl chloride	4	ND	10	ND	8.06	04/20/10 22:10 CJR	75-01-4

SUPPLEMENTAL REPORT

Units Conversion Request



Pace Analytical Services, Inc.
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Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444

ANALYTICAL RESULTS

Client: RMT, INC
Phone: 608-662-5352

Lab Project Number: 10125863
Project Name: 02751.06 TPC-Soil Gas

Lab Sample No: 10125863003
Client Sample ID: SG-03

ProjSampleNum: 10125863003
Matrix: Air

Date Collected: 04/05/10 11:01
Date Received: 04/07/10 10:00

Parameters	Report Limit ppbv	Results ppbv	Report Limit ug/m3	Results ug/m3	DF	Analyzed	CAS No.
Air							
TO-15							
1,1,1-Trichloroethane	2.6	ND	14	ND	5.08	04/19/10 19:02 CJR	71-55-6
1,1-Dichloroethane	2.6	ND	11	ND	5.08	04/19/10 19:02 CJR	75-34-3
1,1-Dichloroethene	2.6	ND	10	ND	5.08	04/19/10 19:02 CJR	75-35-4
1,2-Dichloroethane	2.6	ND	11	ND	5.08	04/19/10 19:02 CJR	107-06-2
2-Propanol	2.5	53.1	6.2	133	5.08	04/19/10 19:02 CJR	67-63-0
cis-1,2-Dichloroethene	2.6	ND	10	ND	5.08	04/19/10 19:02 CJR	156-59-2
Tetrachloroethene	2.6	ND	18	ND	5.08	04/19/10 19:02 CJR	127-18-4
trans-1,2-Dichloroethene	5.1	ND	21	ND	5.08	04/19/10 19:02 CJR	156-60-5
Trichloroethene	2.6	ND	14	ND	5.08	04/19/10 19:02 CJR	79-01-6
Vinyl chloride	2.6	ND	6.8	ND	5.08	04/19/10 19:02 CJR	75-01-4

Lab Sample No: 10125863004
Client Sample ID: SG-04

ProjSampleNum: 10125863004
Matrix: Air

Date Collected: 04/05/10 11:54
Date Received: 04/07/10 10:00

Parameters	Report Limit ppbv	Results ppbv	Report Limit ug/m3	Results ug/m3	DF	Analyzed	CAS No.
Air							
TO-15							
1,1,1-Trichloroethane	2.6	ND	14	ND	4.91	04/19/10 19:32 CJR	71-55-6
1,1-Dichloroethane	2.6	ND	11	ND	4.91	04/19/10 19:32 CJR	75-34-3
1,1-Dichloroethene	2.6	ND	10	ND	4.91	04/19/10 19:32 CJR	75-35-4
1,2-Dichloroethane	2.6	ND	11	ND	4.91	04/19/10 19:32 CJR	107-06-2
2-Propanol	2.5	52.1	6.2	130	4.91	04/19/10 19:32 CJR	67-63-0
cis-1,2-Dichloroethene	2.6	ND	10	ND	4.91	04/19/10 19:32 CJR	156-59-2
Tetrachloroethene	2.6	ND	18	ND	4.91	04/19/10 19:32 CJR	127-18-4
trans-1,2-Dichloroethene	4.9	ND	20	ND	4.91	04/19/10 19:32 CJR	156-60-5
Trichloroethene	2.6	ND	14	ND	4.91	04/19/10 19:32 CJR	79-01-6
Vinyl chloride	2.5	ND	6.5	ND	4.91	04/19/10 19:32 CJR	75-01-4

SUPPLEMENTAL REPORT

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ANALYTICAL RESULTS

Client: RMT, INC
Phone: 608-662-5352

Lab Project Number: 10125863

Project Name: 02751.06 TPC-Soil Gas

Lab Sample No: 10125863005
Client Sample ID: SG-05

ProjSampleNum: 10125863005
Matrix: Air

Date Collected: 04/05/10 12:44
Date Received: 04/07/10 10:00

Parameters	Report Limit ppbv	Results ppbv	Report Limit ug/m3	Results ug/m3	DF	Analyzed	CAS No.
Air							
TO-15							
1,1,1-Trichloroethane	2.6	28.7	14	159	4.91	04/19/10 20:02 CJR	71-55-6
1,1-Dichloroethane	2.6	ND	11	ND	4.91	04/19/10 20:02 CJR	75-34-3
1,1-Dichloroethene	2.6	ND	10	ND	4.91	04/19/10 20:02 CJR	75-35-4
1,2-Dichloroethane	2.6	ND	11	ND	4.91	04/19/10 20:02 CJR	107-06-2
2-Propanol	2.5	103	6.2	257	4.91	04/19/10 20:02 CJR	67-63-0
cis-1,2-Dichloroethene	2.6	ND	10	ND	4.91	04/19/10 20:02 CJR	156-59-2
Tetrachloroethene	2.6	ND	18	ND	4.91	04/19/10 20:02 CJR	127-18-4
trans-1,2-Dichloroethene	4.9	ND	20	ND	4.91	04/19/10 20:02 CJR	156-60-5
Trichloroethene	2.6	26.6	14	145	4.91	04/19/10 20:02 CJR	79-01-6
Vinyl chloride	2.5	ND	6.5	ND	4.91	04/19/10 20:02 CJR	75-01-4

Lab Sample No: 10125863006
Client Sample ID: SG-06

ProjSampleNum: 10125863006
Matrix: Air

Date Collected: 04/05/10 12:47
Date Received: 04/07/10 10:00

Parameters	Report Limit ppbv	Results ppbv	Report Limit ug/m3	Results ug/m3	DF	Analyzed	CAS No.
Air							
TO-15							
1,1,1-Trichloroethane	2.6	ND	14	ND	4.91	04/19/10 20:31 CJR	71-55-6
1,1-Dichloroethane	2.6	ND	11	ND	4.91	04/19/10 20:31 CJR	75-34-3
1,1-Dichloroethene	2.6	ND	10	ND	4.91	04/19/10 20:31 CJR	75-35-4
1,2-Dichloroethane	2.6	ND	11	ND	4.91	04/19/10 20:31 CJR	107-06-2
2-Propanol	1420	41200	3500	103000	2835.95	04/20/10 23:39 CJR	67-63-0
cis-1,2-Dichloroethene	2.6	ND	10	ND	4.91	04/19/10 20:31 CJR	156-59-2
Tetrachloroethene	2.6	ND	18	ND	4.91	04/19/10 20:31 CJR	127-18-4
trans-1,2-Dichloroethene	4.9	ND	20	ND	4.91	04/19/10 20:31 CJR	156-60-5
Trichloroethene	2.6	7.2	14	39.3	4.91	04/19/10 20:31 CJR	79-01-6
Vinyl chloride	2.5	ND	6.5	ND	4.91	04/19/10 20:31 CJR	75-01-4

