PREPARED BY

EnviroForensics, LLC N16W23390 Stone Ridge Drive, Suite G Waukesha, WI 53188



January 21, 2022

Binyoti Amungwafor Remediation & Redevelopment Program Wisconsin Department of Natural Resources 1027 W. St. Paul Ave Milwaukee, WI 53233

Re: Semi-Annual Remediation Site Operation, Maintenance, Monitoring and

Optimization Report
One Hour Martinizing
6737 W. Milwaukee Ave, Wauwatosa, Wisconsin

BRRTS# 02-41-551923

Dear Mr. Amungwafor:

EnviroForensics, LLC (EnviroForensics) is pleased to provide this Remediation Site Operation, Maintenance, Monitoring and Optimization Report for the One Hour Martinizing facility located at 6737 W. Milwaukee Avenue in Wauwatosa, Wisconsin (the Site). This report is being submitted in place of Department Form 4400-194 and covers the period of July 1 to December 31, 2021. The purpose of this report is to present operation, maintenance, and monitoring (OM&M) data related to a soil vapor extraction (SVE) system that operated at the Site during the reporting period. One (1) year of SVE system OM&M was approved by WDNR in a letter dated October 28, 2019.

SVE System Description

The SVE system was installed during December 2020. The system consists of a vacuum blower connected to two (2) extraction wells screened in unconsolidated soil. The blower and associated equipment and controls are housed inside an insulated aluminum enclosure positioned along the east wall of the Site building. The extraction well locations, conveyance line paths, and subsurface vacuum monitoring points are depicted on **Figure 1**. The extraction wells are connected to the SVE blower and associated equipment with individual conveyance lines that combine into a single inlet pipe just outside the system enclosure. System operation commenced on January 11, 2021. OM&M activities have been performed as described in the Operation, Maintenance, and Monitoring Plan dated February 10, 2021.

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Remediation Progress

Operational data is summarized in **Table 1**. The chlorinated volatile organic compound (CVOC) concentration in the system effluent is monitored by collecting samples in 1-liter vacuum canisters at a rate of 200 ml/minute. The samples are analyzed for tetrachloroethene (PCE) and its degradation compounds according to EPA Test Method TO-15. The effluent concentration trend is depicted in **Chart 1**.

The estimated zone of influence of the SVE system based on subsurface vacuum measurements is shown on **Figure 2**. A minimum vacuum of 0.1 inches of water (in H_2O) is considered the threshold for influence. As can be seen in **Figure 2**, the zone of influence encompasses the majority of the contaminated soil area, including the area near the former dry cleaning machine location containing PCE concentrations above 500 micrograms per kilogram.

The system operated continuously with both extraction well valves fully open from startup on January 11, 2021 until October 21, 2021 when operational adjustments were made on based on diminishing CVOC mass removal rates. The following changes were made to enhance recovery and reduce energy costs:

- October 21, 2021: The valve controlling extraction from well SVE-1s was closed; and the
 integrated timer was programmed so that the blower would run for 14 hours and turn
 off for 10 hours every day.
- November 8, 2021: The valve controlling extraction from well SVE-1s was opened and the valve for SVE-2 was closed.
- November 19, 2021: The system was manually shut down and was not operated for the remainder of the reporting period.

PCE was the only compound detected in the effluent samples. PCE mass removal is calculated using the flow rate, system run time, and concentrations detected in samples of the system effluent. PCE was not detected above the laboratory detection limit of 31.9 micrograms per cubic meter ($\mu g/m^3$) in the final three (3) effluent samples collected. Therefore, a PCE concentration of 30 $\mu g/m^3$ is assumed for each of those samples. Time versus cumulative mass removal is illustrated in **Chart 2**. The average PCE removal rate for the system between July 1 and November 19, 2021 was approximately 0.001 pounds per day, for a total of 0.13 pounds. The cumulative mass removed by SVE is 0.52 pounds.

Vapor Sampling

The approved *Remedial Action Plan and SVE System Design Report* specified one (1) year of SVE system OM&M, followed by confirmation vapor sampling. Sub-slab vapor samples were

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collected from monitoring points VP-5 and VP-6 on December 16, 2021. These two monitoring points consist of permanent Vapor Pins[®]. The vapor samples were collected according to EnviroForensics' standard operating procedure, and consistent with the sampling procedures described in WDNR Publication RR-986.

