REI
CIVIL & ENVIRONMENTAL ENGINEERING, SURVEYING

November 2, 2020

Wisconsin Department of Natural Resources
Attn: Matt Thompson
1300 West Clairemont Avenue
Eau Claire, WI 54701

Subject:

Sewer Line Vapor Sampling
Mosinee Dry Cleaners
735 Old Highway 51
Mosinee, WI 54455
WDNR BRRTS #02-37-552230

Dear Matt,

This letter and enclosed information will summarize sewer line vapor sampling at the Mosinee Dry Cleaners site.

In accordance with Change Order #5, REI performed sewer line vapor sampling at the site on September 30, 2020. Prior to sampling, site reconnaissance was performed to determine an appropriate sampling location. There is no access to a cleanout to the lateral, and the main is located on the south side of Business Highway 51. It was therefore determined that the best access for sampling was the sink drain, located near the former dry cleaning machine. Photographs of the drain are attached.

The *Investigation Protocol – Sewers and utility Tunnels as Preferential Pathways for Volatile Organic Compound Migration Into Buildings: Risk Factors and Investigation Protocol* document describes the process by which sewer lines can be sampled through a sink drain beyond the P trap. The polyethylene tubing could not pass the trap without disconnecting the plumbing, which consisted of hand tight PVC fittings. The piping was disconnected, the tubing slid beyond the trap, and the plumbing was then reconnected for sampling.

The line was purged for five (5) minutes using a RAE Plus Classic 4 gas meter with field measurements for Oxygen, Carbon Monoxide (CO), Lower Explosive Limit (LEL), Hydrogen Sulfide (H_2S) and Volatile Organic Compounds (VOCs). Oxygen was 20.1%, CO and LEL were 0 %, with H_2S and VOCs 0.0 parts per million (PPM).

After purging, the line was connected to the Summa can and filled through a 200 ml/minute flow controller. The sample "Sewer" was submitted to Synergy Environmental Lab, Inc. in Appleton, WI for TO-15 analysis.

The results are summarized on the attached Table 4. Detections were comparted to Non-Residential sub-slab screening levels. A variety of low-level detections were present, with Tetrachloroethylene and Trichloroethylene well below the screening level. Chloroform was present at a level exceeding the residential screening level, but may represent a breakdown of chlorination products from municipal tap water, or common household cleaners. Chloroform was not present at significant levels in any previous sub-slab vapor samples. The complete laboratory report is attached.

Dry cleaning has not been performed at the Mosinee Cleaners site for over ten (10) years. Based on the results of additional vapor sampling, residual product does not appear to be present in the sewer line. Sewer line vapor does not represent a significant vapor source into the building. REI recommends submitting a closure report with Continuing Obligations package for the site.

Thank you for your assistance with this project. If you have questions or you would like to discuss, please contact me at Adelforge@REIengineering.com or (715) 675-9784.

Sincerely,
REI Engineering, Inc.

