

#### REMEDIATION IMPLEMENTATION REPORT

# FORMER DAY ONE FORMAL WEAR 3939 LIEN ROAD MADISON, WISCONSIN WDNR BRRTS# 02-13-576916

September 10, 2018

Prepared For:

Marc, Inc. 901 Post Road Madison, WI 53713

Prepared By:

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Document: 5040-0101



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#### **CERTIFICATIONS**

I, Andrew Horwath, hereby certify that I am a registered professional engineer in the State of Wisconsin, registered in accordance with the requirements of ch. A-E 4, Wis. Adm. Code; that this document has been prepared in accordance with the Rules of Professional Conduct in ch. A-E 8, Wis. Adm. Code; and that, to the best of my knowledge, all information contained in this document is correct and the document was prepared in compliance with all applicable requirements in chs. NR 700 to 726, Wis. Adm. Code.

Senior Engineer, PE No. E-43831-6	
Signature, title and P.E. number	P.E. stamp

I, Robert Hoverman, hereby certify that I am a hydrogeologist as that term is defined in s. NR 712.03 (1), Wis. Adm. Code, am registered in accordance with the requirements of ch. GHSS 2, Wis. Adm. Code, or licensed in accordance with the requirements of ch. GHSS 3, Wis. Adm. Code, and that, to the best of my knowledge, all of the information contained in this document is correct and the document was prepared in compliance with all applicable requirements in chs. NR 700 to 726, Wis. Adm. Code.

Senior Project Manager

9/10/2018

Signature and title

Date



#### 1.0 INTRODUCTION

EnviroForensics, LLC (EnviroForensics) has prepared this Remediation Implementation Report on behalf of Marc, Inc. for the Former Day One Formal Wear dry cleaning facility located at 3939 Lien Rd, Madison, Wisconsin (Site). This report has been prepared in accordance with Wisconsin Administrative Code (WAC) Chapter NR 724 and other associated State of Wisconsin Chapter NR 700 series rules.

The general layout of the Site is depicted on **Figure 1**. Day One Formal Wear occupied the building from 1981 through 1989. Day One Formal Wear was listed as small quantity generator of hazardous waste through the US EPA. Marc, Inc. purchased the property in 1989 and was unaware of the former hazardous material activities conducted at the site.

Remedial actions were implemented to address subsurface contamination resulting from release of tetrachloroethene (PCE). The approved soil remedy at the Site was soil vapor extraction (SVE). The primary objective of SVE is to remove contaminant mass from unsaturated soil. SVE may provide the additional benefit of vapor intrusion mitigation at the Site building during operation. As such the previously installed sub-slab depressurization system (SSDS) was shut down, but left in place as backup should the SVE system require prolonged down time for repairs.

#### 2.0 SOIL VAPOR EXTRACTION

#### 2.1 Design

The full-scale SVE system design was derived from the Remedial Action Plan (RAP) by Seymour Environmental Services, Inc. dated January 2017. A blower capable of inducing a flow rate of 75 cubic feet per minute (cfm) at 27 inches of water (in H<sub>2</sub>O) vacuum was specified. The design called for a total of three (3) extraction wells. Deviations from the original design are as follows:

- The outdoor extraction well from the pilot test was not used in conjunction with the proposed two (2) interior extraction wells;
- A 3-horsepower (HP) Rotron DR555/656 Blower Package was substituted for the Rotron EN404 as a more operationally cost effective blower;



- Four-inch polyvinyl chloride (PVC) conveyance lines were used to reduce friction loss in the final installation; and
- The placement of extraction wells was based on the interior layout, final blower selection, and associated radius of influence.

The final system construction and layout is discussed in the following sections.

#### 2.2 System Construction

The SVE system was constructed in three general phases between February 2018 and June 2018:

- Extraction well and monitoring point installation;
- Wellhead and conveyance piping installation; and
- Mechanical system construction and connection.

#### 2.2.1 Extraction Well Installation

Two (2) new extraction wells, designated SVE-1 and SVE-2, were installed between February 23 and March 2, 2018. The extraction wells are connected to a single conveyance line as shown on **Figure 1**.

The extraction wells were installed via hollow-stem auger drill rig and hand auger techniques to advance in 8-inch and 7-inch boreholes respectively. The wells were constructed of 4-inch diameter Schedule 40 PVC 0.020-inch slotted screen. Each SVE well is screened 4 to 14 feet below ground surface (bgs). Riser material consists of solid 4-inch diameter Schedule 40 PVC pipe. A course sand filter pack was installed around each screen and the annular space seal consists of hydrated bentonite chips from 1 to 3 feet bgs. Composite soil samples were collected from SVE-1 for waste characterization purposes. The samples were submitted to a state-certified laboratory for analysis of volatile organic compounds (VOCs) according to EPA Test Method 8260 and the laboratory analytical report is presented in **Appendix A.** 

#### 2.2.2 Monitoring Point Installation

Two (2) SVE monitoring points designated MP-1 and MP-2 were installed using a Geoprobe ® at 10 feet and 20 feet horizontally from SVE-1 to monitor the radius of influence of the SVE system on February 23, 2018. Each was constructed of 1-inch diameter Schedule 40 PVC 0.010-



inch slotted screen. The screened intervals for both monitoring points are 6.5 to 11.5 feet bgs. Riser material consists of solid 1-inch diameter Schedule 40 PVC pipe. A course sand filter pack was installed around each screen and the annular space seal consists of hydrated bentonite chips from 1 to 3 feet bgs. Monitoring point locations are shown on **Figure 1** 

#### 2.2.3 Wellhead and Conveyance Piping Installation

Conveyance piping was installed to connect the SVE wells to the blower. The installation work was completed between March 29 and April 5, 2018. Air flow from each SVE well is regulated by a ball valve located near the respective extraction point. The conveyance lines are constructed of 4-inch diameter PVC. The conveyance piping layout is depicted on **Figure 1**.

#### 2.2.4 Waste Management

Four (4) 55-gallon drums of soil cuttings were generated from the installation of the SVE wells and monitoring points. The analytical results indicated that all soil could be managed as non-hazardous waste for disposal. The soil drums were removed for disposal by Tradebe Treatment and Recycling of Wisconsin, LLC at a regulated waste facility on June 27, 2018. **Appendix B** presents the waste manifest.

#### 2.3 Mechanical System Components

EnviroForensics directed the installation of the mechanical system on April 3 and 4, 2018. The mechanical system consists of the following components:

- 3-HP Rotron blower package capable of a flow up to approximately 200 standard cubic feet per minute (SCFM) and a vacuum up to approximately 60 in H<sub>2</sub>O
- Customized sound block enclosure with Accoustablok ®
- Master Control Panel
- Airflow meter measuring in SCFM
- Vacuum gauge measuring in inches of mercury
- Light indicator to show shutdown during operational hours
- Run time meter in hours
- Daily on/off timer for specific operational control



The SVE exhaust stack extends through the block building side wall to an approximate height of 16 feet above ground surface. Exhaust samples are collected from a port in the stack downstream from the blower. A system process and instrumentation diagram and an associated legend are presented on **Figures 2a and 2b**, respectively.

#### 3.0 SYSTEM COMMISIONING

Samples of the SVE system air emissions are collected from a port in the exhaust stack and analyzed for VOCs to track mass removal and to determine operational changes to optimize system performance. A variance from performance monitoring as required under WAC Chapter 419.07 is being sought to clarify the sampling language in the RAP. Due to the startup occurring on a Friday and a schedule conflict the following start up effluent sampling was conducted:

- On the first day of system operation;
- On day 4 of operation; and
- On day 28 of operation.

A commissioning phase was completed to confirm that system emissions are below permitting thresholds and ambient air standards. The results of the initial samples collected during the first four (4) days of system operation demonstrate that system emissions are below the following permitting thresholds that apply to SVE systems (WAC Chapters NR 406 and 407, respectively):

- Total VOC limit of 5.7 pounds per hour (lb/hr); and
- PCE limits of 9.11 lb/hr and 301 pounds per year.

The effluent laboratory report is included as **Appendix C**.

Operational parameters were gathered on June 22, 2018 and the system was temporarily shut down to allow for vapor rebound. The system was temporarily started on July 7, 2018 to understand the VOC concentration differential between extraction points by utilizing a lung box and photo ionization detector (PID). While the system was temporarily shut down, the SSDS on site was resumed.

The system was then restarted on July 22, 2018 to resume regular operations. The system will operate for six hours on Wednesdays and will be deactivated for the remainder of the time given



the removal rates observed since operations began. There was only a 3% difference in the PID readings in the extraction wells, so both were left fully open during operation. Given the significantly decreased effluent concentrations and minimal operation and maintenance requirements, effluent sampling is proposed at a rate of once per quarter.

Remediation performance, including calculations of mass removal rates and cumulative mass removed, will be reported on Remediation Site Operation, Maintenance, Monitoring & Optimization Reports (Form 4400-194). The reports will be prepared and submitted to WDNR semi-annually as required. Operational data and mass removal rates are presented in the attached **Table 1.** 

#### 4.0 OPERATION AND MAINTENANCE

The SVE system was designed to allow various operational configurations. Each extraction well can be disconnected from service by closing the ball valve installed at the wellhead. This design allows the operators to target specific areas as the remediation progresses to maximize efficiency. We will make operational changes as needed during the maintenance visits described below.

Operation and Maintenance (O&M) activities are conducted by EnviroForensics personnel to:

- Maximize system efficiency and contaminant mass removal rates;
- Keep the mechanical equipment in good working order; and
- Collect data to track system performance and determine a timeframe for shutdown.