SUPPLEMENTAL REPORT

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Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444

ANALYTICAL RESULTS

Client: RMT, INC
Phone: 608-662-5352
Lab Sample No: 10125863007
Client Sample ID: SG-07

Lab Project Number: 10125863
Project Name: 02751.06 TPC-Soil Gas
Date Collected: 04/05/10 13:21
Date Received: 04/07/10 10:00

Parameters	Report Limit ppbv	Results ppbv	Report Limit ug/m3	Results ug/m3	DF	Analyzed	CAS No.
Air							
TO-15							
1,1,1-Trichloroethane	75.2	ND	420	ND	150.38	04/20/10 23:09 CJR	71-55-6
1,1-Dichloroethane	75.2	ND	310	ND	150.38	04/20/10 23:09 CJR	75-34-3
1,1-Dichloroethene	75.2	ND	300	ND	150.38	04/20/10 23:09 CJR	75-35-4
1,2-Dichloroethane	75.2	ND	310	ND	150.38	04/20/10 23:09 CJR	107-06-2
2-Propanol	75.2	747	190	1870	150.38	04/20/10 23:09 CJR	67-63-0
cis-1,2-Dichloroethene	75.2	ND	300	ND	150.38	04/20/10 23:09 CJR	156-59-2
Tetrachloroethene	75.2	ND	520	ND	150.38	04/20/10 23:09 CJR	127-18-4
trans-1,2-Dichloroethene	75.2	ND	300	ND	150.38	04/20/10 23:09 CJR	156-60-5
Trichloroethene	75.2	ND	410	ND	150.38	04/20/10 23:09 CJR	79-01-6
Vinyl chloride	75.2	ND	200	ND	150.38	04/20/10 23:09 CJR	75-01-4

Lab Sample No: 10125863008
Client Sample ID: SG-08

ProjSampleNum: 10125863008
Matrix: Air

Date Collected: 04/05/10 16:04
Date Received: 04/07/10 10:00

Parameters	Report Limit ppbv	Results ppbv	Report Limit ug/m3	Results ug/m3	DF	Analyzed	CAS No.
Air							
TO-15							
1,1,1-Trichloroethane	2.6	ND	14	ND	5.08	04/19/10 21:30 CJR	71-55-6
1,1-Dichloroethane	2.6	ND	11	ND	5.08	04/19/10 21:30 CJR	75-34-3
1,1-Dichloroethene	2.6	ND	10	ND	5.08	04/19/10 21:30 CJR	75-35-4
1,2-Dichloroethane	2.6	ND	11	ND	5.08	04/19/10 21:30 CJR	107-06-2
2-Propanol	2.5	64.9	6.2	162	5.08	04/19/10 21:30 CJR	67-63-0
cis-1,2-Dichloroethene	2.6	ND	10	ND	5.08	04/19/10 21:30 CJR	156-59-2
Tetrachloroethene	2.6	ND	18	ND	5.08	04/19/10 21:30 CJR	127-18-4
trans-1,2-Dichloroethene	5.1	ND	21	ND	5.08	04/19/10 21:30 CJR	156-60-5
Trichloroethene	2.6	ND	14	ND	5.08	04/19/10 21:30 CJR	79-01-6
Vinyl chloride	2.6	ND	6.8	ND	5.08	04/19/10 21:30 CJR	75-01-4

SUPPLEMENTAL REPORT

Units Conversion Request



Pace Analytical Services, Inc.
1700 Elm Street – Suite 200
Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444

ANALYTICAL RESULTS

Client: RMT, INC
Phone: 608-662-5352

Lab Project Number: 10125863
Project Name: 02751.06 TPC-Soil Gas

Lab Sample No: 10125863009
Client Sample ID: SG-09

ProjSampleNum: 10125863009
Matrix: Air

Date Collected: 04/05/10 16:18
Date Received: 04/07/10 10:00

Parameters	Report Limit ppbv	Results ppbv	Report Limit ug/m3	Results ug/m3	DF	Analyzed	CAS No.
Air							
TO-15							
1,1,1-Trichloroethane	2.6	ND	14	ND	5.08	04/19/10 21:59 CJR	71-55-6
1,1-Dichloroethane	2.6	ND	11	ND	5.08	04/19/10 21:59 CJR	75-34-3
1,1-Dichloroethene	2.6	ND	10	ND	5.08	04/19/10 21:59 CJR	75-35-4
1,2-Dichloroethane	2.6	ND	11	ND	5.08	04/19/10 21:59 CJR	107-06-2
2-Propanol	3250	1580000	8100	3950000	502.81	04/21/10 1:40 CJR	67-63-0
cis-1,2-Dichloroethene	2.6	ND	10	ND	5.08	04/19/10 21:59 CJR	156-59-2
Tetrachloroethene	2.6	ND	18	ND	5.08	04/19/10 21:59 CJR	127-18-4
trans-1,2-Dichloroethene	5.1	ND	21	ND	5.08	04/19/10 21:59 CJR	156-60-5
Trichloroethene	2.6	ND	14	ND	5.08	04/19/10 21:59 CJR	79-01-6
Vinyl chloride	2.6	ND	6.8	ND	5.08	04/19/10 21:59 CJR	75-01-4