Andrew R. Delforge, P.G.
Senior Hydrogeologist

Enclosure

CC: Annie Maas, Mosinee Dry Cleaners, 735 Old Highway 51, Mosinee, WI 54455

TABLE 4
SUB-SLAB & SEWER LINE VAPOR SAMPLING RESULTS
MOSINEE CLEANERS
735 OLD HIGHWAY 51
MOSINEE, WI

VOCs (ug/m^3)	Screening Levels	4/23/12	6/10/19	3/4/20	6/24/20	6/26/20	9/30/20
	Non-Residential	VP-1					Sewer
Acetone	1,400,000	54.6	SVE System Startup	44	SVE System Shutdown	209	16.2
Benzene	160	<13.1		5.1		7.1	5.2
Carbon Tetrachloride	200	<25.9		0.57		0.57j	9.6
Chloroform	53	<40.0		<0.3		1.12	231
Chloromethane	3,900	<17.0		1.26j		5.1	7.8
Dichlorodifluoromethane	4,400	<40.8		2.62		9.7	2.77
1,1-Dichloroethane	770	<33.1		<0.187		<0.187	<0.374
1,2-Dichloroethane	47	<16.6		<0.24		0.32	<0.48
1,1-Dichloroethelyene	8,800	<32.7		<0.21		<0.21	<0.42
cis-1,2 Dichloroethene	NS	<32.7		<0.197		<0.197	<0.394
trans-1,2-Dichloroethene	2600	<32.7		<0.231		<0.231	<0.462
Ethylbenzene	490	47.8		6.2		35	8.9
n-Heptane	NS	50.0		4.5		13.2	7.8
n-Hexane	31,000	<29.1		3.3		24.5	10.4
Methylene Chloride	2,600	<28.7		<15		<15	<30
Naphthalene	36	NA		2.25		11.8	5.8
Tetrachloroethene	1,800	**2,270**		12.6		108	18.5
Toluene	220,000	124		42		170	38
1,1,1-Trichloroethane	220,000	<44.8		<0.249		<0.249	<0.498
Trichloroethene	88	25.1		<0.237		<0.237	4.1
Trichlorofluoromethane	31,000	<46.1		2.25		13	2.7
1,2,4-Trimethylbenzene	310	85.1		12		80	26.5
1,3,5-Trimethylbenzene	NS	<40.4		3.3		19.9	6
Vinyl Chloride	280	<10.5		<0.148		<0.148	<0.296
m&p-Xylene	4,400	92.0		22.1		119	32
o-Xylene	4,400	<35.6		9.9		54	14.1

NS - No Standard

NA- Not Analyzed

Bold Exceeds Residential Screening Level

Sink - located near former dry cleaning machine

Trap

Trap disconnected to fish tubing, reconnected for sampling

Purging line and collecting field measurements

Collecting vapor sample

Synergy Environmental Lab, INC

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

ANDY DELFORGE
REI
4080 N. 20TH AVENUE
WAUSAU. WI 54401

Report Date *20-Oct-20*

Project Name MOSINEE CLEANERS/ MOSINEE WI **Invoice #** E38585
Project # 5890

Lab Code 5038585A
Sample ID SEWER
Sample Matrix Air
Sample Date 9/30/2020

	Result	Unit	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
Organic										
Air Samples										
Acetone	16.2	ug/m3	0.598	1.9	2	TO-15		10/19/2020	CJR	1
Acrolein	< 0.188	ug/m3	0.188	0.598	2	TO-15		10/19/2020	CJR	1
Benzene	5.2	ug/m3	0.272	0.866	2	TO-15		10/19/2020	CJR	1
Benzyl Chloride	< 0.418	ug/m3	0.418	1.33	2	TO-15		10/19/2020	CJR	1
Bromodichloromethane	53	ug/m3	0.748	2.38	2	TO-15		10/19/2020	CJR	1
Bromoform	< 0.828	ug/m3	0.828	2.64	2	TO-15		10/19/2020	CJR	1
Bromomethane	< 0.4	ug/m3	0.4	1.274	2	TO-15		10/19/2020	CJR	1
1,3-Butadiene	< 0.286	ug/m3	0.286	0.908	2	TO-15		10/19/2020	CJR	1
Carbon Disulfide	9.6	ug/m3	0.276	0.88	2	TO-15		10/19/2020	CJR	1
Carbon Tetrachloride	0.63 "J"	ug/m3	0.614	1.956	2	TO-15		10/19/2020	CJR	1
Chlorobenzene	< 0.502	ug/m3	0.502	1.596	2	TO-15		10/19/2020	CJR	1
Chloroethane	< 0.318	ug/m3	0.318	1.014	2	TO-15		10/19/2020	CJR	1
Chloroform	231	ug/m3	0.6	1.906	2	TO-15		10/19/2020	CJR	1
Chloromethane	7.8	ug/m3	1.662	5.28	2	TO-15		10/19/2020	CJR	1
Cyclohexane	20.4	ug/m3	0.424	1.348	2	TO-15		10/19/2020	CJR	1
Dibromochloromethane	13.3	ug/m3	0.752	2.4	2	TO-15		10/19/2020	CJR	1
1,4-Dichlorobenzene	0.72 "J"	ug/m3	0.604	1.92	2	TO-15		10/19/2020	CJR	1
1,3-Dichlorobenzene	< 0.604	ug/m3	0.604	1.92	2	TO-15		10/19/2020	CJR	1
1,2-Dichlorobenzene	1.18 "J"	ug/m3	0.47	1.498	2	TO-15		10/19/2020	CJR	1
Dichlorodifluoromethane	2.77	ug/m3	0.526	1.672	2	TO-15		10/19/2020	CJR	1
1,2-Dichloroethane	< 0.48	ug/m3	0.48	1.526	2	TO-15		10/19/2020	CJR	1
1,1-Dichloroethane	< 0.374	ug/m3	0.374	1.192	2	TO-15		10/19/2020	CJR	1
1,1-Dichloroethene	< 0.42	ug/m3	0.42	1.336	2	TO-15		10/19/2020	CJR	1
cis-1,2-Dichloroethene	< 0.394	ug/m3	0.394	1.252	2	TO-15		10/19/2020	CJR	1
trans-1,2-Dichloroethene	< 0.462	ug/m3	0.462	1.468	2	TO-15		10/19/2020	CJR	1