Routine maintenance activities performed quarterly include the following:

- Service the blower as recommended by the manufacturer
- Record operational parameters and vapor concentrations to evaluate efficiency
  - Effluent VOC vapor concentration
  - System runtime
  - o System vacuum
  - Wellhead vacuums
  - Vacuum at monitoring points
  - Flow rates
  - Exhaust temperature



Additional maintenance visits may be required to address system shutdowns or operational issues. A light indicator will go off if the system has shut down during normal operation periods and signage indicates occupants should call EnviroForensics. The SVE blower does not have any specific operation and maintenance requirements therefore, the system will only be monitored on a quarterly basis for operational parameters to calculate mass removal rates and a specific O&M plan was not developed.

#### 5.0 CONCLUSIONS

The implemented remedial actions are designed to address VOC impacts in unsaturated soil. Mass removal via SVE is in progress, and the system will be adjusted and operated to maximize efficiency. In addition, the SVE system has interrupted vapor transport mechanisms and has likely improved mitigation of the vapor exposure pathway in the Site building.



# **TABLES**

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# TABLE 1 SUMMARY OF SVE MASS REMOVAL MARC, Inc. Madison, Wisconsin

	Period				Contain Data*								
Period			System Data*				ne						
From Date	To Date	Sample Date	Hours Start	Hours Final	Total hours during period	Airflow Rate (scfm)	Tetrachloroethe	Trichloroethene	cis-1,2- Dichloroethene	trans-1,2- Dichloroethene	Vinyl Chloride	Total VOCs Removed During Period (pounds)	Cumulative VOCs Removed (pounds)
4/13/2018		4/13/2018	0	1.8	1.8	141	5,060	47.8	ND	ND	ND	0.00486	0.00486
4/13/2018	4/13/2018		VOCs Removed During Period (Pounds)			nds)	0.00481	0.00005	0.00000 0.00000		0.00000	0.00480	0.00480
4/13/2018		4/17/2018	1.8	92	90.2	140	851	26	ND	ND	ND	0.0415	0.0464
4/13/2016	4/17/2018		VOCs Rem	oved During	ouring Period (Pounds)		0.040251598	0.00124397	0.00000	0.00000	0.00000	0.0413	0.0404
4/17/2018		5/11/2010		672	580.0	140	248	ND	ND	ND	ND	0.0754	0.1218
4/1//2010		5/11/2018	VOCs Removed During Period (Pounds)		0.07543	0.00000	0.00000 0.00000 0.00000		0.0734	0.1218			
5/11/2019		7/25/2019	672	1008.8	336.8	140	415	ND	ND	ND	ND	0.0733	0.20
5/11/2018		7/25/2018	VOCs Rem	oved During	Period (Pou	nds)	0.07329	0.00000	0.00000	0.00000	0.00000	0.0/33	0.20

#### **Notes:**

ND = Not Detected above laboratory reporting limits

NA = Not Analyzed

 $\mu g/m^3 = micrograms per cubic meter$ 

scfm = standard cubic feet per minute

\* = estimated based on historical system performance

Constituents not shown are below laboratory detection limits

 $^{1}$  = The hours meter reset from 9308.4 to 0.0 on 4/11/17

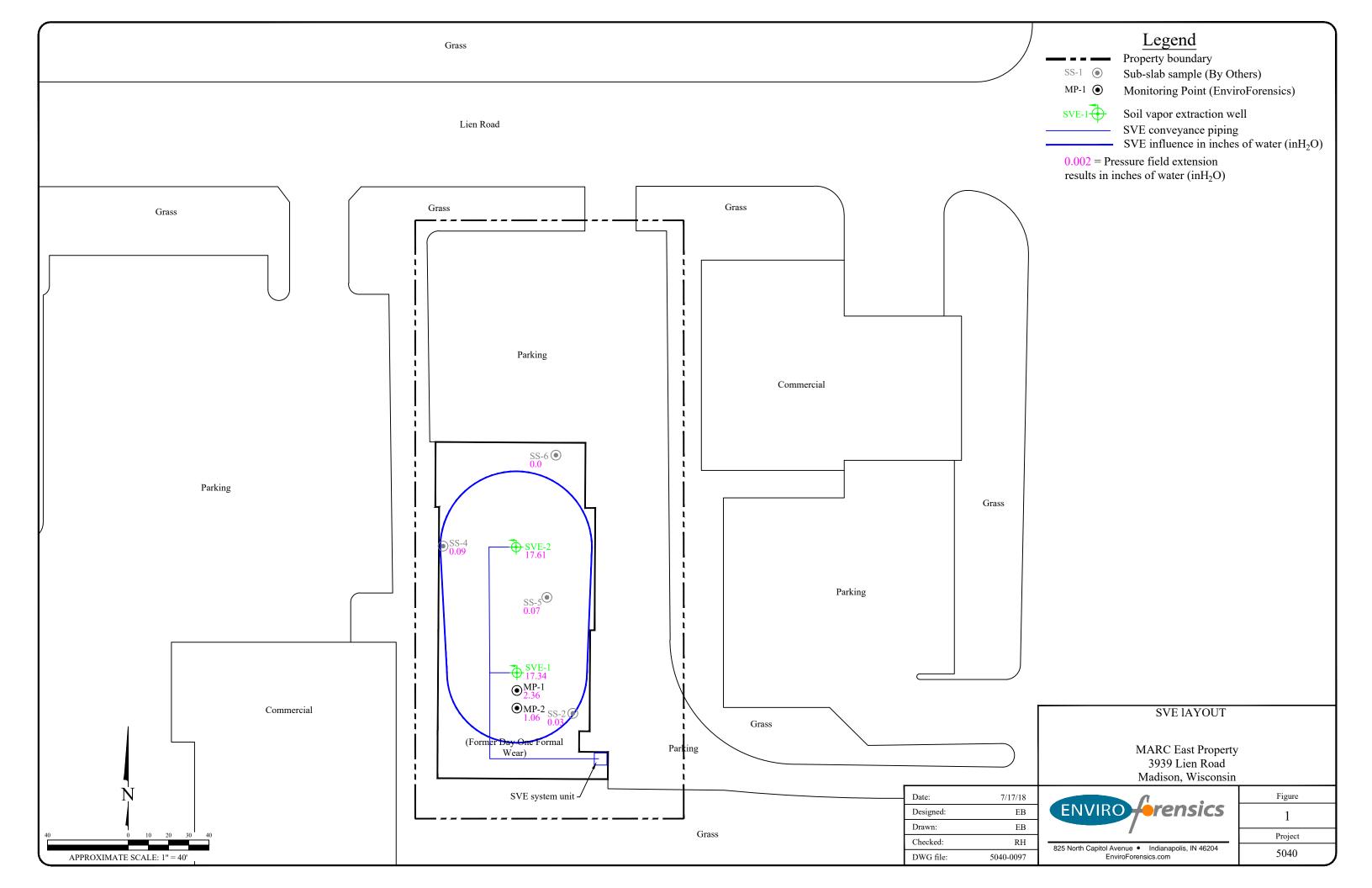
Constituents not presented contained concentration below laboratory reporting limits

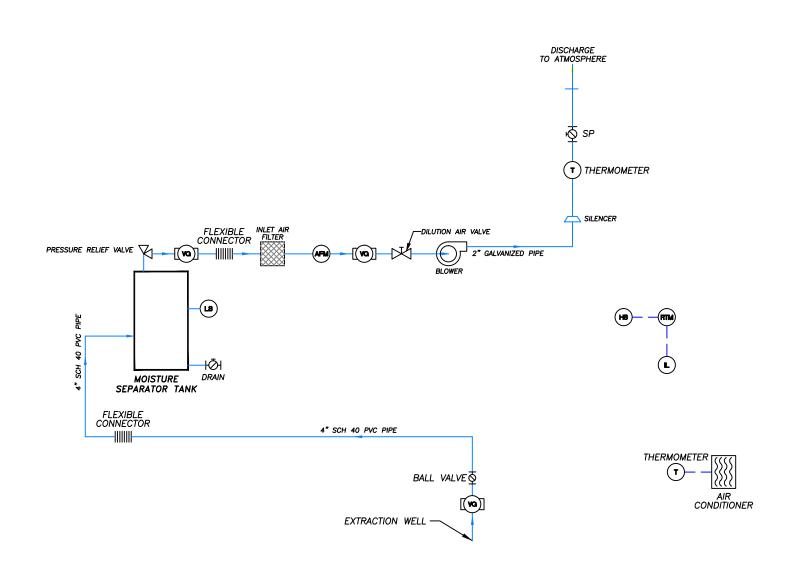
**Bolded** values are above detection limits



# **FIGURES**

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No.	Date	Revision	Approved	
				-8
				Ů



	Date:	7/10/18
-	Designed:	EB
	Drawn:	EB
	Checked:	KVH
	DWG file:	5040-0093

PROCESS AND	INSTRUMENTA	HON DIAGRAM FOR	REMEDIATION SYSTEM

MARC East Property
3939 Lien Road
Madison Wisconsin

Figure
2a
Project
5040

#### VALVE AND PIPING SYMBOLS

₩ GATE VALVE

SOLENOID VALVE

CHECK VALVE

ЮН BALL VALVE

ЮН SAMPLING PORT

EXHAUST TO ATMOSPHERE (INSIDE)

EXHAUST TO ATMOSPHERE (OUTSIDE)

ablaPRESSURE RELIEF VALVE

[(VG)] VACUUM GAUGE

**SILENCER** 

#### DISSOLVED OXYGEN

**ABBREVIATIONS** 

DIFFERENTIAL PRESSURE DP DO FAIL CLOSED
FAIL INDETERMINATE FC FΙ FL FAIL LOCKED FO FAIL OPEN FO FAIL QUANTIFIER HAND OFF - AUTOMATIC HAND SWITCH INDICATOR LIGHT CURRENT-TO-CURRENT CURRENT-TO-HOA HS IL 1/1 I/P **PNEUMATIC** PROGRAM CONTROLLER KC LEVEL CONTROLLER LOWER EXPLOSIVE LIMIT LC LEL LOCAL-REMOTE LS LEVEL SWITCH LSHH LIQUID SWITCH LSL HIGH / LOW