Lab Sample No: 10125863010
Client Sample ID: SG-10

ProjSampleNum: 10125863010
Matrix: Air

Date Collected: 04/05/10 14:08
Date Received: 04/07/10 10:00

Parameters	Report Limit ppbv	Results ppbv	Report Limit ug/m3	Results ug/m3	DF	Analyzed	CAS No.
Air							
TO-15							
1,1,1-Trichloroethane	80.6	ND	450	ND	161.24	04/20/10 22:39 CJR	71-55-6
1,1-Dichloroethane	80.6	ND	330	ND	161.24	04/20/10 22:39 CJR	75-34-3
1,1-Dichloroethene	80.6	ND	320	ND	161.24	04/20/10 22:39 CJR	75-35-4
1,2-Dichloroethane	80.6	ND	330	ND	161.24	04/20/10 22:39 CJR	107-06-2
2-Propanol	80.6	ND	200	ND	161.24	04/20/10 22:39 CJR	67-63-0
cis-1,2-Dichloroethene	80.6	ND	320	ND	161.24	04/20/10 22:39 CJR	156-59-2
Tetrachloroethene	80.6	ND	560	ND	161.24	04/20/10 22:39 CJR	127-18-4
trans-1,2-Dichloroethene	80.6	ND	320	ND	161.24	04/20/10 22:39 CJR	156-60-5
Trichloroethene	80.6	ND	440	ND	161.24	04/20/10 22:39 CJR	79-01-6
Vinyl chloride	80.6	ND	210	ND	161.24	04/20/10 22:39 CJR	75-01-4

SUPPLEMENTAL REPORT

Units Conversion Request



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Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444

ANALYTICAL RESULTS

Client: RMT, INC
Phone: 608-662-5352

Lab Project Number: 10125863

Project Name: 02751.06 TPC-Soil Gas

Lab Sample No: 10125863011
Client Sample ID: SG-11

ProjSampleNum: 10125863011
Matrix: Air

Date Collected: 04/05/10 14:39
Date Received: 04/07/10 10:00

Parameters	Report Limit ppbv	Results ppbv	Report Limit ug/m3	Results ug/m3	DF	Analyzed	CAS No.
Air							
TO-15							
1,1,1-Trichloroethane	2.8	ND	16	ND	5.45	04/19/10 23:57 CJR	71-55-6
1,1-Dichloroethane	2.8	ND	12	ND	5.45	04/19/10 23:57 CJR	75-34-3
1,1-Dichloroethene	2.8	ND	11	ND	5.45	04/19/10 23:57 CJR	75-35-4
1,2-Dichloroethane	2.8	ND	12	ND	5.45	04/19/10 23:57 CJR	107-06-2
2-Propanol	2.7	128	6.7	320	5.45	04/19/10 23:57 CJR	67-63-0
cis-1,2-Dichloroethene	2.8	ND	11	ND	5.45	04/19/10 23:57 CJR	156-59-2
Tetrachloroethene	2.8	ND	19	ND	5.45	04/19/10 23:57 CJR	127-18-4
trans-1,2-Dichloroethene	5.4	ND	22	ND	5.45	04/19/10 23:57 CJR	156-60-5
Trichloroethene	2.8	ND	15	ND	5.45	04/19/10 23:57 CJR	79-01-6
Vinyl chloride	2.8	ND	7.3	ND	5.45	04/19/10 23:57 CJR	75-01-4

Lab Sample No: 10125863012
Client Sample ID: DUP-01

ProjSampleNum: 10125863012
Matrix: Air

Date Collected: 04/05/10 0:00
Date Received: 04/07/10 10:00

Parameters	Report Limit ppbv	Results ppbv	Report Limit ug/m3	Results ug/m3	DF	Analyzed	CAS No.
Air							
TO-15							
1,1,1-Trichloroethane	2.2	ND	12	ND	4.43	04/20/10 0:26 CJR	71-55-6
1,1-Dichloroethane	2.2	ND	9.1	ND	4.43	04/20/10 0:26 CJR	75-34-3
1,1-Dichloroethene	2.2	ND	8.9	ND	4.43	04/20/10 0:26 CJR	75-35-4
1,2-Dichloroethane	2.2	ND	9.1	ND	4.43	04/20/10 0:26 CJR	107-06-2
2-Propanol	1280	15300	3200	38200	2558.87	04/21/10 0:10 CJR	67-63-0
cis-1,2-Dichloroethene	2.2	ND	8.9	ND	4.43	04/20/10 0:26 CJR	156-59-2
Tetrachloroethene	2.2	ND	15	ND	4.43	04/20/10 0:26 CJR	127-18-4
trans-1,2-Dichloroethene	2.2	ND	8.9	ND	4.43	04/20/10 0:26 CJR	156-60-5
Trichloroethene	2.2	ND	12	ND	4.43	04/20/10 0:26 CJR	79-01-6
Vinyl chloride	2.2	ND	5.7	ND	4.43	04/20/10 0:26 CJR	75-01-4

SUPPLEMENTAL REPORT

Units Conversion Request



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1700 Elm Street – Suite 200
Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444

ANALYTICAL RESULTS

Client: RMT, INC
Phone: 608-662-5352
Lab Sample No: 10125863013
Client Sample ID: SG-13

Lab Project Number: 10125863
Project Name: 02751.06 TPC-Soil Gas
Date Collected: 04/05/10 15:40
Date Received: 04/07/10 10:00

ProjSampleNum: 10125863013
Matrix: Air

Parameters	Report Limit ppbv	Results ppbv	Report Limit ug/m3	Results ug/m3	DF	Analyzed	CAS No.
Air							
TO-15							
1,1,1-Trichloroethane	2.5	ND	14	ND	5.08	04/20/10 0:56 CJR	71-55-6
1,1-Dichloroethane	2.5	ND	10	ND	5.08	04/20/10 0:56 CJR	75-34-3
1,1-Dichloroethene	2.5	ND	10	ND	5.08	04/20/10 0:56 CJR	75-35-4
1,2-Dichloroethane	2.5	ND	10	ND	5.08	04/20/10 0:56 CJR	107-06-2
2-Propanol	406	1750	1000	4370	812.85	04/21/10 1:10 CJR	67-63-0
cis-1,2-Dichloroethene	2.5	ND	10	ND	5.08	04/20/10 0:56 CJR	156-59-2
Tetrachloroethene	2.5	ND	17	ND	5.08	04/20/10 0:56 CJR	127-18-4
trans-1,2-Dichloroethene	2.5	ND	10	ND	5.08	04/20/10 0:56 CJR	156-60-5
Trichloroethene	2.5	ND	14	ND	5.08	04/20/10 0:56 CJR	79-01-6
Vinyl chloride	2.5	ND	6.5	ND	5.08	04/20/10 0:56 CJR	75-01-4

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SUPPLEMENTAL REPORT

Units Conversion Request

Date: 4/21/2010

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10125863

[illegible]