Project Name MOSINEE CLEANERS/ MOSINEE WI **Invoice #** E38585
Project # 5890

Lab Code 5038585A
Sample ID SEWER
Sample Matrix Air
Sample Date 9/30/2020

	Result	Unit	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
1,2-Dichloropropane	< 0.56	ug/m3	0.56	1.78	2	TO-15		10/19/2020	CJR	1
trans-1,3-Dichloropropene	< 0.396	ug/m3	0.396	1.26	2	TO-15		10/19/2020	CJR	1
cis-1,3-Dichloropropene	< 0.468	ug/m3	0.468	1.49	2	TO-15		10/19/2020	CJR	1
1,2-Dichlorotetrafluoroethane	< 0.892	ug/m3	0.892	2.84	2	TO-15		10/19/2020	CJR	1
1,4-Dioxane	< 0.314	ug/m3	0.314	1	2	TO-15		10/19/2020	CJR	1
EDB (1,2-Dibromoethane)	< 0.684	ug/m3	0.684	2.18	2	TO-15		10/19/2020	CJR	1
Ethanol	< 0.304	ug/m3	0.304	0.964	2	TO-15		10/19/2020	CJR	1
Ethyl Acetate	< 0.352	ug/m3	0.352	1.118	2	TO-15		10/19/2020	CJR	1
Ethylbenzene	8.9	ug/m3	0.406	1.29	2	TO-15		10/19/2020	CJR	1
4-Ethyltoluene	8.6	ug/m3	0.428	1.362	2	TO-15		10/19/2020	CJR	1
Heptane	7.8	ug/m3	0.53	1.69	2	TO-15		10/19/2020	CJR	1
Hexachlorobutadiene	< 0.978	ug/m3	0.978	3.12	2	TO-15		10/19/2020	CJR	1
Hexane	10.4	ug/m3	0.47	1.496	2	TO-15		10/19/2020	CJR	1
2-Hexanone	< 0.444	ug/m3	0.444	1.414	2	TO-15		10/19/2020	CJR	1
Isopropyl Alcohol	0.64 "J"	ug/m3	0.218	0.694	2	TO-15		10/19/2020	CJR	1
Methyl ethyl ketone (MEK)	1.12 "J"	ug/m3	0.356	1.134	2	TO-15		10/19/2020	CJR	1
Methyl isobutyl ketone (MIBK)	1.23	ug/m3	0.336	1.072	2	TO-15		10/19/2020	CJR	1
Methyl Methacrylate	< 0.434	ug/m3	0.434	1.38	2	TO-15		10/19/2020	CJR	1
Methylene chloride	< 30	ug/m3	0.318	1.012	2	TO-15		10/19/2020	CJR	1
Methyl tert-butyl ether (MTBE)	< 0.32	ug/m3	0.32	1.018	2	TO-15		10/19/2020	CJR	1
Naphthalene	5.8	ug/m3	1.35	4.3	2	TO-15		10/19/2020	CJR	1
Propene	13.4	ug/m3	0.158	0.502	2	TO-15		10/19/2020	CJR	1
Styrene	3.6	ug/m3	0.362	1.154	2	TO-15		10/19/2020	CJR	1
1,1,2,2-Tetrachloroethane	< 0.65	ug/m3	0.65	2.06	2	TO-15		10/19/2020	CJR	1
Tetrachloroethene	18.5	ug/m3	0.556	1.768	2	TO-15		10/19/2020	CJR	1
Tetrahydrofuran	10.6	ug/m3	0.262	0.834	2	TO-15		10/19/2020	CJR	1
Toluene	38	ug/m3	0.368	1.17	2	TO-15		10/19/2020	CJR	1
1,2,4-Trichlorobenzene	< 1.314	ug/m3	1.314	4.18	2	TO-15		10/19/2020	CJR	1
1,1,1-Trichloroethane	< 0.498	ug/m3	0.498	1.586	2	TO-15		10/19/2020	CJR	1
1,1,2-Trichloroethane	< 0.516	ug/m3	0.516	1.644	2	TO-15		10/19/2020	CJR	1
Trichloroethene (TCE)	4.1	ug/m3	0.474	1.508	2	TO-15		10/19/2020	CJR	1
Trichlorofluoromethane	2.7	ug/m3	0.674	2.14	2	TO-15		10/19/2020	CJR	1
Trichlorotrifluoroethane	< 0.804	ug/m3	0.804	2.56	2	TO-15		10/19/2020	CJR	1
1,2,4-Trimethylbenzene	26.5	ug/m3	0.566	1.798	2	TO-15		10/19/2020	CJR	1
1,3,5-Trimethylbenzene	6	ug/m3	0.464	1.478	2	TO-15		10/19/2020	CJR	1
Vinyl acetate	< 0.406	ug/m3	0.406	1.29	2	TO-15		10/19/2020	CJR	1
Vinyl Chloride	< 0.296	ug/m3	0.296	0.944	2	TO-15		10/19/2020	CJR	1
m&p-Xylene	32	ug/m3	0.754	2.4	2	TO-15		10/19/2020	CJR	1
o-Xylene	14.1	ug/m3	0.436	1.39	2	TO-15		10/19/2020	CJR	1