The vapor sample locations and results are illustrated on **Figure 3**, along with pre-remediation sub-slab vapor PCE concentrations for reference. Cumulative vapor data associated with the One hour Martinizing building are summarized on **Table 2**, and the complete lab report is attached. The vapor samples collected from VP-5 and VP-6 did not contain PCE or its degradation compounds at concentrations above laboratory detection limits. These data demonstrate that vapor intrusion risk in the site building has been eliminated and remediation is complete.

Conclusions

The SVE system effluent concentration trend combined with the confirmation vapor sample results indicate that remediation of soil beneath and around the OHM building has been completed successfully. EnviroForensics recommends decommissioning the SVE system and proceeding with case closure.

If you have questions regarding the content of this report, please feel free to contact me at 262-745-5054 or bkappen@enviroforensics.com.

Sincerely,

EnviroForensics, LLC

Brian Kappen, PG Project Manager

Attachments:

Figure 1 – SVE System Layout

Figure 2 – Estimated Zone of SVE Influence

Figure 3 - Sub-Slab Vapor Sample Results

Table 1 – Soil Vapor Extraction System Operational Data

Table 2 - Cumulative Sub-Slab Vapor Sample Data - OHM Building

Chart 1 – SVE System Effluent CVOC Concentration Trend

Chart 2 – SVE System Cumulative CVOC Mass Removal

Sub-Slab Vapor Sample Laboratory Report

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CERTIFICATIONS

I, Robert Fedorchak, 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.

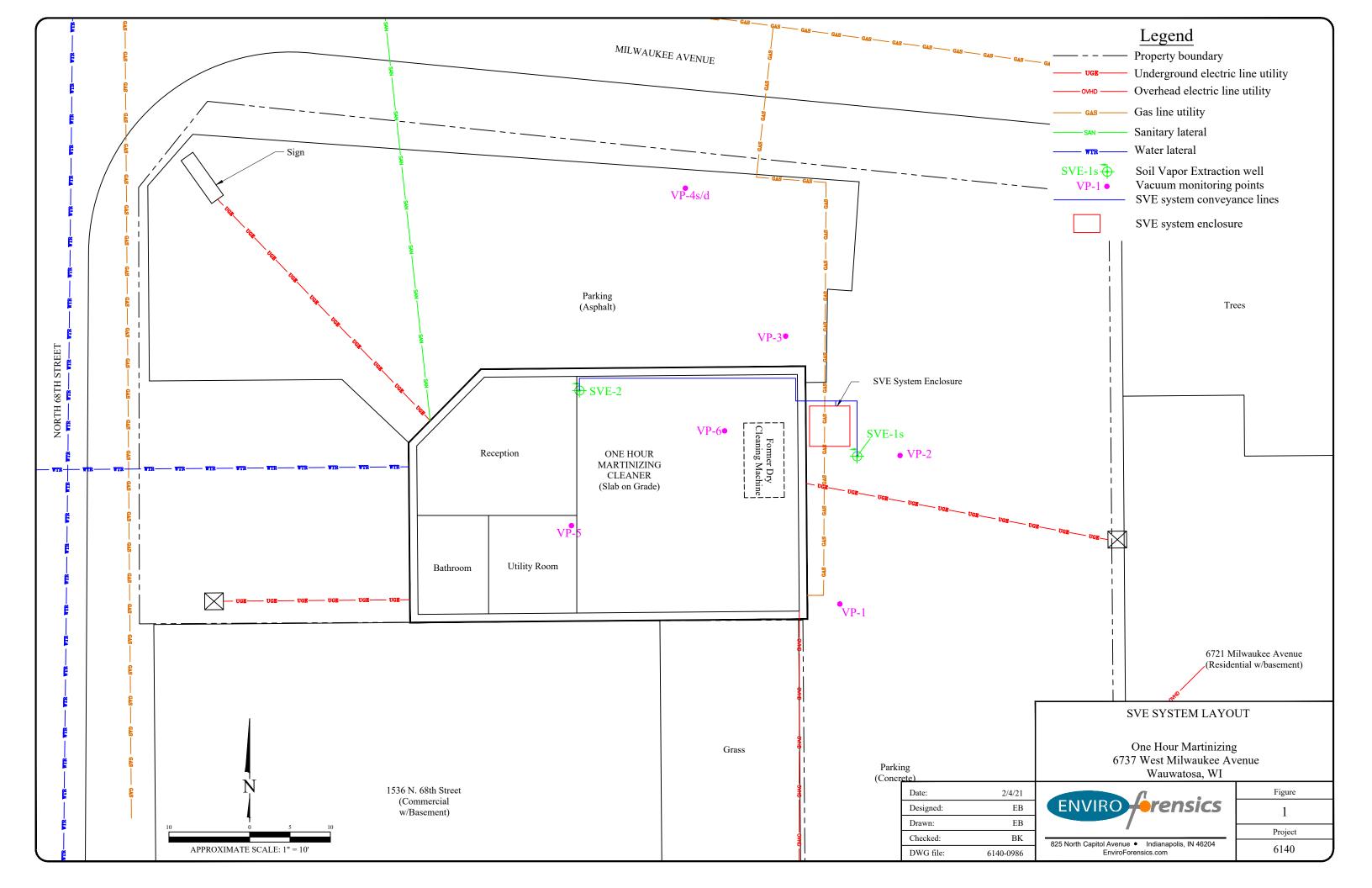
Senior Engineer, Lic. No.