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10125863

[illegible]

ORIGINAL



AIR Sample Condition Upon Receipt

Client Name: RMT Project # 10125863

Courier: ☒ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other _____

Custody Seal on Cooler/Box Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ no

Packing Material: ☒ Bubble Wrap ☐ Bubble Bags ☐ None ☐ Other _____

Tracking #: 7934 1998 1883, 1925, 2055

Comments:

Date and Initials of person examining contents: 4-7-10 JK

Chain of Custody Present: ☒ Yes ☐ No ☐ N/A
Chain of Custody Filled Out: ☒ Yes ☐ No ☐ N/A
Chain of Custody Relinquished: ☒ Yes ☐ No ☐ N/A
Sampler Name & Signature on COC: ☒ Yes ☐ No ☐ N/A
Samples Arrived within Hold Time: ☒ Yes ☐ No ☐ N/A
Short Hold Time Analysis (<72hr): ☐ Yes ☒ No ☐ N/A
Rush Turn Around Time Requested: ☐ Yes ☒ No ☐ N/A
Sufficient Volume: ☒ Yes ☐ No ☐ N/A
Correct Containers Used: ☒ Yes ☐ No ☐ N/A
-Pace Containers Used: ☒ Yes ☐ No ☐ N/A
Containers Intact: ☒ Yes ☐ No ☐ N/A
Media: AIR CAN
Sample Labels match COC: ☒ Yes ☐ No ☐ N/A

Samples Received: 18 CANS, 17 FC'S

Canisters		Flow Controllers		Stand Alone G		Tedlar Bags	
Sample Number	Can ID	Sample Number	Can ID	Sample Number	Can ID	Sample Number	Can ID
SG-01	0997	SG-11	0914		PA45	PA 21	
02	0888	Dup-01	1002		PA111		
03	1169	SG-13	0891		PA58	PA106	
04	1163				PA22		
05	0887				PA23		
06	1341	1151	1151		PA24	PA108	
07	1127	0999	0999		PA53	PA35	
08	0893	1339	1339		PA143	PA59	
09	1024	1324	1324		PA124	PA67	
10	1137	1129	1129		PA56	PA138	

Client Notification/ Resolution:

Field Data Required?

Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: _____

Date: 04/07/10

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

A106 Rev.01 (22May2009)

April 2010 Data

June 15, 2010

Ms. Stacy Metz
RMT, INC
3754 Ranchero Dr.
Ann Arbor, MI 48108

RE: Project: 02751.06.001 TPC-Soil Gas
Pace Project No.: 10129556

Dear Ms. Metz:

Enclosed are the analytical results for sample(s) received by the laboratory on May 21, 2010. The results relate only to the samples included in this report. Results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Colin Schuft

colin.schuft@pacelabs.com
Project Manager

Enclosures

REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: 02751.06.001 TPC-Soil Gas

Pace Project No.: 10129556

Minnesota Certification IDs

1700 Elm Street SE, Suite 200 Minneapolis, MN 55414

Alaska Certification #: UST-078

Washington Certification #: C754

Tennessee Certification #: 02818

Pennsylvania Certification #: 68-00563

Oregon Certification #: MN200001

North Dakota Certification #: R-036

North Carolina Certification #: 530

New York Certification #: 11647

New Jersey Certification #: MN-002

Montana Certification #: MT CERT0092

Minnesota Certification #: 027-053-137

Michigan DEQ Certification #: 9909

Maine Certification #: 2007029

Louisiana Certification #: LA080009

Louisiana Certification #: 03086

Kansas Certification #: E-10167

Iowa Certification #: 368

Illinois Certification #: 200011

Florida/NELAP Certification #: E87605

California Certification #: 01155CA

Arizona Certification #: AZ-0014

Wisconsin Certification #: 999407970

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REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: 02751.06.001 TPC-Soil Gas

Pace Project No.: 10129556

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10129556001	SG-01	Air	05/20/10 10:12	05/21/10 09:55
10129556002	SG-09	Air	05/20/10 10:45	05/21/10 09:55
10129556003	SG-06	Air	05/20/10 13:42	05/21/10 09:55
10129556004	SG-07	Air	05/20/10 13:59	05/21/10 09:55
10129556005	SG-13	Air	05/20/10 15:11	05/21/10 09:55
10129556006	DUP-01	Air	05/20/10 00:00	05/21/10 09:55

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REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: 02751.06.001 TPC-Soil Gas

Pace Project No.: 10129556

Lab ID	Sample ID	Method	Analysts	Analytes Reported
10129556001	SG-01	TO-15	DB1	10
10129556002	SG-09	TO-15	DB1	10
10129556003	SG-06	TO-15	DB1	10
10129556004	SG-07	TO-15	LCW	10
10129556005	SG-13	TO-15	DB1	10
10129556006	DUP-01	TO-15	DB1	10

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REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: 02751.06.001 TPC-Soil Gas

Pace Project No.: 10129556

Method: TO-15

Description: TO15 MSV AIR

Client: RMT, INC

Date: June 15, 2010

General Information:

6 samples were analyzed for TO-15. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

QC Batch: AIR/10336

L1: Analyte recovery in the laboratory control sample (LCS) was above QC limits. Results may be biased high.

- LCS (Lab ID: 802064)
- 2-Propanol

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

Analyte Comments:

QC Batch: AIR/10336

E: Analyte concentration exceeded the calibration range. The reported result is estimated.

- DUP-01 (Lab ID: 10129556006)
 - 1,1,1-Trichloroethane
 - 2-Propanol
 - Trichloroethene
- SG-01 (Lab ID: 10129556001)
 - 1,1,1-Trichloroethane
 - 2-Propanol
 - Trichloroethene
- SG-06 (Lab ID: 10129556003)
 - 2-Propanol

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: 02751.06.001 TPC-Soil Gas

Pace Project No.: 10129556

Method: TO-15

Description: TO15 MSV AIR

Client: RMT, INC

Date: June 15, 2010

Analyte Comments:

QC Batch: AIR/10336

E: Analyte concentration exceeded the calibration range. The reported result is estimated.

- SG-13 (Lab ID: 10129556005)
- 2-Propanol

This data package has been reviewed for quality and completeness and is approved for release.

