



Rose & Westra
A Division of GZA

GEOTECHNICAL
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MEMORANDUM

To: Abby Hendershott, EGLE

From: Leslie Nelson, Rose & Westra, a Division of GZA GeoEnvironmental, Inc.

Date: January 6, 2020

File No.: 16.0062677.81 Task 002

Re: Wolverine World Wide, Inc. (Wolverine) – Wolven/Jewell RI – Monthly Progress Report

This Monthly Progress Report (MPR) is being provided at the request of EGLE to provide an update regarding the implementation of the December 13, 2017 Source Area Investigation Work Plan (WP) related to per- and polyfluorinated alkyl substances (PFAS) detected in residential wells in the Wolven/Jewell study area.

ACTIONS PERFORMED

During this period, November 22, 2019 through December 27, 2019, GZA has done the following:

1. Surveyed the WV-MW-15 series of wells (see Figure 1 for well locations).
2. Continued work to obtain access to additional drilling location WV-PMW-17, located north and west of the WV-MW-16 series of wells.

ANALYTICAL DATA RECEIVED

The 4Q groundwater sampling data was received during this reporting period. Table 1 presents a summary of the data.

ANTICIPATED ACTIONS AND SCHEDULE FOR NEXT REPORTING PERIOD

During the next reporting period, December 27, 2019 through January 24, 2020, R&W/GZA anticipates the following activities:

- 1) Begin work on a summary report for 2019 groundwater sampling.
- 2) Continue to work for access to location WV-PMW-17 for possible additional monitoring wells.

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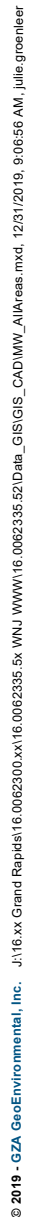


TABLE 1A
SUMMARY OF GROUNDWATER SAMPLE ANALYSIS - VOCS
Wolver/Jewell
Algoma Township, Kent County, MI

Sample Location	Part 201 Generic Residential Groundwater Cleanup Criteria – Drinking Water ²	Part 201 Generic Groundwater Cleanup Criteria – Groundwater Surface Water Interface ²	Part 201 Generic Residential Groundwater Cleanup Criteria – Groundwater Volatilization to Indoor Air Inhalation ²	EGLE Residential Recommended Volatilization to Indoor Air Interim Action Screening Level - Groundwater ³	U.S. EPA Residential Tap Water Regional Removal Management Levels ⁴	WV-MW-1	WV-MW-2D	WV-MW-2S	WV-MW-3D	WV-MW-3S	WV-MW-4	WV-MW-5D	WV-MW-5S	WV-MW-6D	WV-MW-6S	WV-MW-7D	WV-MW-7M	WV-MW-7S
Sample Name						WV-GW-MW-1	WV-GW-MW-2D	WV-GW-MW-2S	WV-GW-MW-3D	WV-GW-MW-3S	WV-GW-MW-4	WV-GW-MW-5D	WV-GW-MW-5S	VW-GW-MW-6D	VW-GW-MW-6S	WV-GW-MW-7D	WV-GW-MW-7M	WV-GW-MW-7S
Well Screen Interval (Feet below ground surface)						135-140	25-35	20-25	56-61	5-10	130-135	67-72	60-65	98-103	13-18	15.7-20.5	50-55	90.2-95
Laboratory Sample ID(s)						UK13023-002	UK07051-005	UK07051-004	UK07025-005	UK07025-004	UK19013-002	UK19013-003	UK19013-004	UK09009-004	UK09009-003	UK07051-003	UK07051-002	UK07051-001
Sample Date						11/12/2019	11/05/2019	11/05/2019	11/06/2019	11/06/2019	11/13/2019	11/13/2019	11/13/2019	11/08/2019	11/08/2019	11/05/2019	11/05/2019	11/05/2019
Parameter (µg/L)																		
Acetone	730	1,700	1,000,000,000 (D,S)	12,000,000	42,000	<20	18 [J]	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
Benzene	5.0 (A)	200	5,600	14	46	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Bromodichloromethane	80 (A,W)	ID	4,800	NCL	13	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Bromoform	80 (A,W)	ID	470,000	NCL	330	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Methyl ethyl ketone (2-Butanone)	13,000	2,200	240,000,000 (S)	NCL	17,000	<10	4.3 [J]	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Bromomethane (Methyl bromide)	10	5.0 (M)	4,000	NCL	23	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Carbon disulfide	800	ID	250,000	NCL	2,400	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Carbon tetrachloride	5.0 (A)	38	370	NCL	46	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chlorobenzene	100 (A)	25	210,000	540	230	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chloroethane	430	1,100	5,700,000 (S)	6,700	63,000	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Chloroform	80 (A,W)	350	28,000	7.6	22	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chloromethane (Methyl chloride)	260	ID	8,600	160	