**MOTOR** NORMALLY OPEN NC NORMALLY CLOSED **PRESSURE** ы PRESSURE INDICATOR PRESSURE SWITCH
PRESSURE TRANSMITTER
PRESSURE RELIEF VALVE
PRESSURE SWITCH PS PT PRV PSH - HIGH SIGHT GLASS SAMPLING PORT SG SP

UNIVERSAL ALARM FLOW METER TOTALIZER UA FMT AIR FLOW METER RUNTIME METER RTM

**THERMOMETER** 

### **EQUIPMENT SYMBOLS**



**PUMP** 



**BLOWER** 

#### LINE SYMBOLS

PROCESS PIPES OR CHANNELS

**ELECTRIC SIGNAL** 

COMPRESSED AIR LINE

#### GENERAL INSTRUMENT SYMBOLS

LOCALLY MOUNTED

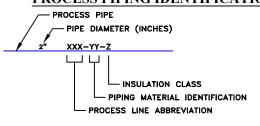
PANEL MOUNTED

REAR-OF-PANEL MOUNTED

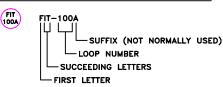
INTERLOCK

**PURGE** 

# PROCESS PIPING IDENTIFICATION



#### INSTRUMENT IDENTIFICATION



$\rightarrow$				
No.	Date	Revision	Approved	114
				ENVIRO Hirensics
				825 North Capitol Avenue . Indianapolis, IN 46204
<u> </u>				EnviroForensics.com

Date:	7/10/18
Designed	EB
Drawn:	EB
Checked:	KVH
DWG file	: 5040-0093



# APPENDIX A

**Soil Sample Laboratory Report** 

Document: 5040-0101

# Synergy Environmental Lab, INC.

1990 Prospect Ct., Appleton, WI 54914 \*P 920-830-2455 \* F 920-733-0631

ROB HOVERMAN ENVIROFORENSICS 825 N. CAPITOL AVENUE INDIANAPOLIS, IN 46204

**Report Date** 14-Mar-18

Project Name MARC INC.(FMR DAY ONE FORMAL) Invoice # E34316

**Project** # 5040 PO#2018-0324

**Lab Code** 5034316A

**Sample ID** 5040-SVE-1 (1-5)

Sample Matrix Soil

**Sample Date** 2/23/2018

	Result	Unit	LOD I	LOQ D	il	Method	Ext Date	Run Date	Analyst	Code
General										
General										
Solids Percent	81.6	%			1	5021		3/7/2018	NJC	1
Organic										
VOC's										
Benzene	< 0.03	mg/kg	0.03	0.096	1	8260B		3/12/2018	CJR	1
Bromobenzene	< 0.025	mg/kg	0.025	0.081	1	8260B		3/12/2018	CJR	1
Bromodichloromethane	< 0.074	mg/kg	0.074	0.24	1	8260B		3/12/2018	CJR	1
Bromoform	< 0.029	mg/kg	0.029	0.092	1	8260B		3/12/2018	CJR	1
tert-Butylbenzene	< 0.026	mg/kg	0.026	0.084	1	8260B		3/12/2018	CJR	1
sec-Butylbenzene	< 0.033	mg/kg	0.033	0.1	1	8260B		3/12/2018	CJR	1
n-Butylbenzene	< 0.04	mg/kg	0.04	0.13	1	8260B		3/12/2018	CJR	1
Carbon Tetrachloride	< 0.016	mg/kg	0.016	0.053	1	8260B		3/12/2018	CJR	1
Chlorobenzene	< 0.013	mg/kg	0.013	0.04	1	8260B		3/12/2018	CJR	1
Chloroethane	< 0.091	mg/kg	0.091	0.29	1	8260B		3/12/2018	CJR	1
Chloroform	< 0.035	mg/kg	0.035	0.11	1	8260B		3/12/2018	CJR	1
Chloromethane	< 0.076	mg/kg	0.076	0.24	1	8260B		3/12/2018	CJR	1
2-Chlorotoluene	< 0.015	mg/kg	0.015	0.047	1	8260B		3/12/2018	CJR	1
4-Chlorotoluene	< 0.018	mg/kg	0.018	0.057	1	8260B		3/12/2018	CJR	1
1,2-Dibromo-3-chloropropane	< 0.058	mg/kg	0.058	0.18	1	8260B		3/12/2018	CJR	1
Dibromochloromethane	< 0.025	mg/kg	0.025	0.079	1	8260B		3/12/2018	CJR	1
1,4-Dichlorobenzene	< 0.037	mg/kg	0.037	0.12	1	8260B		3/12/2018	CJR	1
1,3-Dichlorobenzene	< 0.037	mg/kg	0.037	0.12	1	8260B		3/12/2018	CJR	1
1,2-Dichlorobenzene	< 0.028	mg/kg	0.028	0.088	1	8260B		3/12/2018	CJR	1
Dichlorodifluoromethane	< 0.048	mg/kg	0.048	0.15	1	8260B		3/12/2018	CJR	1
1,2-Dichloroethane	< 0.038	mg/kg	0.038	0.12	1	8260B		3/12/2018	CJR	1
1,1-Dichloroethane	< 0.034	mg/kg	0.034	0.11	1	8260B		3/12/2018	CJR	1
1,1-Dichloroethene	< 0.022	mg/kg	0.022	0.069	1	8260B		3/12/2018	CJR	1
cis-1,2-Dichloroethene	< 0.032	mg/kg	0.032	0.1	1	8260B		3/12/2018	CJR	1
trans-1,2-Dichloroethene	< 0.028	mg/kg	0.028	0.09	1	8260B		3/12/2018	CJR	1

**Proiect** # 5040 PO#2018-0324

**Lab Code** 5034316A

**Sample ID** 5040-SVE-1 (1-5)

	Result	Unit	LOD	LOQ D	il	Method	Ext Date	<b>Run Date</b>	Analyst	Code
1,2-Dichloropropane	< 0.035	mg/kg	0.035	0.11	1	8260B		3/12/2018	CJR	1
1,3-Dichloropropane	< 0.025	mg/kg	0.025	0.079	1	8260B		3/12/2018	CJR	1
trans-1,3-Dichloropropene	< 0.022	mg/kg	0.022	0.068	1	8260B		3/12/2018	CJR	1
cis-1,3-Dichloropropene	< 0.039	mg/kg	0.039	0.12	1	8260B		3/12/2018	CJR	1
Di-isopropyl ether	< 0.01	mg/kg	0.01	0.032	1	8260B		3/12/2018	CJR	1
EDB (1,2-Dibromoethane)	< 0.023	mg/kg	0.023	0.072	1	8260B		3/12/2018	CJR	1
Ethylbenzene	< 0.035	mg/kg	0.035	0.11	1	8260B		3/12/2018	CJR	1
Hexachlorobutadiene	< 0.085	mg/kg	0.085	0.27	1	8260B		3/12/2018	CJR	1
Isopropylbenzene	< 0.034	mg/kg	0.034	0.11	1	8260B		3/12/2018	CJR	1
p-Isopropyltoluene	< 0.029	mg/kg	0.029	0.093	1	8260B		3/12/2018	CJR	1
Methylene chloride	< 0.15	mg/kg	0.15	0.46	1	8260B		3/12/2018	CJR	1
Methyl tert-butyl ether (MTBE)	< 0.05	mg/kg	0.05	0.16	1	8260B		3/12/2018	CJR	1
Naphthalene	< 0.094	mg/kg	0.094	0.3	1	8260B		3/12/2018	CJR	1
n-Propylbenzene	< 0.033	mg/kg	0.033	0.1	1	8260B		3/12/2018	CJR	1
1,1,2,2-Tetrachloroethane	< 0.028	mg/kg	0.028	0.88	1	8260B		3/12/2018	CJR	1
1,1,1,2-Tetrachloroethane	< 0.028	mg/kg	0.028	0.09	1	8260B		3/12/2018	CJR	1
Tetrachloroethene	0.054 "J"	mg/kg	0.032	0.1	1	8260B		3/12/2018	CJR	1
Toluene	< 0.032	mg/kg	0.032	0.1	1	8260B		3/12/2018	CJR	1
1,2,4-Trichlorobenzene	< 0.064	mg/kg	0.064	0.2	1	8260B		3/12/2018	CJR	1
1,2,3-Trichlorobenzene	< 0.066	mg/kg	0.066	0.21	1	8260B		3/12/2018	CJR	1
1,1,1-Trichloroethane	< 0.03	mg/kg	0.03	0.96	1	8260B		3/12/2018	CJR	1
1,1,2-Trichloroethane	< 0.033	mg/kg	0.033	0.11	1	8260B		3/12/2018	CJR	1
Trichloroethene (TCE)	< 0.041	mg/kg	0.041	0.13	1	8260B		3/12/2018	CJR	1
Trichlorofluoromethane	< 0.041	mg/kg	0.041	0.13	1	8260B		3/12/2018	CJR	1
1,2,4-Trimethylbenzene	< 0.025	mg/kg	0.025	0.08	1	8260B		3/12/2018	CJR	1
1,3,5-Trimethylbenzene	< 0.032	mg/kg	0.032	0.1	1	8260B		3/12/2018	CJR	1
Vinyl Chloride	< 0.019	mg/kg	0.019	0.062	1	8260B		3/12/2018	CJR	1
m&p-Xylene	< 0.072	mg/kg	0.072	0.23	1	8260B		3/12/2018	CJR	1
o-Xylene	< 0.044	mg/kg	0.044	0.14	1	8260B		3/12/2018	CJR	1
SUR - Toluene-d8	97	Rec %			1	8260B		3/12/2018	CJR	1
SUR - Dibromofluoromethane	108	Rec %			1	8260B		3/12/2018	CJR	1
SUR - 1,2-Dichloroethane-d4	107	Rec %			1	8260B		3/12/2018	CJR	1
SUR - 4-Bromofluorobenzene	104	Rec %			1	8260B		3/12/2018	CJR	1