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REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 02751.06.001 TPC-Soil Gas
Pace Project No.: 10129556

Sample: SG-01		Lab ID: 10129556001	Collected: 05/20/10 10:12		Received: 05/21/10 09:55		Matrix: Air	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR		Analytical Method: TO-15						
1,1-Dichloroethane	52.4	ppbv	4.4	8.7		06/08/10 23:18	75-34-3	
1,2-Dichloroethane	ND	ppbv	4.4	8.7		06/08/10 23:18	107-06-2	
1,1-Dichloroethene	21.6	ppbv	4.4	8.7		06/08/10 23:18	75-35-4	
cis-1,2-Dichloroethene	184	ppbv	4.4	8.7		06/08/10 23:18	156-59-2	
trans-1,2-Dichloroethene	ND	ppbv	4.4	8.7		06/08/10 23:18	156-60-5	
2-Propanol	335000	ppbv	4.4	8.7		06/08/10 23:18	67-63-0	E
Tetrachloroethene	52.1	ppbv	4.4	8.7		06/08/10 23:18	127-18-4	
1,1,1-Trichloroethane	1690	ppbv	4.4	8.7		06/08/10 23:18	71-55-6	E
Trichloroethene	2800	ppbv	4.4	8.7		06/08/10 23:18	79-01-6	E
Vinyl chloride	ND	ppbv	4.4	8.7		06/08/10 23:18	75-01-4	

Sample: SG-09		Lab ID: 10129556002	Collected: 05/20/10 10:45		Received: 05/21/10 09:55		Matrix: Air	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR		Analytical Method: TO-15						
1,1-Dichloroethane	10.6	ppbv	4.4	8.7		06/09/10 01:08	75-34-3	
1,2-Dichloroethane	ND	ppbv	4.4	8.7		06/09/10 01:08	107-06-2	
1,1-Dichloroethene	ND	ppbv	4.4	8.7		06/09/10 01:08	75-35-4	
cis-1,2-Dichloroethene	ND	ppbv	4.4	8.7		06/09/10 01:08	156-59-2	
trans-1,2-Dichloroethene	ND	ppbv	4.4	8.7		06/09/10 01:08	156-60-5	
2-Propanol	24.8	ppbv	4.4	8.7		06/09/10 01:08	67-63-0	L1
Tetrachloroethene	ND	ppbv	4.4	8.7		06/09/10 01:08	127-18-4	
1,1,1-Trichloroethane	123	ppbv	4.4	8.7		06/09/10 01:08	71-55-6	
Trichloroethene	176	ppbv	4.4	8.7		06/09/10 01:08	79-01-6	
Vinyl chloride	ND	ppbv	4.4	8.7		06/09/10 01:08	75-01-4	

Sample: SG-06		Lab ID: 10129556003	Collected: 05/20/10 13:42		Received: 05/21/10 09:55		Matrix: Air	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR		Analytical Method: TO-15						
1,1-Dichloroethane	ND	ppbv	4.6	9.3		06/09/10 00:40	75-34-3	
1,2-Dichloroethane	ND	ppbv	4.6	9.3		06/09/10 00:40	107-06-2	
1,1-Dichloroethene	ND	ppbv	4.6	9.3		06/09/10 00:40	75-35-4	
cis-1,2-Dichloroethene	ND	ppbv	4.6	9.3		06/09/10 00:40	156-59-2	
trans-1,2-Dichloroethene	ND	ppbv	4.6	9.3		06/09/10 00:40	156-60-5	
2-Propanol	1570	ppbv	4.6	9.3		06/09/10 00:40	67-63-0	E
Tetrachloroethene	9.5	ppbv	4.6	9.3		06/09/10 00:40	127-18-4	
1,1,1-Trichloroethane	6.0	ppbv	4.6	9.3		06/09/10 00:40	71-55-6	
Trichloroethene	104	ppbv	4.6	9.3		06/09/10 00:40	79-01-6	
Vinyl chloride	ND	ppbv	4.6	9.3		06/09/10 00:40	75-01-4	

Date: 06/15/2010 11:55 AM

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 02751.06.001 TPC-Soil Gas

Pace Project No.: 10129556

Sample: SG-07		Lab ID: 10129556004		Collected: 05/20/10 13:59		Received: 05/21/10 09:55		Matrix: Air	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
TO15 MSV AIR		Analytical Method: TO-15							
1,1-Dichloroethane	ND	ppbv	5.0	10		06/09/10 21:08	75-34-3		
1,2-Dichloroethane	ND	ppbv	5.0	10		06/09/10 21:08	107-06-2		
1,1-Dichloroethene	ND	ppbv	5.0	10		06/09/10 21:08	75-35-4		
cis-1,2-Dichloroethene	ND	ppbv	5.0	10		06/09/10 21:08	156-59-2		
trans-1,2-Dichloroethene	ND	ppbv	5.0	10		06/09/10 21:08	156-60-5		
2-Propanol	170	ppbv	5.0	10		06/09/10 21:08	67-63-0		
Tetrachloroethene	13.8	ppbv	5.0	10		06/09/10 21:08	127-18-4		
1,1,1-Trichloroethane	6.8	ppbv	5.0	10		06/09/10 21:08	71-55-6		
Trichloroethene	145	ppbv	5.0	10		06/09/10 21:08	79-01-6		
Vinyl chloride	ND	ppbv	5.0	10		06/09/10 21:08	75-01-4		

Sample: SG-13		Lab ID: 10129556005		Collected: 05/20/10 15:11		Received: 05/21/10 09:55		Matrix: Air	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
TO15 MSV AIR		Analytical Method: TO-15							
1,1-Dichloroethane	ND	ppbv	4.5	9		06/08/10 22:50	75-34-3		
1,2-Dichloroethane	ND	ppbv	4.5	9		06/08/10 22:50	107-06-2		
1,1-Dichloroethene	ND	ppbv	4.5	9		06/08/10 22:50	75-35-4		
cis-1,2-Dichloroethene	ND	ppbv	4.5	9		06/08/10 22:50	156-59-2		
trans-1,2-Dichloroethene	ND	ppbv	4.5	9		06/08/10 22:50	156-60-5		
2-Propanol	9130	ppbv	4.5	9		06/08/10 22:50	67-63-0	E	
Tetrachloroethene	ND	ppbv	4.5	9		06/08/10 22:50	127-18-4		
1,1,1-Trichloroethane	ND	ppbv	4.5	9		06/08/10 22:50	71-55-6		
Trichloroethene	6.1	ppbv	4.5	9		06/08/10 22:50	79-01-6		
Vinyl chloride	ND	ppbv	4.5	9		06/08/10 22:50	75-01-4		