560	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Cyclohexane	NCL	NCL	NCL	NCL	38,000	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2-Dibromo-3-chloropropane (DBCP)	0.20 (A)	ID	220	NCL	0.033	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Dibromochloromethane	80 (A,W)	ID	14,000	NCL	87	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2-Dibromoethane (Ethylene dibromide)	0.05 (A)	5.7	2,400	NCL	0.75	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2-Dichlorobenzene	600 (A)	13	160,000 (S)	NCL	910	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,3-Dichlorobenzene	6.6	28	18,000	52	NCL	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,4-Dichlorobenzene	75 (A)	17	16,000	120	48	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Dichlorodifluoromethane	1,700	ID	220,000	NCL	590	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
1,1-Dichloroethane	880	740	1,000,000	67	280	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2-Dichloroethane	5.0 (A)	360	9,600	NCL	17	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethylene	7.0 (A)	130	200	170	850	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
cis-1,2-Dichloroethylene	70 (A)	620	93,000	48	110	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
trans-1,2-Dichloroethylene	100 (A)	1,500	85,000	650	1,100	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2-Dichloropropane	5.0 (A)	230	16,000	NCL	25	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
cis-1,3-Dichloropropene	NCL	NCL	NCL	NCL	NCL	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
trans-1,3-Dichloropropene	NCL	NCL	NCL	NCL	NCL	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,3-Dichloropropene (Calculated: cis + trans)	8.5	9.0	3,900	NCL	47	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	74 (E)	18	110,000	45	150	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
2-Hexanone	1,000	ID	4,200,000	NCL	110	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Isopropyl benzene	800	28	56,000 (S)	NCL	1,400	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Methyl acetate	NCL	NCL	NCL	NCL	60,000	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Methyl tertiary butyl ether (MTBE)	40 (E)	7,100	47,000,000 (S)	4,000	1,400	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Methyl isobutyl ketone	1,800	ID	20,000,000 (S)	NCL	19,000	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Methylcyclohexane	NCL	NCL	NCL	NCL	NCL	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Methylene Chloride	5.0 (A)	1,500	220,000	3,900	320	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Styrene	100 (A)	80	170,000	NCL	3,600	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1,2,2-Tetrachloroethane	8.5	78	12,000	NCL	7.6	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Tetrachloroethylene	5.0 (A)	60	25,000	96	120	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Toluene	790 (E)	270	530,000 (S)	23,000	3,300	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1,2-Trichloro-1,2,2-trifluoroethane	170,000 (S)	32	170,000 (S)	NCL	31,000	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trichlorobenzene	70 (A)	99	300,000 (S)	95	12	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1,1-Trichloroethane	200 (A)	89	660,000	8,600	24,000	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1,2-Trichloroethane	5.0 (A)	330	17,000	NCL	1.2	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Trichloroethylene	5.0 (A)	200	2,200	6.1	8.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Trichlorofluoromethane	2,600	NA	1,100,000 (S)	NCL	15,000	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Vinyl Chloride	2.0 (A)	13	1,100	0.96 (M)	1.9	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Xylenes (Total)	280 (E)	49	190,000 (S)	1,200	580	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
m+p - Xylenes	NCL	NCL	NCL	NCL	NCL	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
o-Xylene	NCL	NCL	NCL	NCL	580	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Trihalomethanes (Calculation: Bromodichloromethane + Bromoform + Chloroform + Dibromochloromethane)	80 (W)	NCL	NCL	NCL	NCL	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