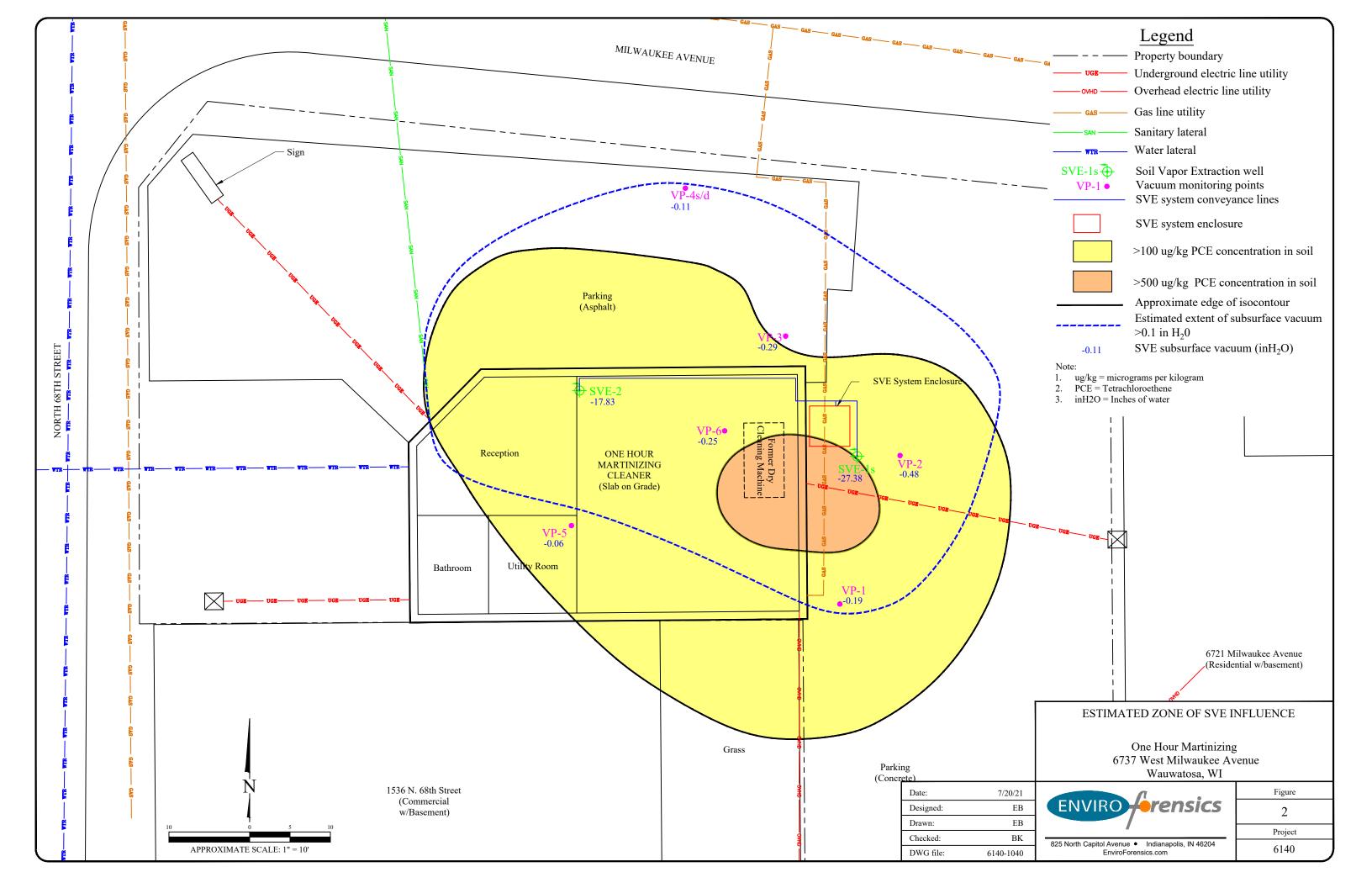
Signature, title and P.E. number

I, Brian Kappen, 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.