Sample: DUP-01		Lab ID: 10129556006		Collected: 05/20/10 00:00		Received: 05/21/10 09:55		Matrix: Air	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
TO15 MSV AIR		Analytical Method: TO-15							
1,1-Dichloroethane	63.2	ppbv	4.4	8.7		06/08/10 23:45	75-34-3		
1,2-Dichloroethane	ND	ppbv	4.4	8.7		06/08/10 23:45	107-06-2		
1,1-Dichloroethene	31.0	ppbv	4.4	8.7		06/08/10 23:45	75-35-4		
cis-1,2-Dichloroethene	245	ppbv	4.4	8.7		06/08/10 23:45	156-59-2		
trans-1,2-Dichloroethene	22.6	ppbv	4.4	8.7		06/08/10 23:45	156-60-5		
2-Propanol	849	ppbv	4.4	8.7		06/08/10 23:45	67-63-0	E	
Tetrachloroethene	256	ppbv	4.4	8.7		06/08/10 23:45	127-18-4		
1,1,1-Trichloroethane	2120	ppbv	4.4	8.7		06/08/10 23:45	71-55-6	E	
Trichloroethene	3770	ppbv	4.4	8.7		06/08/10 23:45	79-01-6	E	
Vinyl chloride	ND	ppbv	4.4	8.7		06/08/10 23:45	75-01-4		

Date: 06/15/2010 11:55 AM

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 02751.06.001 TPC-Soil Gas

Pace Project No.: 10129556

QC Batch: AIR/10336

Analysis Method: TO-15

QC Batch Method: TO-15

Analysis Description: TO15 MSV AIR

Associated Lab Samples: 10129556001, 10129556002, 10129556003, 10129556005, 10129556006

METHOD BLANK: 802063

Matrix: Air

Associated Lab Samples: 10129556001, 10129556002, 10129556003, 10129556005, 10129556006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1-Trichloroethane	ppbv	ND	0.50	06/08/10 16:15	
1,1-Dichloroethane	ppbv	ND	0.50	06/08/10 16:15	
1,1-Dichloroethene	ppbv	ND	0.50	06/08/10 16:15	
1,2-Dichloroethane	ppbv	ND	0.50	06/08/10 16:15	
2-Propanol	ppbv	ND	0.50	06/08/10 16:15	
cis-1,2-Dichloroethene	ppbv	ND	0.50	06/08/10 16:15	
Tetrachloroethene	ppbv	ND	0.50	06/08/10 16:15	
trans-1,2-Dichloroethene	ppbv	ND	0.50	06/08/10 16:15	
Trichloroethene	ppbv	ND	0.50	06/08/10 16:15	
Vinyl chloride	ppbv	ND	0.50	06/08/10 16:15	

LABORATORY CONTROL SAMPLE: 802064

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1-Trichloroethane	ppbv	10	11.6	116	75-135	
1,1-Dichloroethane	ppbv	10	10.3	103	60-125	
1,1-Dichloroethene	ppbv	10	10.1	101	69-128	
1,2-Dichloroethane	ppbv	10	11.3	113	66-127	
2-Propanol	ppbv	10	15.7	157	30-146	L1
cis-1,2-Dichloroethene	ppbv	10	11.0	110	67-131	
Tetrachloroethene	ppbv	10	10.8	108	68-136	
trans-1,2-Dichloroethene	ppbv	10	10.3	103	69-131	
Trichloroethene	ppbv	10	11.7	117	75-147	
Vinyl chloride	ppbv	10	9.5	95	66-125	

QUALITY CONTROL DATA

Project: 02751.06.001 TPC-Soil Gas
Pace Project No.: 10129556

QC Batch: AIR/10355 Analysis Method: TO-15
QC Batch Method: TO-15 Analysis Description: TO15 MSV AIR
Associated Lab Samples: 10129556004

METHOD BLANK: 805234 Matrix: Air
Associated Lab Samples: 10129556004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1-Trichloroethane	ppbv	ND	0.50	06/09/10 20:09	
1,1-Dichloroethane	ppbv	ND	0.50	06/09/10 20:09	
1,1-Dichloroethene	ppbv	ND	0.50	06/09/10 20:09	
1,2-Dichloroethane	ppbv	ND	0.50	06/09/10 20:09	
2-Propanol	ppbv	ND	0.50	06/09/10 20:09	
cis-1,2-Dichloroethene	ppbv	ND	0.50	06/09/10 20:09	
Tetrachloroethene	ppbv	ND	0.50	06/09/10 20:09	
trans-1,2-Dichloroethene	ppbv	ND	0.50	06/09/10 20:09	
Trichloroethene	ppbv	ND	0.50	06/09/10 20:09	
Vinyl chloride	ppbv	ND	0.50	06/09/10 20:09	

LABORATORY CONTROL SAMPLE: 805235

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1-Trichloroethane	ppbv	10	10.3	103	75-135	
1,1-Dichloroethane	ppbv	10	10.2	102	60-125	
1,1-Dichloroethene	ppbv	10	10.0	100	69-128	
1,2-Dichloroethane	ppbv	10	10.6	106	66-127	
2-Propanol	ppbv	10	9.0	90	30-146	
cis-1,2-Dichloroethene	ppbv	10	9.8	98	67-131	
Tetrachloroethene	ppbv	10	8.6	86	68-136	
trans-1,2-Dichloroethene	ppbv	10	9.3	93	69-131	
Trichloroethene	ppbv	10	9.9	99	75-147	
Vinyl chloride	ppbv	10	9.9	99	66-125	

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QUALIFIERS

Project: 02751.06.001 TPC-Soil Gas

Pace Project No.: 10129556

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is NELAP accredited. Contact your Pace PM for the current list of accredited analytes.

ANALYTE QUALIFIERS

E Analyte concentration exceeded the calibration range. The reported result is estimated.

L1 Analyte recovery in the laboratory control sample (LCS) was above QC limits. Results may be biased high.