TABLE 1A
SUMMARY OF GROUNDWATER SAMPLE ANALYSIS - VOCS
Wolver/Jewell
Algoma Township, Kent County, MI

Sample Location	Part 201 Generic Residential Groundwater Cleanup Criteria – Drinking Water ²	Part 201 Generic Groundwater Cleanup Criteria – Groundwater Surface Water Interface ²	Part 201 Generic Residential Groundwater Cleanup Criteria – Groundwater Volatilization to Indoor Air Inhalation ²	EGLE Residential Recommended Volatilization to Indoor Air Interim Action Screening Level - Groundwater ³	U.S. EPA Residential Tap Water Regional Removal Management Levels ⁴	WV-MW-8D	WV-MW-8M	WV-MW-8S	WV-MW-9	WV-MW-10D	WV-MW-10M	WV-MW-10S	WV-MW-11D	WV-MW-11D	WV-MW-11S	WV-MW-12D	WV-MW-12M	WV-MW-12S
Sample Name						VW-GW-MW-8D	VW-GW-MW-8M	VW-GW-MW-8S	VW-GW-MW-9	VW-GW-MW-10D	VW-GW-MW-10M	VW-GW-MW-10S	VW-GW-MW-11D	VW-GW-MW-11D DUP	VW-GW-MW-11S	VW-GW-MW-12D	VW-GW-MW-12M	VW-GW-MW-12S
Well Screen Interval (Feet below ground surface)						11S-120	60-65	30-35	92.3-97.3	165-170	70-75	10-15	158.9-163.9	158.9-163.9	28.8-33.8	176.5-181.5	144.5-149.4	74.6-79.5
Laboratory Sample ID(s)						UK09009-001	UK07025-007	UK07025-006	UK13023-011	UK07025-003	UK07025-002	UK07025-001	UK07051-006	UK07051-007	UK07051-008	UK09008-003	UK09008-002	UK09008-001
Sample Date						11/08/2019	11/06/2019	11/06/2019	11/11/2019	11/06/2019	11/06/2019	11/06/2019	11/05/2019	11/05/2019	11/05/2019	11/07/2019	11/07/2019	11/07/2019
Parameter (µg/L)																		
Acetone	730	1,700	1,000,000,000 (D,S)	12,000,000	42,000	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
Benzene	5.0 (A)	200	5,600	14	46	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Bromodichloromethane	80 (A,W)	ID	4,800	NCL	13	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Bromoform	80 (A,W)	ID	470,000	NCL	330	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Methyl ethyl ketone (2-Butanone)	13,000	2,200	240,000,000 (S)	NCL	17,000	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Bromomethane (Methyl bromide)	10	5.0 (M)	4,000	NCL	23	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Carbon disulfide	800	ID	250,000	NCL	2,400	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Carbon tetrachloride	5.0 (A)	38	370	NCL	46	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chlorobenzene	100 (A)	25	210,000	540	230	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chloroethane	430	1,100	5,700,000 (S)	6,700	63,000	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Chloroform	80 (A,W)	350	28,000	7.6	22	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chloromethane (Methyl chloride)	260	ID	8,600	160	560	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Cyclohexane	NCL	NCL	NCL	NCL	38,000	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2-Dibromo-3-chloropropane (DBCP)	0.20 (A)	ID	220	NCL	0.033	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Dibromochloromethane	80 (A,W)	ID	14,000	NCL	87	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2-Dibromoethane (Ethylene dibromide)	0.05 (A)	5.7	2,400	NCL	0.75	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2-Dichlorobenzene	600 (A)	13	160,000 (S)	NCL	910	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,3-Dichlorobenzene	6.6	28	18,000	52	NCL	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,4-Dichlorobenzene	75 (A)	17	16,000	120	48	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Dichlorodifluoromethane	1,700	ID	220,000	NCL	590	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
1,1-Dichloroethane	880	740	1,000,000	67	280	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2-Dichloroethane	5.0 (A)	360	9,600	NCL	17	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethylene	7.0 (A)	130	200	170	850	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
cis-1,2-Dichloroethylene	70 (A)	620	93,000	48	110	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
trans-1,2-Dichloroethylene	100 (A)	1,500	85,000	650	1,100	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2-Dichloropropane	5.0 (A)	230	16,000	NCL	25	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
cis-1,3-Dichloropropene	NCL	NCL	NCL	NCL	NCL	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
trans-1,3-Dichloropropene	NCL	NCL	NCL	NCL	NCL	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,3-Dichloropropene (Calculated: cis + trans)	8.5	9.0	3,900	NCL	47	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	74 (E)	18	110,000	45	150	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
2-Hexanone	1,000	ID	4,200,000	NCL	110	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Isopropyl benzene	800	28	56,000 (S)	NCL	1,400	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Methyl acetate	NCL	NCL	NCL	NCL	60,000	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Methyl tertiary butyl ether (MTBE)	40 (E)	7,100	47,000,000 (S)	4,000	1,400	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Methyl isobutyl ketone	1,800	ID	20,000,000 (S)	NCL	19,000	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Methylcyclohexane	NCL	NCL	NCL	NCL	NCL	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Methylene Chloride	5.0 (A)	1,500	220,000	3,900	320	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Styrene	100 (A)	80	170,000	NCL	3,600	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1,2,2-Tetrachloroethane	8.5	78	12,000	NCL	7.6	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Tetrachloroethylene	5.0 (A)	60	25,000	96	120	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Toluene	790 (E)	270	530,000 (S)	23,000	3,300	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1,2-Trichloro-1,2,2-trifluoroethane	170,000 (S)	32	170,000 (S)	NCL	31,000	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trichlorobenzene	70 (A)	99	300,000 (S)	95	12	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1,1-Trichloroethane	200 (A)	89	660,000	8,600	24,000	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1,2-Trichloroethane	5.0 (A)	330	17,000	NCL	1.2	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Trichloroethylene	5.0 (A)	200	2,200	6.1	8.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Trichlorofluoromethane	2,600	NA	1,100,000 (S)	NCL	15,000	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Vinyl Chloride	2.0 (A)	13	1,100	0.96 (M)	1.9	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Xylenes (Total)	280 (E)	49	190,000 (S)	1,200	580	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
m+p - Xylenes	NCL	NCL	NCL	NCL	NCL	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
o-Xylene	NCL	NCL	NCL	NCL	580	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Trihalomethanes (Calculation: Bromodichloromethane + Bromoform + Chloroform + Dibromochloromethane)	80 (W)	NCL	NCL	NCL	NCL	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

TABLE 1A
SUMMARY OF GROUNDWATER SAMPLE ANALYSIS - VOCS
Wolven/Jewell
Algoma Township, Kent County, MI