**Proiect** # 5040 PO#2018-0324

**Lab Code** 5034316B

**Sample ID** 5040-SVE-1 (5-9)

Sample Date	2/23/2016	Result	Unit	LOD	LOQ	D:I	Method	Ext Data	Dun Data	Analyst	Codo
C 1		Resuit	Unit	LOD	LUQ	ИII	Method	Ext Date	Run Date	Analyst	Code
General											
General											
Solids Percent		91.6	%			1	5021		3/7/2018	NJC	1
Organic											
VOC's											
Benzene		< 0.03	mg/kg	0.03	0.096	5 1	8260B		3/12/2018	CJR	1
Bromobenzene		< 0.025	mg/kg	0.025			8260B		3/12/2018	CJR	1
Bromodichlorometha	ne	< 0.074	mg/kg	0.074			8260B		3/12/2018	CJR	1
Bromoform		< 0.029	mg/kg	0.029			8260B		3/12/2018	CJR	1
tert-Butylbenzene		< 0.026	mg/kg	0.026			8260B		3/12/2018	CJR	1
sec-Butylbenzene		< 0.033	mg/kg	0.033			8260B		3/12/2018	CJR	1
n-Butylbenzene		< 0.04	mg/kg	0.04			8260B		3/12/2018	CJR	1
Carbon Tetrachloride		< 0.016	mg/kg	0.016			8260B		3/12/2018	CJR	1
Chlorobenzene		< 0.013	mg/kg	0.013			8260B		3/12/2018	CJR	1
Chloroethane		< 0.091	mg/kg	0.091			8260B		3/12/2018	CJR	1
Chloroform		< 0.035	mg/kg	0.035			8260B		3/12/2018	CJR	1
Chloromethane		< 0.076	mg/kg	0.076			8260B		3/12/2018	CJR	1
2-Chlorotoluene		< 0.015	mg/kg	0.015			8260B		3/12/2018	CJR	1
4-Chlorotoluene		< 0.018	mg/kg	0.018			8260B		3/12/2018	CJR	1
1,2-Dibromo-3-chlor	opropane	< 0.058	mg/kg	0.058			8260B		3/12/2018	CJR	1
Dibromochlorometha		< 0.025	mg/kg	0.025			8260B		3/12/2018	CJR	1
1,4-Dichlorobenzene		< 0.037	mg/kg	0.037			8260B		3/12/2018	CJR	1
1,3-Dichlorobenzene		< 0.037	mg/kg	0.037			8260B		3/12/2018	CJR	1
1,2-Dichlorobenzene		< 0.028	mg/kg	0.028		3 1	8260B		3/12/2018	CJR	1
Dichlorodifluorometh		< 0.048	mg/kg	0.048			8260B		3/12/2018	CJR	1
1,2-Dichloroethane		< 0.038	mg/kg	0.038	0.12	2 1	8260B		3/12/2018	CJR	1
1,1-Dichloroethane		< 0.034	mg/kg	0.034	0.11	1 1	8260B		3/12/2018	CJR	1
1,1-Dichloroethene		< 0.022	mg/kg	0.022	0.069	9 1	8260B		3/12/2018	CJR	1
cis-1,2-Dichloroether	ne	< 0.032	mg/kg	0.032	0.1	1 1	8260B		3/12/2018	CJR	1
trans-1,2-Dichloroeth	iene	< 0.028	mg/kg	0.028	0.09	9 1	8260B		3/12/2018	CJR	1
1,2-Dichloropropane		< 0.035	mg/kg	0.035	0.11	1 1	8260B		3/12/2018	CJR	1
1,3-Dichloropropane		< 0.025	mg/kg	0.025	0.079	9 1	8260B		3/12/2018	CJR	1
trans-1,3-Dichloropro	opene	< 0.022	mg/kg	0.022	0.068	3 1	8260B		3/12/2018	CJR	1
cis-1,3-Dichloroprop	ene	< 0.039	mg/kg	0.039	0.12	2 1	8260B		3/12/2018	CJR	1
Di-isopropyl ether		< 0.01	mg/kg	0.01	0.032	2 1	8260B		3/12/2018	CJR	1
EDB (1,2-Dibromoet	hane)	< 0.023	mg/kg	0.023	0.072	2 1	8260B		3/12/2018	CJR	1
Ethylbenzene		< 0.035	mg/kg	0.035	0.11	1 1	8260B		3/12/2018	CJR	1
Hexachlorobutadiene		< 0.085	mg/kg	0.085	0.27	7 1	8260B		3/12/2018	CJR	1
Isopropylbenzene		< 0.034	mg/kg	0.034	0.11	1 1	8260B		3/12/2018	CJR	1
p-Isopropyltoluene		< 0.029	mg/kg	0.029	0.093	3 1	8260B		3/12/2018	CJR	1
Methylene chloride		< 0.15	mg/kg	0.15	0.46	5 1	8260B		3/12/2018	CJR	1
Methyl tert-butyl ethe	er (MTBE)	< 0.05	mg/kg	0.05	0.16	5 1	8260B		3/12/2018	CJR	1
Naphthalene		< 0.094	mg/kg	0.094	0.3	3 1	8260B		3/12/2018	CJR	1
n-Propylbenzene		< 0.033	mg/kg	0.033	0.1	1 1	8260B		3/12/2018	CJR	1
1,1,2,2-Tetrachloroet	hane	< 0.028	mg/kg	0.028	0.88	3 1	8260B		3/12/2018	CJR	1
1,1,1,2-Tetrachloroet	hane	< 0.028	mg/kg	0.028	0.09	9 1	8260B		3/12/2018	CJR	1
Tetrachloroethene		< 0.032	mg/kg	0.032	0.1	1 1	8260B		3/12/2018	CJR	1
Toluene		< 0.032	mg/kg	0.032	0.1	1 1	8260B		3/12/2018	CJR	1
1,2,4-Trichlorobenze	ne	< 0.064	mg/kg	0.064	0.2	2 1	8260B		3/12/2018	CJR	1
1,2,3-Trichlorobenze	ne	< 0.066	mg/kg	0.066	0.21	1 1	8260B		3/12/2018	CJR	1
1,1,1-Trichloroethane	e	< 0.03	mg/kg	0.03	0.96	5 1	8260B		3/12/2018	CJR	1

**Proiect** # 5040 PO#2018-0324

**Lab Code** 5034316B

**Sample ID** 5040-SVE-1 (5-9)

	Result	Unit	LOD I	LOQ D	il	Method	Ext Date	Run Date	Analyst	Code
1,1,2-Trichloroethane	< 0.033	mg/kg	0.033	0.11	1	8260B		3/12/2018	CJR	1
Trichloroethene (TCE)	< 0.041	mg/kg	0.041	0.13	1	8260B		3/12/2018	CJR	1
Trichlorofluoromethane	< 0.041	mg/kg	0.041	0.13	1	8260B		3/12/2018	CJR	1
1,2,4-Trimethylbenzene	< 0.025	mg/kg	0.025	0.08	1	8260B		3/12/2018	CJR	1
1,3,5-Trimethylbenzene	< 0.032	mg/kg	0.032	0.1	1	8260B		3/12/2018	CJR	1
Vinyl Chloride	< 0.019	mg/kg	0.019	0.062	1	8260B		3/12/2018	CJR	1
m&p-Xylene	< 0.072	mg/kg	0.072	0.23	1	8260B		3/12/2018	CJR	1
o-Xylene	< 0.044	mg/kg	0.044	0.14	1	8260B		3/12/2018	CJR	1
SUR - 1,2-Dichloroethane-d4	95	Rec %			1	8260B		3/12/2018	CJR	1
SUR - 4-Bromofluorobenzene	108	Rec %			1	8260B		3/12/2018	CJR	1
SUR - Dibromofluoromethane	104	Rec %			1	8260B		3/12/2018	CJR	1
SUR - Toluene-d8	96	Rec %			1	8260B		3/12/2018	CJR	1