US EPA ARCHIVE DOCUMENT

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 02751.06.001 TPC-Soil Gas

Pace Project No.: 10129556

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10129556001	SG-01	TO-15	AIR/10336		
10129556002	SG-09	TO-15	AIR/10336		
10129556003	SG-06	TO-15	AIR/10336		
10129556004	SG-07	TO-15	AIR/10355		
10129556005	SG-13	TO-15	AIR/10336		
10129556006	DUP-01	TO-15	AIR/10336		

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Date: 06/15/2010 11:55 AM

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Pace Analytical Services, Inc.
1700 Elm Street – Suite 200
Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444

ANALYTICAL RESULTS

Client: RMT, INC
Phone: 608-662-5352

Lab Project Number: 10129556
Project Name: 02751.06.001 TPC-Soil Gas

Lab Sample No: 10129556001
Client Sample ID: SG-01

ProjSampleNum: 10129556001
Matrix: Air

Date Collected: 05/20/10 10:12
Date Received: 05/21/10 9:55

Parameters	Report Limit ppbv	Results ppbv	Report Limit ug/m3	Results ug/m3	DF	Analyzed	CAS No.
Air							
TO-15							
1,1,1-Trichloroethane	4.4	1690	24	9370	8.7	06/08/10 23:18 DB1	71-55-6
1,1-Dichloroethane	4.4	52.4	18	216	8.7	06/08/10 23:18 DB1	75-34-3
1,1-Dichloroethene	4.4	21.6	18	87.1	8.7	06/08/10 23:18 DB1	75-35-4
1,2-Dichloroethane	4.4	ND	18	ND	8.7	06/08/10 23:18 DB1	107-06-2
2-Propanol	4.4	335000	11	837000	8.7	06/08/10 23:18 DB1	67-63-0
cis-1,2-Dichloroethene	4.4	184	18	742	8.7	06/08/10 23:18 DB1	156-59-2
Tetrachloroethene	4.4	52.1	30	359	8.7	06/08/10 23:18 DB1	127-18-4
trans-1,2-Dichloroethene	4.4	ND	18	ND	8.7	06/08/10 23:18 DB1	156-60-5
Trichloroethene	4.4	2800	24	15300	8.7	06/08/10 23:18 DB1	79-01-6
Vinyl chloride	4.4	ND	11	ND	8.7	06/08/10 23:18 DB1	75-01-4

Lab Sample No: 10129556002
Client Sample ID: SG-09

ProjSampleNum: 10129556002
Matrix: Air

Date Collected: 05/20/10 10:45
Date Received: 05/21/10 9:55

Parameters	Report Limit ppbv	Results ppbv	Report Limit ug/m3	Results ug/m3	DF	Analyzed	CAS No.
Air							
TO-15							
1,1,1-Trichloroethane	4.4	123	24	682	8.7	06/09/10 1:08 DB1	71-55-6
1,1-Dichloroethane	4.4	10.6	18	43.6	8.7	06/09/10 1:08 DB1	75-34-3
1,1-Dichloroethene	4.4	ND	18	ND	8.7	06/09/10 1:08 DB1	75-35-4
1,2-Dichloroethane	4.4	ND	18	ND	8.7	06/09/10 1:08 DB1	107-06-2
2-Propanol	4.4	24.8	11	62	8.7	06/09/10 1:08 DB1	67-63-0
cis-1,2-Dichloroethene	4.4	ND	18	ND	8.7	06/09/10 1:08 DB1	156-59-2
Tetrachloroethene	4.4	ND	30	ND	8.7	06/09/10 1:08 DB1	127-18-4
trans-1,2-Dichloroethene	4.4	ND	18	ND	8.7	06/09/10 1:08 DB1	156-60-5
Trichloroethene	4.4	176	24	961	8.7	06/09/10 1:08 DB1	79-01-6
Vinyl chloride	4.4	ND	11	ND	8.7	06/09/10 1:08 DB1	75-01-4

SUPPLEMENTAL REPORT

Units Conversion Request



Pace Analytical Services, Inc.
1700 Elm Street – Suite 200
Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444

ANALYTICAL RESULTS

Client: RMT, INC
Phone: 608-662-5352

Lab Project Number: 10129556
Project Name: 02751.06.001 TPC-Soil Gas

Lab Sample No: 10129556003
Client Sample ID: SG-06

ProjSampleNum: 10129556003
Matrix: Air

Date Collected: 05/20/10 13:42
Date Received: 05/21/10 9:55

Parameters	Report Limit ppbv	Results ppbv	Report Limit ug/m3	Results ug/m3	DF	Analyzed	CAS No.
Air							
TO-15							
1,1,1-Trichloroethane	4.6	6.0	26	33.3	9.3	06/09/10 0:40 DB1	71-55-6
1,1-Dichloroethane	4.6	ND	19	ND	9.3	06/09/10 0:40 DB1	75-34-3
1,1-Dichloroethene	4.6	ND	19	ND	9.3	06/09/10 0:40 DB1	75-35-4
1,2-Dichloroethane	4.6	ND	19	ND	9.3	06/09/10 0:40 DB1	107-06-2
2-Propanol	4.6	1570	11	3920	9.3	06/09/10 0:40 DB1	67-63-0
cis-1,2-Dichloroethene	4.6	ND	19	ND	9.3	06/09/10 0:40 DB1	156-59-2
Tetrachloroethene	4.6	9.5	32	65.5	9.3	06/09/10 0:40 DB1	127-18-4
trans-1,2-Dichloroethene	4.6	ND	19	ND	9.3	06/09/10 0:40 DB1	156-60-5
Trichloroethene	4.6	104	25	568	9.3	06/09/10 0:40 DB1	79-01-6
Vinyl chloride	4.6	ND	12	ND	9.3	06/09/10 0:40 DB1	75-01-4