1/21/2022

Date





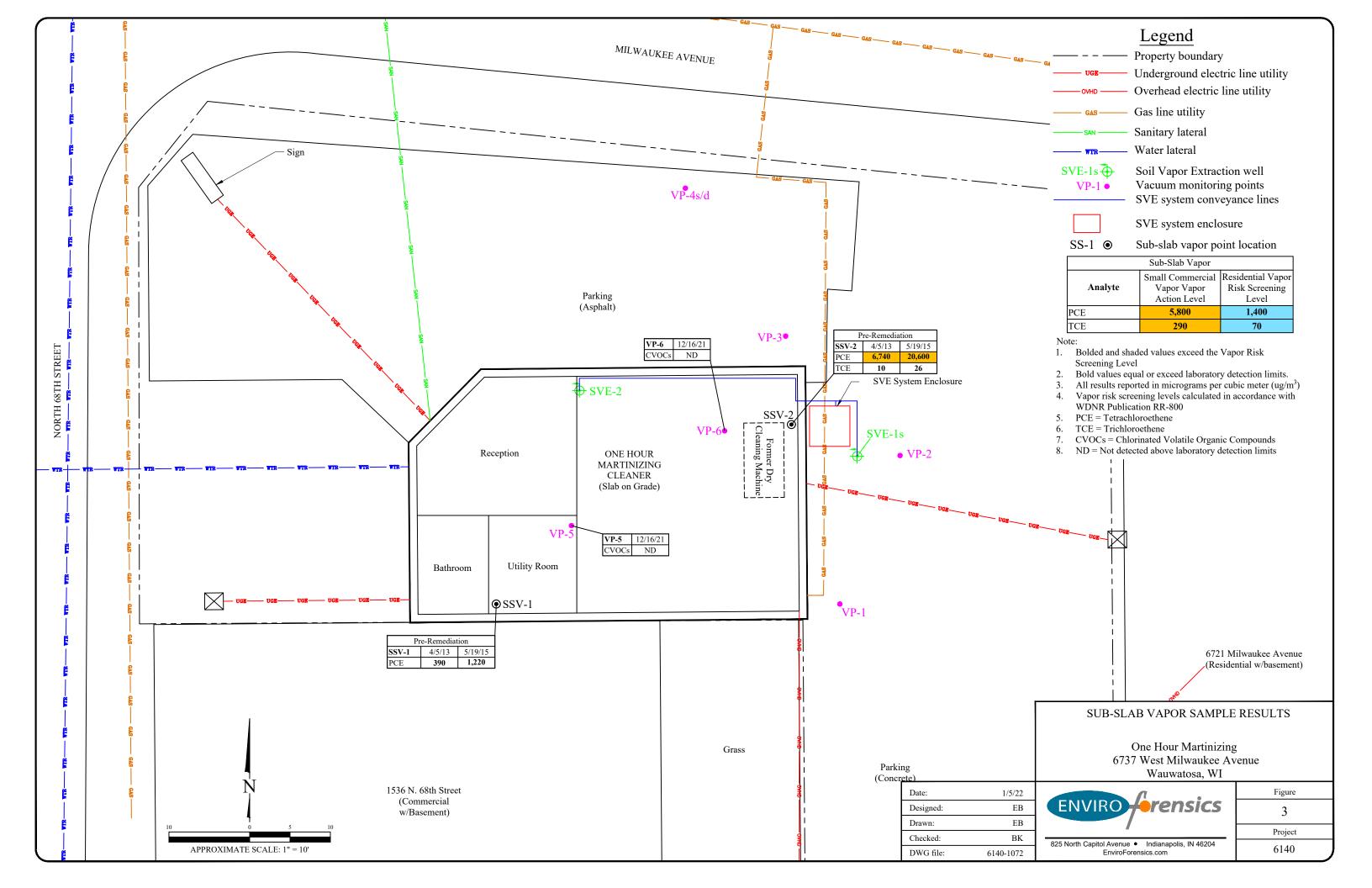


TABLE 1
SOIL VAPOR EXTRACTION SYSTEM OPERATIONAL DATA

One Hour Martinizing Wauwatosa, Wisconsin

Date	Time	System Run Time	System Vacuum	Effluent Differential Pressure	Effluent Air Temperature	Effluent Pressure	Dilution	Conveya Vac	ince Line uum	Calculated Flow Rate	Effluent CVOC Concentration
		Panel Display	VI-104	FI-101	TI-101	PI-101	Gate Valve	SVE-1s	SVE-2		Exhaust Port
		Hours	in H₂O	in H ₂ O	°F	in H₂O	Turns Open	in I	H₂O	SCFM	μg/m³
01/11/21	12:00	3.1	-44	3	115	9	0	-25	-25	139.8	174
01/12/21	11:26	25.2	-46	3.5	105	10	0	-26	-26	164.8	75
01/13/21	11:58	49.7	-46	3.5	105	8	0	-20	-27	147.4	287
01/20/21	11:49	217.5	-48	3.2	108	9	0	-23	-28	147.9	218
01/28/21	11:52	409.6	-47	3.5	100	9	0	-25	-26	159.2	280
02/03/21	12:33	554.3	-47	3.5	105	9	0	-26	-26	156.3	127
03/04/21	11:17	1,249.0	-48	3.2	110	9	0	-28	-28	146.9	81
04/06/21	10:10	2,038.9	-49	3.5	110	9	0	-29	-28	153.6	161
05/05/21	9:38	2,734.4	-49	3.25	120	9	0	-29	-28	143.2	149
06/09/21	10:00	3,574.7	-48	3.2	130	9	0	-30	-28	137.7	75
07/09/21	11:30	4,296.2	-47	3.25	130	9	0	-27	-26	138.8	115
09/09/21	14:24	5,751.6	-46	3.50	130	9	0	-26	-24	144.0	119
10/05/21	9:23	6,368.7	-44	3.50	125	9	0	-22	-19	146.3	30
11/08/21	9:11	7,005.1	-54	3.00	110	7	0	0	-33	125.4	30
11/19/21	13:42	7,163.6	-76	1.50	143	5	0	-65	0	64.2	30

Notes:

in H_2O = inches of water

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