**Proiect** # 5040 PO#2018-0324

**Lab Code** 5034316C

**Sample ID** 5040-SVE-1 (9-13)

Sample Date 2/23/2	Result	Unit	LOD	LOQ 1	D:I	Method	Evt Doto	Dun Doto	Analyst	Codo
0 1	Result	Unit	LOD	LUQ I	DΙΙ	Method	Ext Date	Run Date	Analyst	Code
General										
General										
Solids Percent	94.2	%			1	5021		3/7/2018	NJC	1
Organic										
VOC's										
Benzene	< 0.03	mg/kg	0.03	0.096	1	8260B		3/12/2018	CJR	1
Bromobenzene	< 0.025	mg/kg	0.025	0.081		8260B		3/12/2018	CJR	1
Bromodichloromethane	< 0.074	mg/kg	0.074	0.24		8260B		3/12/2018	CJR	1
Bromoform	< 0.029	mg/kg	0.029	0.092	1	8260B		3/12/2018	CJR	1
tert-Butylbenzene	< 0.026	mg/kg	0.026	0.084		8260B		3/12/2018	CJR	1
sec-Butylbenzene	< 0.033	mg/kg	0.033	0.1	1	8260B		3/12/2018	CJR	1
n-Butylbenzene	< 0.04	mg/kg	0.04	0.13	1	8260B		3/12/2018	CJR	1
Carbon Tetrachloride	< 0.016	mg/kg	0.016	0.053	1	8260B		3/12/2018	CJR	1
Chlorobenzene	< 0.013	mg/kg	0.013	0.04	1	8260B		3/12/2018	CJR	1
Chloroethane	< 0.091	mg/kg	0.091	0.29	1	8260B		3/12/2018	CJR	1
Chloroform	< 0.035	mg/kg	0.035	0.11	1	8260B		3/12/2018	CJR	1
Chloromethane	< 0.076	mg/kg	0.076	0.24	1	8260B		3/12/2018	CJR	1
2-Chlorotoluene	< 0.015	mg/kg	0.015	0.047	1	8260B		3/12/2018	CJR	1
4-Chlorotoluene	< 0.018	mg/kg	0.018	0.057	1	8260B		3/12/2018	CJR	1
1,2-Dibromo-3-chloropropan	e < 0.058	mg/kg	0.058	0.18	1	8260B		3/12/2018	CJR	1
Dibromochloromethane	< 0.025	mg/kg	0.025	0.079	1	8260B		3/12/2018	CJR	1
1,4-Dichlorobenzene	< 0.037	mg/kg	0.037	0.12	1	8260B		3/12/2018	CJR	1
1,3-Dichlorobenzene	< 0.037	mg/kg	0.037	0.12	1	8260B		3/12/2018	CJR	1
1,2-Dichlorobenzene	< 0.028	mg/kg	0.028	0.088	1	8260B		3/12/2018	CJR	1
Dichlorodifluoromethane	< 0.048	mg/kg	0.048	0.15	1	8260B		3/12/2018	CJR	1
1,2-Dichloroethane	< 0.038	mg/kg	0.038	0.12	1	8260B		3/12/2018	CJR	1
1,1-Dichloroethane	< 0.034	mg/kg	0.034	0.11	1	8260B		3/12/2018	CJR	1
1,1-Dichloroethene	< 0.022	mg/kg	0.022	0.069	1	8260B		3/12/2018	CJR	1
cis-1,2-Dichloroethene	< 0.032	mg/kg	0.032	0.1	1	8260B		3/12/2018	CJR	1
trans-1,2-Dichloroethene	< 0.028	mg/kg	0.028	0.09	1	8260B		3/12/2018	CJR	1
1,2-Dichloropropane	< 0.035	mg/kg	0.035	0.11	1	8260B		3/12/2018	CJR	1
1,3-Dichloropropane	< 0.025	mg/kg	0.025	0.079	1	8260B		3/12/2018	CJR	1
trans-1,3-Dichloropropene	< 0.022	mg/kg	0.022	0.068	1	8260B		3/12/2018	CJR	1
cis-1,3-Dichloropropene	< 0.039	mg/kg	0.039	0.12	1	8260B		3/12/2018	CJR	1
Di-isopropyl ether	< 0.01	mg/kg	0.01	0.032	1	8260B		3/12/2018	CJR	1
EDB (1,2-Dibromoethane)	< 0.023	mg/kg	0.023	0.072	1	8260B		3/12/2018	CJR	1
Ethylbenzene	< 0.035	mg/kg	0.035	0.11	1	8260B		3/12/2018	CJR	1
Hexachlorobutadiene	< 0.085	mg/kg	0.085	0.27	1	8260B		3/12/2018	CJR	1
Isopropylbenzene	< 0.034	mg/kg	0.034	0.11	1	8260B		3/12/2018	CJR	1
p-Isopropyltoluene	< 0.029	mg/kg	0.029	0.093	1	8260B		3/12/2018	CJR	1
Methylene chloride	< 0.15	mg/kg	0.15	0.46	1	8260B		3/12/2018	CJR	1
Methyl tert-butyl ether (MTE	3E) < 0.05	mg/kg	0.05	0.16	1	8260B		3/12/2018	CJR	1
Naphthalene	< 0.094	mg/kg	0.094	0.3	1	8260B		3/12/2018	CJR	1
n-Propylbenzene	< 0.033	mg/kg	0.033	0.1	1	8260B		3/12/2018	CJR	1
1,1,2,2-Tetrachloroethane	< 0.028	mg/kg	0.028	0.88	1	8260B		3/12/2018	CJR	1
1,1,1,2-Tetrachloroethane	< 0.028	mg/kg	0.028	0.09	1	8260B		3/12/2018	CJR	1
Tetrachloroethene	< 0.032	mg/kg	0.032	0.1	1	8260B		3/12/2018	CJR	1
Toluene	< 0.032	mg/kg	0.032	0.1		8260B		3/12/2018	CJR	1
1,2,4-Trichlorobenzene	< 0.064	mg/kg	0.064	0.2		8260B		3/12/2018	CJR	1
1,2,3-Trichlorobenzene	< 0.066	mg/kg	0.066	0.21		8260B		3/12/2018	CJR	1
1,1,1-Trichloroethane	< 0.03	mg/kg	0.03	0.96	1	8260B		3/12/2018	CJR	1

**Proiect** # 5040 PO#2018-0324

**Lab Code** 5034316C

**Sample ID** 5040-SVE-1 (9-13)

**Sample Matrix** Soil **Sample Date** 2/23/2018

	Result	Unit	LOD I	LOQ D	il	Method	Ext Date	<b>Run Date</b>	Analyst	Code
1,1,2-Trichloroethane	< 0.033	mg/kg	0.033	0.11	1	8260B		3/12/2018	CJR	1
Trichloroethene (TCE)	< 0.041	mg/kg	0.041	0.13	1	8260B		3/12/2018	CJR	1
Trichlorofluoromethane	< 0.041	mg/kg	0.041	0.13	1	8260B		3/12/2018	CJR	1
1,2,4-Trimethylbenzene	< 0.025	mg/kg	0.025	0.08	1	8260B		3/12/2018	CJR	1
1,3,5-Trimethylbenzene	< 0.032	mg/kg	0.032	0.1	1	8260B		3/12/2018	CJR	1
Vinyl Chloride	< 0.019	mg/kg	0.019	0.062	1	8260B		3/12/2018	CJR	1
m&p-Xylene	< 0.072	mg/kg	0.072	0.23	1	8260B		3/12/2018	CJR	1
o-Xylene	< 0.044	mg/kg	0.044	0.14	1	8260B		3/12/2018	CJR	1
SUR - Toluene-d8	95	Rec %			1	8260B		3/12/2018	CJR	1
SUR - 1,2-Dichloroethane-d4	100	Rec %			1	8260B		3/12/2018	CJR	1
SUR - 4-Bromofluorobenzene	108	Rec %			1	8260B		3/12/2018	CJR	1
SUR - Dibromofluoromethane	105	Rec %			1	8260B		3/12/2018	CJR	1

<sup>&</sup>quot;J" Flag: Analyte detected between LOD and LOQ

LOD Limit of Detection

LOQ Limit of Quantitation

Code Comment

Laboratory QC within limits.

All solid sample results reported on a dry weight basis unless otherwise indicated. All LOD's and LOQ's are adjusted for dilutions but not dry weight. Subcontracted results are denoted by SUB in the analyst field.

Michaelyllul

**Authorized Signature** 

CHAIN OF STODY RECORD

Synergy

Environmental Lab, Inc.

1990 Prospect Ct. • Appleton, WI 54914 920-830-2455 • FAX 920-733-0631

PO# 2018-0324

5040

Account No.: Project #:

Lab I.D. #

Sampler: (signature)

Quote No.:

Chain # Nº 2960

Page / of

(Rushes accepted only with prior authorization) Rush Analysis Date Required Sample Handling Request

X Normal Turn Around

Reports To: R. Hoverman / K. Varde Heightwoice To:	LAMAIN /	K. Vac	de H	Invo	ice To:															
Company Enviratoratics , LLC	צוכצ ירת			Com	Company										30	90				
Address W2339 Stone Ridge Dr. Suiter Address	No Rida	e DC	Suite	Add	ress									3		יסרור		-		
City State Zip (Uaukesha, Lu) 53188	ha, tel	53(	308	City	City State Zip	р		17.74												
Phone (262) 290-408)	10-40	10		Phone	ne			Vision	200	-			(02							
FAX				FAX				Mary					28 A		3					PID/
Lablid. Sa	Sample I.D.	Colle	Collection Date Time	Comp Grab	Grab	Filtered Y/N	No. of Containers	Sample Type (Matrix)*	Preservation	DRO (M	LEAD	NITRATIN OIL & GI	PCB PAH (EP	PVOC (E	SULFAT	YOC DW	VOC (EF	100		
D 5040-50E-1 (1-5) 2/23 1025	(5-1) 1-	2/23	1025		X	Z	7	S	MedH					-	- 10	1	×			
R 3040-SVE-1(5-9) 2/23 1040	-1(5-9)	2/23	1040		×	2	2	S	Meat					9			×	1990		
C 5040-5VE-1 (9-13) 7/23 1050	1 (9-13)	2423	080		×	2	1	V	MeGH				0				X	-		
																		100		
Comments/Special Instructions (*Specify groundwater "GW", Drinking Water	ructions (*{	Specify	ground	water "	GW", [	Vrinking M		Vaste Water	"DW", Waste Water "WW", Soil "S", Air "A", Oil, Sludge etc.)	, Air "	ı", Oil	Sludi	je etc.	_						

Sample Integrity - To be completed by receiving lab. Method of Shipment: "C On Ice: X Cooler seal intact upon receipt: X Yes Temp. of Temp. Blank

Received in Laboratory By:

Date

Time 200

Relinquished By: (sign)

307

8:00

Time:

Date: 3/1/8



# APPENDIX B

**Waste Manifest** 

Document: 5040-0101

	<b>^</b>	NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number	6396	2. Page 1 of	3. Emergency Respo	nse Phone		racking Nu	mber		
		5. Generator's Name and Mail				Generator's Site Addr	ress (if different				-	
		Generator's Phone: 6. Transporter 1 Company Nar						<b>3</b>	,			
		TRADERE TRANS	PORTATION LLC					U.S. EPA ID		A.		
		7. Transporter 2 Company Nar	ne					U.S. EPA ID	Number			
	30 4 658	8. Designated Facility Name at I I I I I I I I I I I I I I I I I I	MENT & DECVILI K STREET	1865 OF 1875 424-7760-95	75			U.S. EPA ID				
		9. Waste Shipping Nam	e and Description	*		10. Co	ntainers	11. Total	12. Unit			
		Marka specifica a	TED MATERIAL			No.	Туре	Quantity	Wt./Vol.			
CENTON	NERAIO	2.	THE PROPERTY OF THE PARTY OF TH			005	DM	275	Common .			
	5											
		3.									,	
		4.										
	1	3. Special Handling Instructions	and Additional Information									
	14	4. GENERATOR'S/OFFEROR'	S CERTIFICATION: I hereby d d, and are in all respects in pro	declare that the contents of this copper condition for transport accord	onsignment are ding to applicab	fully and accurately de le international and nat	scribed above b	y the proper ship	ping name, a	and are classifie	ed, packa	aged,
*		- Kajle	ed Name		Signat	ture ,				Month	Day	Year
INT		i. International Shipments	Import to U.S.		xport from U.S	. Port of er	otn/ovite			U	4 1	1 miles
_	Tra 16	ansporter Signature (for exports Transporter Acknowledgment	of Receipt of Materials			Date leav						
RTE	Tra	ansporter 1 Printed/Typed Nam	e magen for from		Signat	uro de de	- COLON STATE OF					
TRANSPORTER	Tra	ansporter 2 Printed/Typed Nami	e e	)	Signati	400 5	Section of the last the sections of the last the sections of the section o	No. of Contract of		Month Month Month	Day Day	Year Year
_	17.	Discrepancy								1 1	- ",	
	17a	a. Discrepancy Indication Space	LLJ Quantity	Type		Residue		Partial Reject	ion	☐ Fi	ull Reject	tion
FACILITY	17b	o. Alternate Facility (or Generate	or)			Manifest Reference N		U.S. EPA ID Nu	mber			
		ility's Phone:										
NAIE	17c.	. Signature of Alternate Facility	(or Generator)							Month	Day	Year
DESIGNA												
	18. [	Designated Facility Owner or O	perator: Certification of receipt	of materials covered by the mani	fest except as r	noted in Itom 170	A. A.				-	
1	Print	ted/Typed Name		and the state of t	Signatur			1		Month	Day	Year



# **APPENDIX C**

**SVE System Commissioning Laboratory Reports** 

Document: 5040-0101



1441 Sadlier Circle West Drive Indianapolis, IN 46239 Ph: 317-351-0885 Fax: 317-351-0882 www.envision-air.com

Mr. Brian Kappen Enviroforensics N16 W. 23390 Stone Ridge Dr Suite G Waukesha, WI 53188

April 23, 2018

EnvisionAir Project Number: 2018-260

Client Project Name: 5040

Dear Mr. Kappen,

Please find the attached analytical report for the samples received April 18, 2018. All test methods performed were fully compliant with local, state, and federal EPA methods unless otherwise noted. The project was analyzed as requested on the enclosed chain of custody record. Please review the comments section for additional information about your results or Quality Control data.

Feel free to contact me if you have any questions or comments regarding your analytical report or service.

Thank you for your business. EnvisionAir looks forward to working with you on your next project.

Yours Sincerely,

Stanley A Hunnicutt

Stanly a. Hunnicutt

Project Manager EnvisionAir, LLC



1441 Sadlier Circle West Drive Indianapolis, IN 46239 Ph: 317-351-0885 Fax: 317-351-0882

www.envision-air.com

Client Name: ENVIROFORENSICS

Project ID: 5040

Client Project Manager: KYLE VANDER HEIDEN

EnvisionAir Project Number: 2018-260

#### Sample Summary

Canister Pressure / Vacuum

			START	START							<u>Lab</u>
			Date	Time	End Date	End Time	Date	Time	Initial Field	Final Field	Received
Laboratory Sample Number:	Sample Description:	Matrix:	Collected:	Collected:	Collected:	Collected:	Received:	Received	(in. Hg)	(in. Hg)	(in. Hg)
18-1146	5040-SVE-EX	Α	4/13/18	14:54	4/13/18	14:59	4/18/18	10:40	-27	-2	-2



1441 Sadlier Circle West Drive Indianapolis, IN 46239 Ph: 317-351-0885 Fax: 317-351-0882 www.envision-air.com

Client Name: ENVIROFORENSICS

Project ID: 5040

Client Project Manager: KYLE VANDER HEIDEN

**EnvisionAir Project Number:** 2018-260

Analytical Method: TO-15
Analytical Batch: 041918CAIR

Client Sample ID: 5040-SVE-EX Sample Collection START Date/Time: 4/13/18 14:54

Sample Collection END Date/Time: 4/13/18 14:59

Envision Sample Number: 18-1146 Sample Received Date/Time: 4/18/18 10:40

Sample Matrix: AIR

Compounds	Sample Results ug/m <sup>3</sup>	Reporting Limit ug/m <sup>3</sup>	<u>Flag</u>
cis-1,2-Dichloroethene	< 198	198	
Tetrachloroethene	5,060	128	1
trans-1,2-Dichloroethene	< 396	396	
Trichloroethene	47.8	10.7	
Vinyl Chloride	< 12.8	12.8	
4-bromofluorobenzene (surro	ogate) 106%		
Analysis Date/Time:	4-21-18/01:45		
Analyst Initials	tjg		



1441 Sadlier Circle West Drive Indianapolis, IN 46239 Ph: 317-351-0885 Fax: 317-351-0882 www.envision-air.com

Analytical Report

#### **TO-15 Quality Control Data**

EnvisionAir Batch Number: 041918CAIR

Method Blank (MB):	MB Results (ppbv)	Reporting Limit (ppbv)	<u>Flags</u>
cis-1,2-Dichloroethene	< 5	5	
Tetrachloroethene	< 0.47	0.47	
trans-1,2-Dichloroethene	< 10	10	
Trichlorethene	< 0.2	0.2	
Vinyl Chloride	< 0.5	0.5	
4-bromofluorobenzene (surrogate)	86%		
Analysis Date/Time:	4-20-18/17:19		
Analyst Initials	tjg		

			LCS/D	LCS	LCSD		
LCS/LCSD	LCS Results (ppbv)	LCSD Results (ppbv)	Conc(ppbv)	Rec.	Rec.	<u>RPD</u>	Flag
Vinyl Chloride	10.6	10.4	10	106%	104%	1.9%	
trans-1,2-Dichloroethene	9.29	8.72	10	93%	87%	6.3%	
cis-1,2-Dichloroethene	9.54	9.22	10	95%	92%	3.4%	
Trichloroethene	9.21	9.53	10	92%	95%	3.4%	
Tetrachloroethene	8.07	8.33	10	81%	83%	3.2%	
4-bromofluorobenzene (surrogate)	105%	113%					
Analysis Date/Time:	4-20-18/16:04	4-20-18/18:35					
Analyst Initials	tjg	tjg					



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Flag Number

**Comments** 

1

Reported value is from a 40x dilution. TJG 4/23/18

# **CHAIN OF CUSTODY RECORD**

EnvisionAir | 1441Sadlier Circle West Drive | Indianapolis, IN 46239 | Phone: (317) 351-0885 | Fax: (317) 351-0882

Client: Enviraforensis, LL	777	_	lumber: 7	P.O. Number: 2018-0549	उपव				10.0	ne,			
Report Nik W23390 store Ridge Un- Address: Suite & Address: Conchestra, Lot 53888	a Rigeld		Project Name or Number: 5040	Number:		¥	KEQUESTED PARAMETERS	PARAME	IERS	tanen			
Report To: Ander Heiden / R.		1	Sampled by: KL				/3	IN IN					
+ -/	301		Required Lev	QA/QC Required: (circle if applicable) Level III Level IV	applicable)		(loads)				>	2	NAISIONAIN
Invoice Address:	s, E	Report	ting Units 1	Reporting Units needed: (circle)	de) PPMV	SIT IM	isi I roll			Nest.			
Desired TAT: (Please Circle One)  1 day 2 days 3 days Std (5 bus. days)	bus. days)	Media type:	e: 1LC = 1 Liter 6LC = 6 Liter TB = Tedlar TD = Therm	9: 1LC = 1 Liter Canister 6LC = 6 Liter Canister TB = Tediar Bag TD = Thermal Desorption Tube	a	SSI-OU ISI-OU	55,04		Sub-Stab:	Canister	WWW.envision- Canister Pressure / Vacuum	www.envision-air.com	шо
Air Sample ID	Media Type (see code above)	Coll. Date (Grab/Comp	Coll. Time (Grab/Comp Start)	Coll.  Date (Comp. End)	Coll. Time			Canister Serial #	Flow Controller Serial #	Initial Field (in. Hg)	Final Field (in. Hg)	Lab Received (in. Hg)	EnvisionAir Sample Number
SOHO-SVE-EX	771	4/13/18	HSH	4/13/18	1459	×		2235	4100	#2-	7-	-2	18-1146
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					-								
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Comments: CVGC S	huo		<i>y</i>						-				
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1441 Sadlier Circle West Drive Indianapolis, IN 46239 Ph: 317-351-0885 Fax: 317-351-0882 www.envision-air.com

Mr. Rob Hoverman Enviroforensics N16 W. 23390 Stone Ridge Dr Suite G Waukesha, WI 53188

May 2, 2018

EnvisionAir Project Number: 2018-270

Client Project Name: 5040

Dear Mr. Hoverman,

Please find the attached analytical report for the samples received April 24, 2018. All test methods performed were fully compliant with local, state, and federal EPA methods unless otherwise noted. The project was analyzed as requested on the enclosed chain of custody record. Please review the comments section for additional information about your results or Quality Control data.

Feel free to contact me if you have any questions or comments regarding your analytical report or service.

Thank you for your business. EnvisionAir looks forward to working with you on your next project.