Lab Sample No: 10129556004
Client Sample ID: SG-07

ProjSampleNum: 10129556004
Matrix: Air

Date Collected: 05/20/10 13:59
Date Received: 05/21/10 9:55

Parameters	Report Limit ppbv	Results ppbv	Report Limit ug/m3	Results ug/m3	DF	Analyzed	CAS No.
Air							
TO-15							
1,1,1-Trichloroethane	5	6.8	28	37.7	10	06/09/10 21:08 LCW	71-55-6
1,1-Dichloroethane	5	ND	21	ND	10	06/09/10 21:08 LCW	75-34-3
1,1-Dichloroethene	5	ND	20	ND	10	06/09/10 21:08 LCW	75-35-4
1,2-Dichloroethane	5	ND	21	ND	10	06/09/10 21:08 LCW	107-06-2
2-Propanol	5	170	12	425	10	06/09/10 21:08 LCW	67-63-0
cis-1,2-Dichloroethene	5	ND	20	ND	10	06/09/10 21:08 LCW	156-59-2
Tetrachloroethene	5	13.8	34	95.1	10	06/09/10 21:08 LCW	127-18-4
trans-1,2-Dichloroethene	5	ND	20	ND	10	06/09/10 21:08 LCW	156-60-5
Trichloroethene	5	145	27	792	10	06/09/10 21:08 LCW	79-01-6
Vinyl chloride	5	ND	13	ND	10	06/09/10 21:08 LCW	75-01-4

SUPPLEMENTAL REPORT

Units Conversion Request

Date: 6/15/2010

Page 2



Pace Analytical Services, Inc.
1700 Elm Street – Suite 200
Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444

ANALYTICAL RESULTS

Client: RMT, INC
Phone: 608-662-5352

Lab Project Number: 10129556
Project Name: 02751.06.001 TPC-Soil Gas

Lab Sample No: 10129556005
Client Sample ID: SG-13

ProjSampleNum: 10129556005
Matrix: Air

Date Collected: 05/20/10 15:11
Date Received: 05/21/10 9:55

Parameters	Report Limit ppbv	Results ppbv	Report Limit ug/m3	Results ug/m3	DF	Analyzed	CAS No.
Air							
TO-15							
1,1,1-Trichloroethane	4.5	ND	25	ND	9	06/08/10 22:50 DB1	71-55-6
1,1-Dichloroethane	4.5	ND	19	ND	9	06/08/10 22:50 DB1	75-34-3
1,1-Dichloroethene	4.5	ND	18	ND	9	06/08/10 22:50 DB1	75-35-4
1,2-Dichloroethane	4.5	ND	19	ND	9	06/08/10 22:50 DB1	107-06-2
2-Propanol	4.5	9130	11	22800	9	06/08/10 22:50 DB1	67-63-0
cis-1,2-Dichloroethene	4.5	ND	18	ND	9	06/08/10 22:50 DB1	156-59-2
Tetrachloroethene	4.5	ND	31	ND	9	06/08/10 22:50 DB1	127-18-4
trans-1,2-Dichloroethene	4.5	ND	18	ND	9	06/08/10 22:50 DB1	156-60-5
Trichloroethene	4.5	6.1	25	33.3	9	06/08/10 22:50 DB1	79-01-6
Vinyl chloride	4.5	ND	12	ND	9	06/08/10 22:50 DB1	75-01-4

Lab Sample No: 10129556006
Client Sample ID: DUP-01

ProjSampleNum: 10129556006
Matrix: Air

Date Collected: 05/20/10 0:00
Date Received: 05/21/10 9:55

Parameters	Report Limit ppbv	Results ppbv	Report Limit ug/m3	Results ug/m3	DF	Analyzed	CAS No.
Air							
TO-15							
1,1,1-Trichloroethane	4.4	2120	24	11800	8.7	06/08/10 23:45 DB1	71-55-6
1,1-Dichloroethane	4.4	63.2	18	260	8.7	06/08/10 23:45 DB1	75-34-3
1,1-Dichloroethene	4.4	31.0	18	125	8.7	06/08/10 23:45 DB1	75-35-4
1,2-Dichloroethane	4.4	ND	18	ND	8.7	06/08/10 23:45 DB1	107-06-2
2-Propanol	4.4	849	11	2120	8.7	06/08/10 23:45 DB1	67-63-0
cis-1,2-Dichloroethene	4.4	245	18	987	8.7	06/08/10 23:45 DB1	156-59-2
Tetrachloroethene	4.4	256	30	1760	8.7	06/08/10 23:45 DB1	127-18-4
trans-1,2-Dichloroethene	4.4	22.6	18	91.1	8.7	06/08/10 23:45 DB1	156-60-5
Trichloroethene	4.4	3770	24	20600	8.7	06/08/10 23:45 DB1	79-01-6
Vinyl chloride	4.4	ND	11	ND	8.7	06/08/10 23:45 DB1	75-01-4

SUPPLEMENTAL REPORT

Units Conversion Request

2556 E/01

[illegible]



AIR Sample Condition Upon Receipt

Client Name: RMT

Project # 10129556

Courier: ☒ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other _____

Custody Seal on Cooler/Box Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ no

Packing Material: ☒ Bubble Wrap ☒ Bubble Bags ☐ None ☐ Other _____

Tracking #: 8708 9009 5638

Comments:

Date and Initials of person examining contents: 5-21-10 K

Chain of Custody Present:	☒ Yes ☐ No ☐ N/A	1.
Chain of Custody Filled Out:	☒ Yes ☐ No ☐ N/A	2.
Chain of Custody Relinquished:	☒ Yes ☐ No ☐ N/A	3.
Sampler Name & Signature on COC:	☒ Yes ☐ No ☐ N/A	4.
Samples Arrived within Hold Time:	☒ Yes ☐ No ☐ N/A	5.
Short Hold Time Analysis (<72hr):	☐ Yes ☒ No ☐ N/A	6.
Rush Turn Around Time Requested:	☐ Yes ☒ No ☐ N/A	7.
Sufficient Volume:	☒ Yes ☐ No ☐ N/A	8.
Correct Containers Used:	☒ Yes ☐ No ☐ N/A	9.
-Pace Containers Used:	☒ Yes ☐ No ☐ N/A	
Containers Intact:	☒ Yes ☐ No ☐ N/A	10.
Media:	<u>AR (CAN)</u>	11.
Sample Labels match COC:	☒ Yes ☐ No ☐ N/A	12.

Samples Received: 8 CANS, 8 FC'S

Canisters		Flow Controllers		Stand Alone G		Tedlar Bags	
Sample Number	Can ID	Sample Number	Can ID	Sample Number	Can ID	Sample Number	Can ID
SG-01	1163		124				
SG-09	1142		A4				
SG-06	0994		999				
SG-07	1312		161				
SG-13	0828		19				
DUP-01	1022		43				
	1092		A12				
	1340		42				

Client Notification/ Resolution:

Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: _____

Date: 05/24/10

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

A106 Rev.01 (22May2009)