CVOC = Chlorinated Volatile Organic Compound

SCFM = Standard cubic feet per minute



TABLE 2

CUMULATIVE SUB-SLAB VAPOR SAMPLE DATA - OHM BUILDING

One Hour Martinizing

6737 West Milwaukee Avenue, Wauwatosa, Wisconsin

Location Identification	Laboratory Identification	Remediation Status (Pre/Post)	Date Sampled	Tetrachloroethene	Trichloroethene	cis-1,2,-Dichloroethene	trans-1,2,-Dichloroethene	Vinyl Chloride	Acetone	Benzene	2-Butanone	Carbon Disulfide	Cyclohexane	Dichlorodifluoromethane	Ethanol	Ethylbenzene	4-Ethyltoluene
SSV-1	6140-OHM-SSV-1	Pre	4/5/2013	390	< 1.1	<1.6	<1.6	<0.53	200	3.6	31.1	7.6	5.0	2.5	125	5.5	6.8
33V-1	0140-011101-330-1	Pre	5/19/2015	1,220	<10.7	<198	<396	<12.8	NA	NA	NA	NA	NA	NA	NA	NA	NA
SSV-2	6140-OHM-SSV-2	Pre	4/5/2013	6,740	10	<1.7	<1.7	<0.55	397	22.0	26.1	3.2	42.8	< 2.1	152	26.9	13.5
33V-2	0140-011101-330-2	Pre	5/19/2015	20,600	26	<198	<396	<12.8	NA	NA	NA	NA	NA	NA	NA	NA	NA
VP-5	6140-OHM-VP-5	Post	12/16/2021	<3.19	<1.07	<19.8	<39.6	<1.28	NA	NA	NA	NA	NA	NA	NA	NA	NA
VP-6	6140-OHM-VP-6	Post	12/16/2021	<3.19	<1.07	<19.8	<39.6	<1.28	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sma	III Commercial Vapor	Risk Screening Lo	evel	5,800	290	N.E.	5,800	930	46,000,000	520	730,000	103,000	8,600,000	146,000	N.E.	1,600	N.E.
ı	Residential Vapor Risk Screening Level				70	N.E.	1,400	56	10,000,000	120	170,000	24,000	2,100,000	3,300	N.E.	370	N.E.