Sample Location	Part 201 Generic Residential Groundwater Cleanup Criteria – Drinking Water ²	Part 201 Generic Groundwater Cleanup Criteria – Groundwater Surface Water Interface ²	Part 201 Generic Residential Groundwater Cleanup Criteria – Groundwater Volatilization to Indoor Air Inhalation ²	EGLE Residential Recommended Volatilization to Indoor Air Interim Action Screening Level - Groundwater ³	U.S. EPA Residential Tap Water Regional Removal Management Levels ⁴	WV-MW-13D	WV-MW-13M	WV-MW-13S	WV-MW-14D	WV-MW-14S	WV-MW-15A	WV-MW-15B	WV-MW-15C	WV-MW-15D	WV-MW-15D DUP	WV-MW-16D	WV-MW-16S
Sample Name						WV-GW-MW-13D	WV-GW-MW-13M	WV-GW-MW-13S	VW-GW-MW-14D	WV-GW-MW-14S	WV-GW-MW-15A	WV-GW-MW-15B	WV-GW-MW-15C	WV-GW-MW-15D	WV-GW-MW-15D DUP	WV-GW-MW-16D	WV-GW-MW-16S
Well Screen Interval (Feet below ground surface)						58-63	18-23	1.5-6.5	140-145	9-14	9-14	33-38	37.8-42.6	134.9-137.6	134.9-137.6	91-96	17-22
Laboratory Sample ID(s)						UK09008-006	UK09008-005	UK09008-004	UK09009-002	UK09008-007	UK13023-008	UK13023-009	UK13023-010	UK13023-013	UK13023-014	UK13023-001	UK19013-001
Sample Date						11/07/2019	11/07/2019	11/07/2019	11/08/2019	11/07/2019	11/11/2019	11/11/2019	11/11/2019	11/11/2019	11/11/2019	11/12/2019	11/13/2019
Parameter (µg/L)																	
Acetone	730	1,700	1,000,000,000 (D,S)	12,000,000	42,000	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
Benzene	5.0 (A)	200	5,600	14	46	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Bromodichloromethane	80 (A,W)	ID	4,800	NCL	13	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Bromoform	80 (A,W)	ID	470,000	NCL	330	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Methyl ethyl ketone (2-Butanone)	13,000	2,200	240,000,000 (S)	NCL	17,000	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Bromomethane (Methyl bromide)	10	5.0 (M)	4,000	NCL	23	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Carbon disulfide	800	ID	250,000	NCL	2,400	<1	<1	<1	<1	<1	<1	0.6 [J]	1.5	<1	<1	<1	<1
Carbon tetrachloride	5.0 (A)	38	370	NCL	46	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chlorobenzene	100 (A)	25	210,000	540	230	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chloroethane	430	1,100	5,700,000 (S)	6,700	63,000	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Chloroform	80 (A,W)	350	28,000	7.6	22	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chloromethane (Methyl chloride)	260	ID	8,600	160	560	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Cyclohexane	NCL	NCL	NCL	NCL	38,000	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2-Dibromo-3-chloropropane (DBCP)	0.20 (A)	ID	220	NCL	0.033	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Dibromochloromethane	80 (A,W)	ID	14,000	NCL	87	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2-Dibromoethane (Ethylene dibromide)	0.05 (A)	5.7	2,400	NCL	0.75	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2-Dichlorobenzene	600 (A)	13	160,000 (S)	NCL	910	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,3-Dichlorobenzene	6.6	28	18,000	52	NCL	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,4-Dichlorobenzene	75 (A)	17	16,000	120	48	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Dichlorodifluoromethane	1,700	ID	220,000	NCL	590	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
1,1-Dichloroethane	880	740	1,000,000	67	280	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2-Dichloroethane	5.0 (A)	360	9,600	NCL	17	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethylene	7.0 (A)	130	200	170	850	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
cis-1,2-Dichloroethylene	70 (A)	620	93,000	48	110	<1	<1	<1	<1	<1	1.4	0.45 [J]	<1	<1	<1	<1	<1
trans-1,2-Dichloroethylene	100 (A)	1,500	85,000	650	1,100	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2-Dichloropropane	5.0 (A)	230	16,000	NCL	25	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
cis-1,3-Dichloropropene	NCL	NCL	NCL	NCL	NCL	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
trans-1,3-Dichloropropene	NCL	NCL	NCL	NCL	NCL	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,3-Dichlorpropene (Calculated: cis + trans)	8.5	9.0	3,900	NCL	47	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	74 (E)	18	110,000	45	150	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
2-Hexanone	1,000	ID	4,200,000	NCL	110	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Isopropyl benzene	800	28	56,000 (S)	NCL	1,400	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Methyl acetate	NCL	NCL	NCL	NCL	60,000	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Methyl tertiary butyl ether (MTBE)	40 (E)	7,100	47,000,000 (S)	4,000	1,400	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Methyl isobutyl ketone	1,800	ID	20,000,000 (S)	NCL	19,000	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Methylcyclohexane	NCL	NCL	NCL	NCL	NCL	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Methylene Chloride	5.0 (A)	1,500	220,000	3,900	320	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Styrene	100 (A)	80	170,000	NCL	3,600	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1,2,2-Tetrachloroethane	8.5	78	12,000	NCL	7.6	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Tetrachloroethylene	5.0 (A)	60	25,000	96	120	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Toluene	790 (E)	270	530,000 (S)	23,000	3,300	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1,2-Trichloro-1,2,2-trifluoroethane	170,000 (S)	32	170,000 (S)	NCL	31,000	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trichlorobenzene	70 (A)	99	300,000 (S)	95	12	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1,1-Trichloroethane	200 (A)	89	660,000	8,600	24,000	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1,2-Trichloroethane	5.0 (A)	330	17,000	NCL	1.2	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Trichloroethylene	5.0 (A)	200	2,200	6.1	8.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Trichlorofluoromethane	2,600	NA	1,100,000 (S)	NCL	15,000	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Vinyl Chloride	2.0 (A)	13	1,100	0.96 (M)	1.9	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Xylenes (Total)	280 (E)	49	190,000 (S)	1,200	580	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
m+p - Xylenes	NCL	NCL	NCL	NCL	NCL	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
o-Xylene	NCL	NCL	NCL	NCL	580	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Trihalomethanes (Calculation: Bromodichloromethane + Bromoform + Chloroform + Dibromochloromethane)	80 (W)	NCL	NCL	NCL	NCL	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

TABLE 1B
SUMMARY OF GROUNDWATER SAMPLE ANALYSIS - SVOCS
Wolver/Jewell
Algoma Township, Kent County, MI