Yours Sincerely,

Stanley A Hunnicutt

Stanly a. Hunnicutt

Project Manager EnvisionAir, LLC



1441 Sadlier Circle West Drive Indianapolis, IN 46239 Ph: 317-351-0885 Fax: 317-351-0882

www.envision-air.com

Client Name: ENVIROFORENSICS

Project ID: 5040

Client Project Manager: ROB HOVERMAN

EnvisionAir Project Number: 2018-270

#### Sample Summary

Canister Pressure / Vacuum

			START	START							<u>Lab</u>
			Date	<u>Time</u>	End Date	End Time	Date	Time	Initial Field	Final Field	Received
Laboratory Sample Number:	Sample Description:	Matrix:	Collected:	Collected:	Collected:	Collected:	Received:	Received	(in. Hg)	(in. Hg)	(in. Hg)
18-1165	5040-SVE-EX	Α	4/17/18	14:56	4/17/18	15:01	4/24/18	12:25	-32	-3	-3



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**Client Name: ENVIROFORENSICS** 

Project ID: 5040

**Client Project Manager: ROB HOVERMAN** 

**EnvisionAir Project Number:** 2018-270

**Analytical Method:** TO-15 **Analytical Batch:** 050118AIR

**Client Sample ID:** 5040-SVE-EX Sample Collection START Date/Time: 4/17/18 14:56

Sample Collection END Date/Time: 4/17/18 15:01 Sample Received Date/Time: 4/24/18 12:25

**Envision Sample Number:** 18-1165 AIR

Sample Matrix:

<u>Compounds</u>	Sample Results ug/m <sup>3</sup>	Reporting Limit ug/m <sup>3</sup>	<u>Flag</u>
cis-1,2-Dichloroethene	< 198	198	
Tetrachloroethene	851	31.9	
trans-1,2-Dichloroethene	< 396	396	
Trichloroethene	26.3	10.7	
Vinyl Chloride	< 12.8	12.8	
4-bromofluorobenzene (surro	gate) 89%		
Analysis Date/Time	5-1-18/15:19		

Analysis Date/Time: 5-1-18/15:19 Analyst Initials tjg



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Analytical Report

#### **TO-15 Quality Control Data**

EnvisionAir Batch Number: 050118AIR

Method Blank (MB):	MB Results (ppbv)	Reporting Limit (ppbv)	<u>Flags</u>
cis-1,2-Dichloroethene	< 5	5	
Tetrachloroethene	< 0.47	0.47	
trans-1,2-Dichloroethene	< 10	10	
Trichlorethene	< 0.2	0.2	
Vinyl Chloride	< 0.5	0.5	
4-bromofluorobenzene (surrogate)	82%		
Analysis Date/Time:	5-1-18/10:59		
Analyst Initials	tjg		

			LCS/D	LCS	LCSD		
LCS/LCSD	LCS Results (ppbv)	LCSD Results (ppbv)	Conc(ppbv)	Rec.	Rec.	<u>RPD</u>	Flag
Vinyl Chloride	9.18	9.61	10	92%	96%	4.6%	
trans-1,2-Dichloroethene	10.4	10.6	10	104%	106%	1.9%	
cis-1,2-Dichloroethene	10.1	10.4	10	101%	104%	2.9%	
Trichloroethene	9.73	10.5	10	97%	105%	7.6%	
Tetrachloroethene	10.6	11.6	10	106%	116%	9.0%	
4-bromofluorobenzene (surrogate)	91%	89%					
Analysis Date/Time:	5-1-18/09:04	5-1-18/09:44					
Analyst Initials	tjg	tjg					



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Flag Number Comments

# **CHAIN OF CUSTODY RECORD**

EnvisionAir | 1441Sadlier Circle West Drive | Indianapolis, IN 46239 | Phone: (317) 351-0885 | Fax: (317) 351-0882

Client: Ehuita Forensick, LLC	20.2	P.O. N	umber: 7	P.O. Number: 2018-0549	549					Г			
Report Alk W23393 Stock Robe Project Name or Number:	Here Ridge	Project	t Name or	Number:			REQUES	REQUESTED PARAMETERS	ETERS				
Address: Outter	W 53188	Ñ	5040					/	//	1	t the		
Report To:	K. Vander Heide		Sampled by: $ \not \!$	/	200		\	\		1			DIVIN
Phone: (2262)		QA/QC	Required:	QA/QC Required: (circle if applicable)	applicable)		/	/	<b>/</b>			2	MENDICIANI
Invoice Address:		Report ug/m	ing Units r	Reporting Units needed: (arde)	cle)		RIL HORR		Soil-Gas: A				
Desired TAT: (Please Circle One)  1 day 2 days 3 days Std (5 bus. days)	bus. days)	Media type:	: 1LC = 1 Liter 6LC = 6 Liter TB = Tedlar TD = Therm	1LC = 1 Liter Canister 6LC = 6 Liter Canister TB = Tediar Bag TD = Thermal Desorption Tube	ø	17.01	1 ( 51 02		: *	Canister	WWW.ENVISION-: Canister Pressure / Vacuum	www.envision-air.com ressure / Vacuum	uo O
Air Sample ID	Media Type	Coll.  Date (Grab/Comp Start)	Coll. Time (Grab/Comp Start)	Coll.  Date (comp. find)	Coll. Time			Canister Serial #	Flow Controller Serial #	Initial Field (in. Hg)	Final Field (in. Hg)	Lab Received (in. Hg)	EnvisionAir Sample Number
5040-SVE-EX	F	4/17	1456	4/14	150		×	15048	9400	-32	-3	13	18.1165
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1441 Sadlier Circle West Drive Indianapolis, IN 46239 Ph: 317-351-0885 Fax: 317-351-0882 www.envision-air.com

Mr. Kyle Vander Heiden Enviroforensics N16 W. 23390 Stone Ridge Dr Suite G Waukesha, WI 53188

May 25, 2018

EnvisionAir Project Number: 2018-305

Client Project Name: 5040

Dear Mr. Vander Heiden,

Please find the attached analytical report for the samples received May 15, 2018. All test methods performed were fully compliant with local, state, and federal EPA methods unless otherwise noted. The project was analyzed as requested on the enclosed chain of custody record. Please review the comments section for additional information about your results or Quality Control data.

Feel free to contact me if you have any questions or comments regarding your analytical report or service.

Thank you for your business. EnvisionAir looks forward to working with you on your next project.

Yours Sincerely,

Stanley A Hunnicutt

Stanly a. Hunnicutt

Project Manager EnvisionAir, LLC



1441 Sadlier Circle West Drive Indianapolis, IN 46239 Ph: 317-351-0885 Fax: 317-351-0882

www.envision-air.com

Client Name: ENVIROFORENSICS

Project ID: 5040

Client Project Manager: KYLE VANDERHEIDEN

EnvisionAir Project Number: 2018-305

## Sample Summary

Canister Pressure / Vacuum

			START	START							<u>Lab</u>
			Date	Time	End Date	End Time	Date	Time	Initial Field	Final Field	Received
Laboratory Sample Number:	Sample Description:	Matrix:	Collected:	Collected:	Collected:	Collected:	Received:	Received	(in. Hg)	(in. Hg)	(in. Hg)
18-1260	5040-SVE-EX	Α	5/11/18	14:09	5/11/18	14:15	5/15/18	11:05	-29	-2	-2



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Client Name: ENVIROFORENSICS

Project ID: 5040

Client Project Manager: KYLE VANDERHEIDEN

**EnvisionAir Project Number:** 2018-305

Analytical Method: TO-15
Analytical Batch: 052118CAIR

Client Sample ID: 5040-SVE-EX Sample Collection START Date/Time: 5/11/18 14:09

Sample Collection END Date/Time: 5/11/18 14:15

Envision Sample Number: 18-1260 Sample Received Date/Time: 5/15/18 11:05

Sample Matrix: AIR

Compounds	Sample Results ug/m <sup>3</sup>	Reporting Limit ug/m <sup>3</sup>	<u>Flag</u>
cis-1,2-Dichloroethene	< 198	198	
Tetrachloroethene	248	31.9	
trans-1,2-Dichloroethene	< 396	396	
Trichloroethene	< 10.7	10.7	
Vinyl Chloride	< 12.8	12.8	
4-bromofluorobenzene (surro	gate) 101%		
Analysis Date/Time:	5-23-18/08:46		
Analyst Initials	tjg		



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Analytical Report

## **TO-15 Quality Control Data**

EnvisionAir Batch Number: 052118AIR

Method Blank (MB):	MB Results (ppbv)	Reporting Limit (ppbv)	<u>Flags</u>
cis-1,2-Dichloroethene	< 5	5	
Tetrachloroethene	< 0.47	0.47	
trans-1,2-Dichloroethene	< 10	10	
Trichlorethene	< 0.2	0.2	
Vinyl Chloride	< 0.5	0.5	
4-bromofluorobenzene (surrogate)	84%		
Analysis Date/Time:	5-23-18/00:37		
Analyst Initials	tjg		