Notes:

 $Vapor\ Risk\ Screeing\ Levels\ are\ calculated\ according\ to\ procedures\ described\ in\ Publication\ RR-800$

All concentrations reported in untis of micrograms per cubic meter ($\mu\text{g}/\text{m3})$

Bolded values are above detection limits

Bolded and Orange Shaded values exceed the Small Commercial Vapor Risk Screening Level

Bolded and Blue Shaded values exceed the Residential Vapor Risk Screening Level

N.E. = Not Established

NA = Compound not analyzed



TABLE 2

CUMULATIVE SUB-SLAB VAPOR SAMPLE DATA - OHM BUILDING

One Hour Martinizing

6737 West Milwaukee Avenue, Wauwatosa, Wisconsin

Location Identification	Laboratory Identification	Remediation Status (Pre/Post)	Date Sampled	n-Heptane	n-Hexane	2-Hexanone	4-Methyl-2-pentanone	Methylene Chloride	Napthalene	2-propanol	1,1,2-Trichlorotrifluoroethar	1,2,4-Trimethylbenzene	1,3,5-Trimethylbenzene	Toluene	m&p-Xylene	o- Xylene
SSV-1	6140-OHM-SSV-1	Pre	4/5/2013	8.2	9.3	6.9	7.9	4.9	4.8	128	7.4	10.2	6.8	9.5	11.5	7.3
337-1	0140-011101-330-1	Pre	5/19/2015	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SSV-2	6140-OHM-SSV-2	Pre	4/5/2013	67.9	92.1	< 1.7	< 1.7	4.7	4.3	51.8	< 3.4	36.2	14.3	42.9	71.7	26.3
33V-2	0140-OHIVI-33V-2	Pre	5/19/2015	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
VP-5	6140-OHM-VP-5	Post	12/16/2021	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
VP-6	6140-OHM-VP-6	Post	12/16/2021	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sma	Small Commercial Vapor Risk Screening Level				103,000	43,000	43,000	87,000	120	1,000,000	4,300,000	10,000	N.E.	730,000	15,000	15,000
i	Residential Vapor Ris	N.E.	24,000	10,000	10,000	21,000	28	430,000	1,000,000	2,400	N.E.	170,000	3,300	3,300		

Notes:

Vapor Risk Screeing Levels are calculated according to procedures described in Publication RR-800 All concentrations reported in untis of micrograms per cubic meter ($\mu g/m3$)

Bolded values are above detection limits

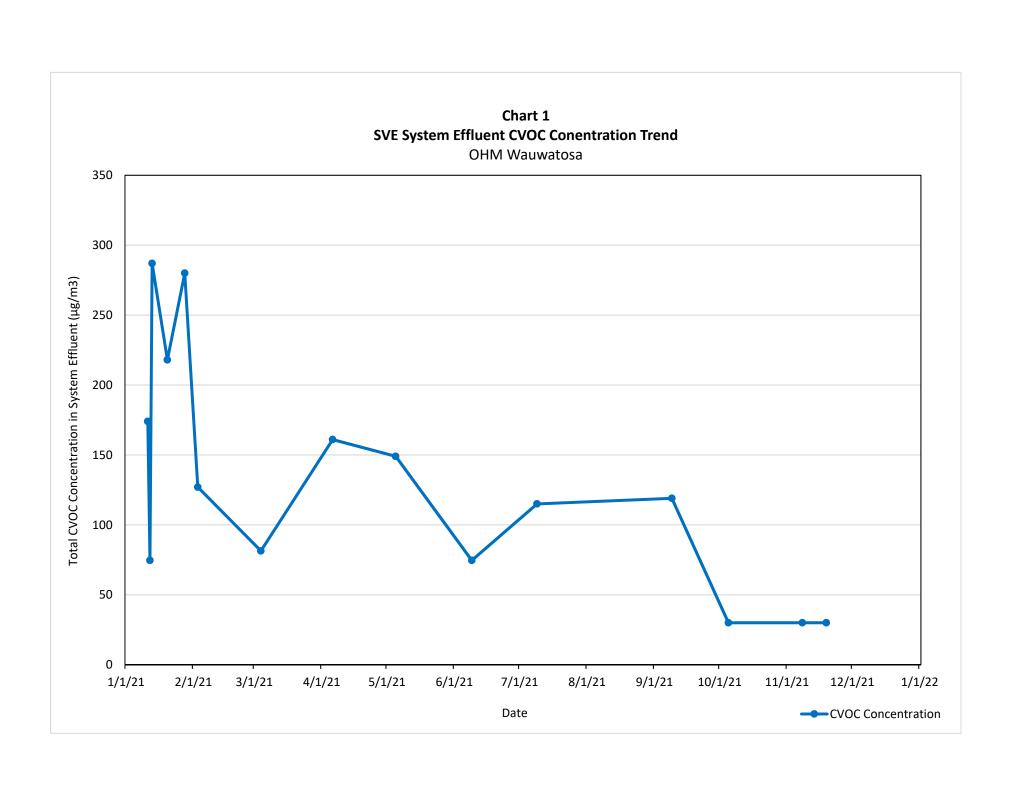
Bolded and Orange Shaded values exceed the Small Commercial Vapor Risk Screening Level