Sample Location	Part 201 Generic Residential Groundwater Cleanup Criteria – Drinking Water ²	Part 201 Generic Groundwater Cleanup Criteria – Groundwater Surface Water Interface ²	Part 201 Generic Residential Groundwater Cleanup Criteria – Groundwater Volatilization to Indoor Air Inhalation ²	EGLE Residential Recommended Volatilization to Indoor Air Interim Action Screening Level - Groundwater ³	U.S. EPA Residential Tap Water Regional Removal Management Levels ⁴	WV-MW-1	WV-MW-2D	WV-MW-2S	WV-MW-3D	WV-MW-3S	WV-MW-4	WV-MW-5D	WV-MW-5S	WV-MW-6D	WV-MW-6S	WV-MW-7D	WV-MW-7M	WV-MW-7S
Sample Name						WV-GW-MW-1	WV-GW-MW-2D	WV-GW-MW-2S	WV-GW-MW-3D	WV-GW-MW-3S	WV-GW-MW-4	WV-GW-MW-5D	WV-GW-MW-5S	VW-GW-MW-6D	VW-GW-MW-6S	WV-GW-MW-7D	WV-GW-MW-7M	WV-GW-MW-7S
Well Screen Interval (Feet below ground surface)						135-140	25-35	20-25	56-61	5-10	130-135	67-72	60-65	98-103	13-18	15.7-20.5	50-55	90.2-95
Laboratory Sample ID(s)						UK13023-002	UK07051-005	UK07051-004	UK07025-005	UK07025-004	UK19013-002	UK19013-003	UK19013-004	UK09009-004	UK09009-003	UK07051-003	UK07051-002	UK07051-001
Sample Date						11/12/2019	11/05/2019	11/05/2019	11/06/2019	11/06/2019	11/13/2019	11/13/2019	11/13/2019	11/08/2019	11/08/2019	11/05/2019	11/05/2019	11/05/2019
Parameter (µg/L)																		
Acenaphthene	1,300	38	4,200 (S)	NCL	1,600	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Acenaphthylene	52	ID	3,900 (S)	NCL	NCL	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Acetophenone	1,500	ID	6,100,000 (S)	NCL	5,800	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Anthracene	43 (S)	ID	43 (S)	NCL	5,300	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Atrazine	3.0 (A)	7.3	NLV	NCL	30	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Benzidine	0.30 (M)	0.30 (M)	NLV	NCL	0.011	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
Benzo[a]anthracene	2.1	ID	NLV	NCL	3.0	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo[a]pyrene	5.0 (A)	ID	NLV	NCL	2.5	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo[b]fluoranthene (3,4-Benzofluoranthene)	1.5 (S,AA)	ID	ID	NCL	25	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo[g,h,i]perylene	1.0 (M)	ID	NLV	NCL	NCL	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo[k]fluoranthene	1.0 (M)	NA	NLV	NCL	250	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Butyl benzyl phthalate	1,200	67	NLV	NCL	1,600	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Caprolactam	5,800	NA	NLV	NCL	30,000	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6
Carbazole	85	10 (M)	NLV	NCL	NCL	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
p-Chloro-m-cresol	150	7.4	NLV	NCL	4,300	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
bis[2-chloroethyl]ether	2.0	1.0 (M)	38,000	NCL	1.4	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
2-Chloronaphthalene	1,800	NA	ID	NCL	2,200	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
2-Chlorophenol	45	18	490,000	NCL	270	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Chrysene	1.6 (S)	ID	ID	NCL	2,500	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Dibenzo[a,h]anthracene	2.0 (M)	ID	NLV	NCL	2.5	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Dibenzofuran	ID	4.0	10,000 (S)	NCL	24	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
3,3'-Dichlorobenzidine	1.1	0.30 (M)	NLV	NCL	13	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
2,4-Dichlorophenol	73	11	NLV	NCL	140	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6
Diethyl phthalate	5,500	110	NLV	NCL	45,000	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Dimethyl phthalate	73,000	NA	NLV	NCL	NCL	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
2,4-Dimethylphenol	370	380	NLV	NCL	1,100	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Di-n-butyl phthalate	880	9.7	NLV	NCL	2,700	0.53 [BJ]	0.69 [J]	0.62 [J]	0.56 [J]	0.58 [J]	<0.8	<0.8	<0.8	0.55 [BJ]	0.54 [BJ]	0.55 [J]	0.54 [J]	0.75 [J]
4,6-Dinitro-o-cresol	20 (M)	NA	NLV	NCL	4.5	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
2,4-Dinitrotoluene	7.7	NA	NLV	NCL	24	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6
Di-n-octyl phthalate	130	ID	NLV	NCL	600	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Azobenzene	23	ID	6,400 (S)	NCL	12	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
bis[2-Ethylhexyl]phthalate	6.0 (A)	14	NLV	NCL	560	<4	0.71 [J]	<4	<4	0.75 [J]	<4	<4	<4	<4	<4	<4	<4	0.75 [J]
Fluoranthene	210 (S)	1.6	210 (S)	NCL	2,400	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Fluorene	880	12	2,000 (S)	NCL	880	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Hexachlorobenzene	1.0 (A)	0.2 (M)	440	NCL	0.98	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Hexachlorobutadiene	15	0.053	1,600	NCL	14	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Hexachlorocyclopentadiene	50 (A)	ID	130	NCL	1.2	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
Hexachloroethane	7.3	6.7	27,000.00	NCL	19	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Indeno[1,2,3-cd]pyrene	2.0 (M)	ID	NLV	NCL	25	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Isophorone	770	1,300	NLV	NCL	7,800	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
2-Methylnaphthalene	260	19	25,000 (S)	NCL	110	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
2-Methylphenol	NCL	NCL	NCL	NCL	2,800	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
4-Methylphenol	NCL	NCL	NCL	NCL	5,600	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6
Naphthalene	520	11	31,000 (S)	NCL	17	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.29	0.22	<0.2	<0.2	<0.2
Nitrobenzene	3.4	180	280,000	NCL	14	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
2-Nitrophenol	20	ID	NLV	NCL	NCL	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6
n-Nitroso-di-n-propylamine	5.0 (M)	NA	NLV	NCL	1.1	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
n-Nitrosodiphenylamine	270	NA	NLV	NCL	1,200	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Pentachlorophenol	1.0 (A)	1.8 (G)	NLV	NCL	4.1	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
Phenanthrene	52	2.0 (M)	1,000 (S)	NCL	NCL	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Phenol	4,400	450	NLV	NCL	17,000	<0.8	0.72 [J]	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Pyrene	140 (S)	ID	140 (S)	NCL	360	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
2,4,5-Trichlorophenol	730	NA	NLV	NCL	3,500	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
2,4,6-Trichlorophenol	120	5.0	NLV	NCL	36	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8