"J" Flag: Analyte detected between LOD and LOQ LOD Limit of Detection LOQ Limit of Quantitation

Code	*Comment*
1	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.

Authorized Signature

CHAIN OF CUSTODY RECORD

Synergy Environmental Lab, Inc.

www.synergy-lab.net
1990 Prospect Ct. • Appleton, WI 54914
920-830-2455 • mrsynergy@wi.twcbc.com

Chain # No 38992

Page 1 of 1

Sample Handling Request

___ Rush Analysis Date Required: ___
(Rushes accepted only with prior authorization)
X Normal Turn Around

Lab I.D. #	
QUOTE # :	
Project #:	5890
Sampler: (signature)	[signature]

Project (Name / Location): Mosinee Cleaners / Mosinee WI

Reports To:	Randy Delforge	Invoice To:	RD
Company	REI	Company	REI
Address		Address	
City State Zip		City State Zip	
Phone		Phone	
Email	ADelforge@REIengineering.com	Email	

Analysis Requested: DRO (Mod DRO Sep 95), GRO (Mod GRO Sep 95), LEAD, NITRATE/NITRITE, OIL & GREASE, PAH (EPA 8270), PCB, PVOC (EPA 8021), PVOC + NAPHTHALENE, SULFATE, TOTAL SUSPENDED SOLIDS, VOC DW (EPA 524.2), VOC (EPA 8260), VOC AIR (TO - 15), 8-RCRA METALS

Other Analysis: PID/FID

Lab I.D.	Sample I.D.	Collection Date	Collection Time	Filtered Y/N	No. of Containers	Sample Type (Matrix)*	Preservation	VOC AIR (TO - 15)
5038555A	Sewer	9/30/2	1108	N	1	A		X

Comments/Special Instructions (*Specify groundwater "GW", Drinking Water "DW", Waste Water "WW", Soil "S", Air "A", Oil, Sludge, etc.)

Sample Integrity - To be completed by receiving lab.
Method of Shipment: SPEE DEE
Temp. of Temp. Blank: ___ °C On Ice: ✓
Cooler seal intact upon receipt: ✓ Yes ___ No

Relinquished By: (sign)	Time	Date	Received By: (sign)	Time	Date
[signature]	9/30/20	3:00			

Received in Laboratory By: [signature] Time: 11:01 AM Date: 10-2-20