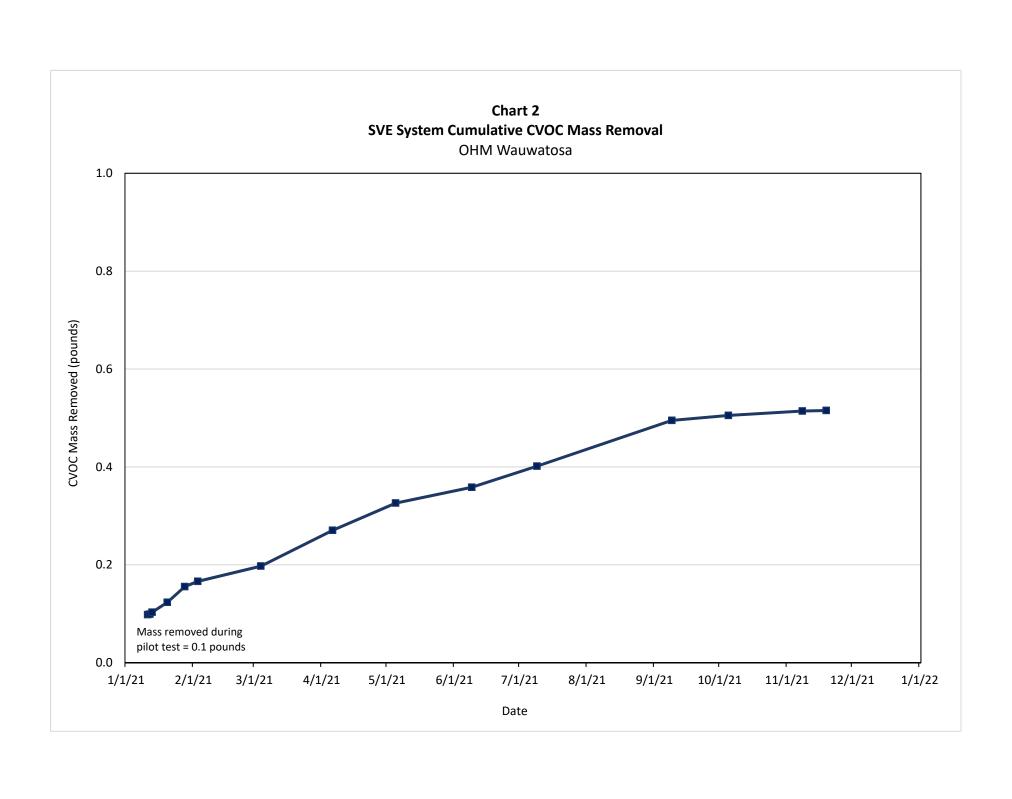
Bolded and Blue Shaded values exceed the Residential Vapor Risk Screening Level

N.E. = Not Established

NA = Compound not analyzed









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

December 30, 2021

EnvisionAir Project Number: 2021-616

Client Project Name: 6140

Dear Mr. Kappen,

Please find the attached analytical report for the samples received December 17, 2021. 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,

David Norris Project Manager EnvisionAir, LLC



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www.envision-air.com

Client Name: ENVIROFORENSICS

Project ID: 6140

Client Project Manager: BRIAN KAPPEN

EnvisionAir Project Number: 2021-616

Sample Summary

Canister Pressure / Vacuum

				START Date	START Time	End Date	End Time	Date	Time	Initial Field	Final Field	<u>Lab</u> Received	
L	aboratory Sample Number:	Sample Description:	Matrix:						Received	(in. Hg)	(in. Hg)	(in. Hg)	
	21-2940	6140-OHM-VP-5	Α	12/16/21	12:14	12/16/21	12:19	12/16/21	15:00	-27	-5	-5	
	21-2941	6140-OHM-VP-6	Α	12/16/21	11:52	12/16/21	12:05	12/16/21	15:00	-27	-5	-5	



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Client Name: ENVIROFORENSICS

Project ID: 6140

Client Project Manager: BRIAN KAPPEN

EnvisionAir Project Number: 2021-616

Analytical Method: TO-15
Analytical Batch: 122721AIR

Client Sample ID: 6140-OHM-VP-5 Sample Collection START Date/Time: 12/16/21 12:14

Sample Collection END Date/Time: 12/16/21 12:19
EnvisionAir Sample Number: 21-2940 Sample Received Date/Time: 12/17/21 15:00