TABLE 1B
SUMMARY OF GROUNDWATER SAMPLE ANALYSIS - SVOCS
Wolver/Jewell
Algoma Township, Kent County, MI

Sample Location	Part 201 Generic Residential Groundwater Cleanup Criteria – Drinking Water ²	Part 201 Generic Groundwater Cleanup Criteria – Groundwater Surface Water Interface ²	Part 201 Generic Residential Groundwater Cleanup Criteria – Groundwater Volatilization to Indoor Air Inhalation ²	EGLE Residential Recommended Volatilization to Indoor Air Interim Action Screening Level - Groundwater ³	U.S. EPA Residential Tap Water Regional Removal Management Levels ⁴	WV-MW-8D	WV-MW-8M	WV-MW-8S	WV-MW-9	WV-MW-10D	WV-MW-10M	WV-MW-10S	WV-MW-11D	WV-MW-11D	WV-MW-11S	WV-MW-12D	WV-MW-12M	WV-MW-12S
Sample Name						VW-GW-MW-8D	VW-GW-MW-8M	VW-GW-MW-8S	VW-GW-MW9	VW-GW-MW-10D	VW-GW-MW-10M	VW-GW-MW-10S	VW-GW-MW-11D	VW-GW-MW-11D DUP	VW-GW-MW-11S	VW-GW-MW-12D	VW-GW-MW-12M	VW-GW-MW-12S
Well Screen Interval (Feet below ground surface)						11S-120	60-65	30-35	92.3-97.3	165-170	70-75	10-15	158.9-163.9	158.9-163.9	28.8-33.8	176.5-181.5	144.5-149.4	74.6-79.5
Laboratory Sample ID(s)						UK09009-001	UK07025-007	UK07025-006	UK13023-011	UK07025-003	UK07025-002	UK07025-001	UK07051-006	UK07051-007	UK07051-008	UK09008-003	UK09008-002	UK09008-001
Sample Date						11/08/2019	11/06/2019	11/06/2019	11/11/2019	11/06/2019	11/06/2019	11/06/2019	11/05/2019	11/05/2019	11/05/2019	11/07/2019	11/07/2019	11/07/2019
Parameter (µg/L)																		
Acenaphthene	1,300	38	4,200 (S)	NCL	1,600	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Acenaphthylene	52	ID	3,900 (S)	NCL	NCL	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Acetophenone	1,500	ID	6,100,000 (S)	NCL	5,800	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Anthracene	43 (S)	ID	43 (S)	NCL	5,300	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Atrazine	3.0 (A)	7.3	NLV	NCL	30	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Benzidine	0.30 (M)	0.30 (M)	NLV	NCL	0.011	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
Benzo[a]anthracene	2.1	ID	NLV	NCL	3.0	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo[a]pyrene	5.0 (A)	ID	NLV	NCL	2.5	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo[b]fluoranthene (3,4-Benzofluoranthene)	1.5 (S,AA)	ID	ID	NCL	25	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo[g,h,i]perylene	1.0 (M)	ID	NLV	NCL	NCL	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo[k]fluoranthene	1.0 (M)	NA	NLV	NCL	250	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Butyl benzyl phthalate	1,200	67	NLV	NCL	1,600	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Caprolactam	5,800	NA	NLV	NCL	30,000	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6
Carbazole	85	10 (M)	NLV	NCL	NCL	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
p-Chloro-m-cresol	150	7.4	NLV	NCL	4,300	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
bis[2-chloroethyl]ether	2.0	1.0 (M)	38,000	NCL	1.4	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
2-Chloronaphthalene	1,800	NA	ID	NCL	2,200	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
2-Chlorophenol	45	18	490,000	NCL	270	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Chrysene	1.6 (S)	ID	ID	NCL	2,500	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Dibenzo[a,h]anthracene	2.0 (M)	ID	NLV	NCL	2.5	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Dibenzofuran	ID	4.0	10,000 (S)	NCL	24	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
3,3'-Dichlorobenzidine	1.1	0.30 (M)	NLV	NCL	13	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
2,4-Dichlorophenol	73	11	NLV	NCL	140	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	2.6
Diethyl phthalate	5,500	110	NLV	NCL	45,000	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Dimethyl phthalate	73,000	NA	NLV	NCL	NCL	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
2,4-Dimethylphenol	370	380	NLV	NCL	1,100	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	1.2
Di-n-butyl phthalate	880	9.7	NLV	NCL	2,700	0.53 [BJ]	0.58 [J]	0.56 [J]	0.52 [BJ]	0.53 [J]	0.56 [J]	0.56 [J]	0.56 [J]	0.76 [J]	0.6 [J]	0.53 [J]	0.54 [BJ]	0.54 [BJ]
4,6-Dinitro-o-cresol	20 (M)	NA	NLV	NCL	4.5	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
2,4-Dinitrotoluene	7.7	NA	NLV	NCL	24	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	1.9
Di-n-octyl phthalate	130	ID	NLV	NCL	600	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Azobenzene	23	ID	6,400 (S)	NCL	12	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
bis[2-Ethylhexyl]phthalate	6.0 (A)	14	NLV	NCL	560	<4	<4	<4	<4	<4	<4	<4	0.74 [J]	<4	<4	<4	0.75 [BJ]	0.74 [BJ]
Fluoranthene	210 (S)	1.6	210 (S)	NCL	2,400	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Fluorene	880	12	2,000 (S)	NCL	880	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Hexachlorobenzene	1.0 (A)	0.2 (M)	440	NCL	0.98	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Hexachlorobutadiene	15	0.053	1,600	NCL	14	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Hexachlorocyclopentadiene	50 (A)	ID	130	NCL	1.2	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
Hexachloroethane	7.3	6.7	27,000.00	NCL	19	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Indeno[1,2,3-cd]pyrene	2.0 (M)	ID	NLV	NCL	25	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Isophorone	770	1,300	NLV	NCL	7,800	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
2-Methylnaphthalene	260	19	25,000 (S)	NCL	110	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
2-Methylphenol	NCL	NCL	NCL	NCL	2,800	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
4-Methylphenol	NCL	NCL	NCL	NCL	5,600	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6
Naphthalene	520	11	31,000 (S)	NCL	17	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Nitrobenzene	3.4	180	280,000	NCL	14	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
2-Nitrophenol	20	ID	NLV	NCL	NCL	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6
n-Nitroso-di-n-propylamine	5.0 (M)	NA	NLV	NCL	1.1	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
n-Nitrosodiphenylamine	270	NA	NLV	NCL	1,200	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Pentachlorophenol	1.0 (A)	1.8 (G)	NLV	NCL	4.1	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
Phenanthrene	52	2.0 (M)	1,000 (S)	NCL	NCL	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Phenol	4,400	450	NLV	NCL	17,000	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Pyrene	140 (S)	ID	140 (S)	NCL	360	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
2,4,5-Trichlorophenol	730	NA	NLV	NCL	3,500	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
2,4,6-Trichlorophenol	120	5.0	NLV	NCL	36	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8