		LCS/D	LCS	LCSD		
LCS Results (ppbv)	LCSD Results (ppbv)	Conc(ppbv)	Rec.	Rec.	<u>RPD</u>	<u>Flag</u>
9.18	9.23	10	92%	92%	0.5%	
11	11.1	10	110%	111%	0.9%	
10.7	10.9	10	107%	109%	1.9%	
9.72	9.96	10	97%	100%	2.4%	
10.3	10.7	10	103%	107%	3.8%	
105%	104%					
5-22-18/22:41	5-22-18/23:22					
tjg	tjg					
	9.18 11 10.7 9.72 10.3 105% 5-22-18/22:41	9.18       9.23         11       11.1         10.7       10.9         9.72       9.96         10.3       10.7         105%       104%         5-22-18/22:41       5-22-18/23:22	LCS Results (ppbv)         LCSD Results (ppbv)         Conc(ppbv)           9.18         9.23         10           11         11.1         10           10.7         10.9         10           9.72         9.96         10           10.3         10.7         10           105%         104%           5-22-18/22:41         5-22-18/23:22	LCS Results (ppbv)         LCSD Results (ppbv)         Conc(ppbv)         Rec.           9.18         9.23         10         92%           11         11.1         10         110%           10.7         10.9         10         107%           9.72         9.96         10         97%           10.3         10.7         10         103%           105%         104%           5-22-18/22:41         5-22-18/23:22         5-22-18/23:22	LCS Results (ppbv)         LCSD Results (ppbv)         Conc(ppbv)         Rec.         Rec.           9.18         9.23         10         92%         92%           11         11.1         10         110%         111%           10.7         10.9         10         107%         109%           9.72         9.96         10         97%         100%           10.3         10.7         10         103%         107%           105%         104%         5-22-18/23:22         5-22-18/23:22         5-22-18/23:22	LCS Results (ppbv)         LCSD Results (ppbv)         Conc(ppbv)         Rec.         Rec.         RPD           9.18         9.23         10         92%         92%         0.5%           11         11.1         10         110%         111%         0.9%           10.7         10.9         10         107%         109%         1.9%           9.72         9.96         10         97%         100%         2.4%           10.3         10.7         10         103%         107%         3.8%           105%         104%         5-22-18/23:22         5-22-18/23:22         5-22-18/23:22         5-22-18/23:22         5-22-18/23:22         5-24-18/23:22         5-24-18/23:22         5-24-18/23:22         5-24-18/23:24         5-24-18/23:22         5-24-18/23:24         5-24-18/23:24         5-24-18/23:22         5-24-18/23:24



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Flag Number Comments

# **CHAIN OF CUSTODY RECORD**

EnvisionAir | 1441Sadlier Circle West Drive | Indianapolis, IN 46239 | Phone: (317) 351-0885 | Fax: (317) 351-0882

Client: EnviroParansics,	FF	P.O. N	umber: 7	P.O. Number: 2018-0643	573									
Report NIG WZ3390 SHONE RIGHEDT Project Name or Number:	me. Ridgel	Project	t Name or	Number:	e		REQUE	REQUESTED PARAMETERS	METERS					
Address: Wankesha, W. 53 KK	5388	2	5040		e r			/	/					
Report To: Kyle Vander Heiden	Heiden		Sampled by: Kyle		Vander Heider	1	\		/		4			FINISIONAIR
Phone: 262.296.400	40		Required.	QA/QC Required: (circle if applicable) Level III Level IV	applicable)		\	/	\				2	
Invoice Address:		Report ug/m	ing Units r	Reporting Units needed: (circle)	de)		ISIT IING	1	Soil-Gas:	Sampling Type: Soil-Gas: X				
Desired TAT: (Please Circle One) 1 day 2 days 3 days Std (5 bus. days)	bus. days	Media type:	e: 1LC = 1 Liter 6LC = 6 Liter TB = Tediar TD = Thermi	1LC = 1 Liter Canister 6LC = 6 Liter Canister TB = Tediar Bag TD = Thermal Desorption Tube	esta gray	OI	(51.01/51.01		Indoor-Air:		Canister P	www.cuvisiour	'acuum	
Air Sample ID	Media Type (see code above)	Coll.  Date (Grab/Comp Start)	Coll. Time (Grab/Comp	Coll. Date	Coll. Time			Canister Serial #	ter Flow 1# Controller Serial#		Initial Field (in. Hg)	Final Field (in. Hg)	Lab Received (in. Hg)	EnvisionAir Sample Number
5040-SUE-EX	77	11/9	1400	11/9	1415	- 8	~	2091	71 0083	3721	67-	7	-2	18-1260
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1441 Sadlier Circle West Drive Indianapolis, IN 46239 Ph: 317-351-0885 Fax: 317-351-0882 www.envision-air.com

Mr. Kyle Vander Heiden Enviroforensics N16 W. 23390 Stone Ridge Dr Suite G Waukesha, WI 53188

August 14, 2018

EnvisionAir Project Number: 2018-465

Client Project Name: 5040

Dear Mr. Vander Heiden,

Please find the attached analytical report for the samples received July 30, 2018. All test methods performed were fully compliant with local, state, and federal EPA methods unless otherwise noted. The project was analyzed as requested on the enclosed chain of custody record. Please review the comments section for additional information about your results or Quality Control data.

Feel free to contact me if you have any questions or comments regarding your analytical report or service.

Thank you for your business. EnvisionAir looks forward to working with you on your next project.

Yours Sincerely,

Stanley A Hunnicutt

Stanly a. Hunnicutt

Project Manager EnvisionAir, LLC



1441 Sadlier Circle West Drive Indianapolis, IN 46239 Ph: 317-351-0885 Fax: 317-351-0882

www.envision-air.com

Client Name: ENVIROFORENSICS

Project ID: 5040

Client Project Manager: KYLE VANDER HEIDEN

EnvisionAir Project Number: 2018-465

# Sample Summary

Canister Pressure / Vacuum

			START	START							<u>Lab</u>	
			Date	Time	End Date	End Time	Date	Time	Initial Field	Final Field	Received	
Laboratory Sample Number:	Sample Description:	Matrix:	Collected:	Collected:	Collected:	Collected:	Received:	Received	(in. Hg)	(in. Hg)	(in. Hg)	
18-1829	5040-SVE-EX	Α	7/25/18	9:15	7/25/18	9:20	7/30/18	11:00	-26	-2	-2	



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**Client Name: ENVIROFORENSICS** 

Project ID: 5040

**Client Project Manager:** KYLE VANDER HEIDEN

**EnvisionAir Project Number:** 2018-465

**Analytical Method:** TO-15 **Analytical Batch:** 081018AIR

**Client Sample ID:** 5040-SVE-EX Sample Collection START Date/Time: 7/25/18 9:15

> Sample Collection END Date/Time: 7/25/18 9:20

**Envision Sample Number:** Sample Received Date/Time: 7/30/18 18-1829 11:00

Sample Matrix: AIR

Compounds	Sample Results ug/m <sup>3</sup>	Reporting Limit ug/m <sup>3</sup>	<u>Flag</u>
cis-1,2-Dichloroethene	< 198	198	
Tetrachloroethene	415	31.9	
trans-1,2-Dichloroethene	< 396	396	
Trichloroethene	< 10.7	10.7	
Vinyl Chloride	< 12.8	12.8	
4-bromofluorobenzene (surro	gate) 86%		
Analysis Date/Time:	8-12-18/10:06		
Analyst Initials	tjg		



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Analytical Report

## **TO-15 Quality Control Data**

EnvisionAir Batch Number: 081018AIR

Method Blank (MB):	MB Results (ppbv)	Reporting Limit (ppbv)	<u>Flags</u>
cis-1,2-Dichloroethene	< 5	5	
Tetrachloroethene	< 0.47	0.47	
trans-1,2-Dichloroethene	< 10	10	
Trichlorethene	< 0.2	0.2	
Vinyl Chloride	< 0.5	0.5	
4-bromofluorobenzene (surrogate)	90%		
Analysis Date/Time:	8-12-18/06:53		
Analyst Initials	tjg		

			LCS/D	LCS	LCSD		
LCS/LCSD	LCS Results (ppbv)	LCSD Results (ppbv)	Conc(ppbv)	Rec.	Rec.	<u>RPD</u>	Flag
Vinyl Chloride	10.1	10.4	10	101%	104%	2.9%	
trans-1,2-Dichloroethene	9.17	9.49	10	92%	95%	3.4%	
cis-1,2-Dichloroethene	8.84	9.25	10	88%	93%	4.5%	
Trichloroethene	8.68	9	10	87%	90%	3.6%	
Tetrachloroethene	10.1	9.17	10	101%	92%	9.7%	
4-bromofluorobenzene (surrogate)	85%	88%					
Analysis Date/Time:	8-12-18/05:35	8-12-18/08:11					
Analyst Initials	tjg	tjg					



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Flag Number Comments

# **CHAIN OF CUSTODY RECORD**

EnvisionAir | 1441Sadlier Circle West Drive | Indianapolis, IN 46239 | Phone: (317) 351-0885 | Fax: (317) 351-0882

			GIVIOUSIMINE	ALCO CIANT		www.envision-air.com Canister Pressure / Vacuum	al Final Lab EnvisionAir d Field Received Sample Number lg) (in. Hg) (in. Hg)	128187 2- 2-						2				- Aire
	ETERS				Soil-Gas: X	] [	Flow Initial Controller Field Serial # (in. Hg)	0027 -36					T.	STANCE	2 20.0			Docoived by:
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***************************************	P.O. Number: 2.018-1035	Number:	)	QA/QC Required: (circle if applicable) Level III Level IV	Reporting Units needed: (circle)	1LC = 1 Liter Canister 6LC = 6 Liter Canister TB = Tedlar Bag TD = Thermal Desorption Tube	Coll.  Date (Comp. End)	7/25/K				1 3 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			341 S.	-		
	Vumber: 2	SOU O	Sampled by: (<	C Required	ting Units nee	pe: 1LC = 1 Liter 6LC = 6 Liter TB = Tedlar TD = Therm	Coll. Time (Grab/Comp	0915	allerio.	4				1-1				
-	1	e Var Projec				Media type:	Coll. Date Grab/Comp	7/25/18		TEN T								hv:
	Sics, LLC	255 277	er Heid	-4138		ne) (5 bus. days	Media Type (see code above)	12	VPL90		11-		Java 15 II					Relinquished hv:
	W	Address: Washa, has hereby Project Name or Number: Address: Washa, Jul 5388	Report To: K. Vander Heide	Phone: 262-299-4381	Invoice Address:	Desired TAT: (Please Circle One) 1 day 2 days 3 days Std (5 bus. days)	Air Sample ID	SOHO-SNE-Ex							8		Comments:	/ Relin