Sample Matrix: AIR

Compounds	Sample Results ug/m³	Reporting Limit ug/m ³	<u>Flag</u>
cis-1,2-Dichloroethene	< 19.8	19.8	
Tetrachloroethene	< 3.19	3.19	
trans-1,2-Dichloroethene	< 39.6	39.6	
Trichloroethene	< 1.07	1.07	
Vinyl Chloride	< 1.28	1.28	
4-bromofluorobenzene (surro	ogate) 98%		
Analysis Date/Time:	12-28-21/09:57		
Analyst Initials	tjg		



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Client Name: ENVIROFORENSICS

Project ID: 6140

Client Project Manager: BRIAN KAPPEN

EnvisionAir Project Number: 2021-616

Analytical Method: TO-15
Analytical Batch: 122721AIR

Client Sample ID: 6140-OHM-VP-6 Sample Collection START Date/Time: 12/16/21 11:52

Sample Collection END Date/Time: 12/16/21 12:05
EnvisionAir Sample Number: 21-2941 Sample Received Date/Time: 12/17/21 15:00

Sample Matrix: AIR

Sample Results ug/m³ Reporting Limit ug/m³ Compounds Flag cis-1,2-Dichloroethene < 19.8 19.8 < 3.19 3.19 Tetrachloroethene trans-1,2-Dichloroethene < 39.6 39.6 Trichloroethene < 1.07 1.07

Vinyl Chloride < 1.07

4-bromofluorobenzene (surrogate)

Analysis Date/Time:

Analyst Initials

1.07

1.07

1.28

1.28

1.28

1.28

1.29

1.29

1.29

1.29

1.29

1.29

1.29

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1.29

1.29



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Analytical Report

TO-15 Quality Control Data

EnvisionAir Batch Number: 122721AIR

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)	97%		
Analysis Date/Time:	12-27-21/16:58		
Analyst Initials	tjg		

			LCS/D	LCS	LCSD		
LCS/LCSD	LCS Results (ppbv)	LCSD Results (ppbv)	Conc(ppbv)	Rec.	Rec.	<u>RPD</u>	<u>Flag</u>
Vinyl Chloride	9.78	10.3	10	98%	103%	5.2%	
trans-1,2-Dichloroethene	9.25	8.68	10	93%	87%	6.4%	
cis-1,2-Dichloroethene	10.4	9.77	10	104%	98%	6.2%	
Trichloroethene	9.38	9.12	10	94%	91%	2.8%	
Tetrachloroethene	8.39	9.59	10	84%	96%	13.3%	
4-bromofluorobenzene (surre	ogate) 97%	103%					
Analysis Date/Time:	12-27-21/15:33	12-27-21/16:20					
Analyst Initials	tjg	tjg					



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

Flag Number

Comments

1

Reporting limit is supported by MDL. TJG

1700

17-16-21

CHAIN OF CUSTODY RECORD

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

Client: Enviroforens	125 LL	P.O. N	umber: 2	021-6	752.		RI	EOUF!	STED	PARAME	TERS	7			
Report bKappen@ e Address: Foren 5/25	envito com	Project	: Name or		140				/						
Report To: B. Kapp		Sample	ed by:									Ler		CIO	NAIR
Phone: 262-290-	4001		Leve	(circle if appliced III Ceve	⊌ IV		/	/ . /.			/		VV		
Invoice Address: account @enviroforensiès.	s payab	Report ug/m	ing Units r 3) mg/m	needed: (circl	e) PPMV					//	Sampling Type: Soil-Gas: □ Sub-Slab:		www.en	vision-air.c	om
Desired TAT: (Please Circle One 1 day 2 days 3 days Std (5	-		: 1LC = 1 Liter 6LC = 6 Liter TB = Tedlar	Canister Canister		/20		5/			Indoor-Air: □	Canister	Pressure /		· —
Air Sample ID	Media Type (See code above)	Coll. Date (Grab/Comp	Coll. Time (Grab/Comp	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
6140-0HM_VP-5			 	12-16-U	NA		X			2224	016	-27	-5	-5	21-2940 -
6140-0HM-NP-6	1LC	N-16-11	1152	12-16-21	1205		X			7.04	∞H2	-77	-5	-5	21-2941-

Comments:	<u> </u>		<u> </u>		<u> </u>			<u> </u>	<u></u>	1	<u> </u>	<u> </u>		<u> </u>	1
Short List: F	CEIT	CE,(DCE	E,TDC	E,VC										
	quished				Date	T	ime			Red	eived by:		Da	ate	Time

12-16-21

1200