TABLE 1B
SUMMARY OF GROUNDWATER SAMPLE ANALYSIS - SVOCs
Wolver/Jewell
Algoma Township, Kent County, MI

Sample Location	Part 201 Generic Residential Groundwater Cleanup Criteria – Drinking Water ²	Part 201 Generic Groundwater Cleanup Criteria – Groundwater Surface Water Interface ²	Part 201 Generic Residential Groundwater Cleanup Criteria – Groundwater Volatilization to Indoor Air Inhalation ²	EGLE Residential Recommended Volatilization to Indoor Air Interim Action Screening Level - Groundwater ³	U.S. EPA Residential Tap Water Regional Removal Management Levels ⁴	WV-MW-13D	WV-MW-13M	WV-MW-13S	WV-MW-14D	WV-MW-14S	WV-MW-15A	WV-MW-15B	WV-MW-15C	WV-MW-15D	WV-MW-15D DUP	WV-MW-16D	WV-MW-16S
Sample Name						WV-GW-MW-13D	WV-GW-MW- 13M	WV-GW-MW-13S	VW-GW-MW-14D	WV-GW-MW-14S	WV-GW-MW-15A	WV-GW-MW-15B	WV-GW-MW-15C	WV-GW-MW-15D	WV-GW-MW-15D DUP	WV-GW-MW-16D	WV-GW-MW-16S
Well Screen Interval (Feet below ground surface)						58-63	18-23	1.5-6.5	140-145	9-14	9-14	33-38	37.8-42.6	134.9-137.6	134.9-137.6	91-96	17-22
Laboratory Sample ID(s)						UK09008-006	UK09008-005	UK09008-004	UK09009-002	UK09008-007	UK13023-008	UK13023-009	UK13023-010	UK13023-013	UK13023-014	UK13023-001	UK19013-001
Sample Date						11/07/2019	11/07/2019	11/07/2019	11/08/2019	11/07/2019	11/11/2019	11/11/2019	11/11/2019	11/11/2019	11/11/2019	11/12/2019	11/13/2019
Parameter (µg/L)																	
Acenaphthene	1,300	38	4,200 (S)	NCL	1,600	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Acenaphthylene	52	ID	3,900 (S)	NCL	NCL	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Acetophenone	1,500	ID	6,100,000 (S)	NCL	5,800	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Anthracene	43 (S)	ID	43 (S)	NCL	5,300	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Atrazine	3.0 (A)	7.3	NLV	NCL	30	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Benzidine	0.30 (M)	0.30 (M)	NLV	NCL	0.011	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
Benzo[a]anthracene	2.1	ID	NLV	NCL	3.0	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo[a]pyrene	5.0 (A)	ID	NLV	NCL	2.5	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo[b]fluoranthene (3,4-Benzofluoranthene)	1.5 (S,AA)	ID	ID	NCL	25	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo[g,h,i]perylene	1.0 (M)	ID	NLV	NCL	NCL	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo[k]fluoranthene	1.0 (M)	NA	NLV	NCL	250	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Butyl benzyl phthalate	1,200	67	NLV	NCL	1,600	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Caprolactam	5,800	NA	NLV	NCL	30,000	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6
Carbazole	85	10 (M)	NLV	NCL	NCL	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
p-Chloro-m-cresol	150	7.4	NLV	NCL	4,300	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
bis(2-chloroethyl)ether	2.0	1.0 (M)	38,000	NCL	1.4	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
2-Chloronaphthalene	1,800	NA	ID	NCL	2,200	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
2-Chlorophenol	45	18	490,000	NCL	270	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Chrysene	1.6 (S)	ID	ID	NCL	2,500	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Dibenzo[a,h]anthracene	2.0 (M)	ID	NLV	NCL	2.5	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Dibenzofuran	ID	4.0	10,000 (S)	NCL	24	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
3,3'-Dichlorobenzidine	1.1	0.30 (M)	NLV	NCL	13	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
2,4-Dichlorophenol	73	11	NLV	NCL	140	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6
Diethyl phthalate	5,500	110	NLV	NCL	45,000	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Dimethyl phthalate	73,000	NA	NLV	NCL	NCL	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
2,4-Dimethylphenol	370	380	NLV	NCL	1,100	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Di-n-butyl phthalate	880	9.7	NLV	NCL	2,700	0.57 [BJ]	0.54 [BJ]	0.54 [BJ]	0.53 [BJ]	0.53 [BJ]	0.54 [BJ]	0.55 [BJ]	0.52 [BJ]	0.51 [BJ]	0.54 [BJ]	0.55 [BJ]	1.1
4,6-Dinitro-o-cresol	20 (M)	NA	NLV	NCL	4.5	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
2,4-Dinitrotoluene	7.7	NA	NLV	NCL	24	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6
Di-n-octyl phthalate	130	ID	NLV	NCL	600	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Azobenzene	23	ID	6,400 (S)	NCL	12	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
bis(2-Ethylhexyl)phthalate	6.0 (A)	14	NLV	NCL	560	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
Fluoranthene	210 (S)	1.6	210 (S)	NCL	2,400	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Fluorene	880	12	2,000 (S)	NCL	880	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Hexachlorobenzene	1.0 (A)	0.2 (M)	440	NCL	0.98	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Hexachlorobutadiene	15	0.053	1,600	NCL	14	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Hexachlorocyclopentadiene	50 (A)	ID	130	NCL	1.2	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
Hexachloroethane	7.3	6.7	27,000.00	NCL	19	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Indeno[1,2,3-cd]pyrene	2.0 (M)	ID	NLV	NCL	25	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Isophorone	770	1,300	NLV	NCL	7,800	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
2-Methylnaphthalene	260	19	25,000 (S)	NCL	110	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.073 [J]	<0.2	<0.2	<0.2	<0.2
2-Methylphenol	NCL	NCL	NCL	NCL	2,800	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
4-Methylphenol	NCL	NCL	NCL	NCL	5,600	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6
Naphthalene	520	11	31,000 (S)	NCL	17	<0.2	<0.2	<0.2	0.17 [J]	<0.2	<0.2	<0.2	0.057 [J]	<0.2	<0.2	<0.2	<0.2
Nitrobenzene	3.4	180	280,000	NCL	14	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
2-Nitrophenol	20	ID	NLV	NCL	NCL	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6
n-Nitroso-di-n-propylamine	5.0 (M)	NA	NLV	NCL	1.1	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
n-Nitrosodiphenylamine	270	NA	NLV	NCL	1,200	0.54 [J]	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Pentachlorophenol	1.0 (A)	1.8 (G)	NLV	NCL	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
Phenanthrene	52	2.0 (M)	1,000 (S)	NCL	NCL	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Phenol	4,400	450	NLV	NCL	17,000	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Pyrene	140 (S)	ID	140 (S)	NCL	360	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
2,4,5-Trichlorophenol	730	NA	NLV	NCL	3,500	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
2,4,6-Trichlorophenol	120	5.0	NLV	NCL	36	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8

TABLE 1C
SUMMARY OF GROUNDWATER SAMPLE ANALYSIS - METALS
Wolver/Jewell
Algoma Township, Kent County, MI

Sample Location	Part 201 Generic Residential Groundwater Cleanup Criteria – Drinking Water ²	Part 201 Generic Groundwater Cleanup Criteria – Groundwater Surface Water Interface ²	Part 201 Generic Residential Groundwater Cleanup Criteria – Groundwater Volatilization to Indoor Air Inhalation ²	EGLE Residential Recommended Volatilization to Indoor Air Interim Action Screening Level - Groundwater ³	U.S. EPA Residential Tap Water Regional Removal Management Levels ⁴	WV-MW-1	WV-MW-2D	WV-MW-2S	WV-MW-3D	WV-MW-3S	WV-MW-4	WV-MW-5D	WV-MW-5S	WV-MW-6D	WV-MW-6S	WV-MW-7D	WV-MW-7M	WV-MW-7S
Sample Name						WV-GW-MW-1	WV-GW-MW-2D	WV-GW-MW-2S	WV-GW-MW-3D	WV-GW-MW-3S	WV-GW-MW-4	WV-GW-MW-5D	WV-GW-MW-5S	VW-GW-MW-6D	VW-GW-MW-6S	WV-GW-MW-7D	WV-GW-MW-7M	WV-GW-MW-7S
Well Screen Interval (Feet below ground surface)						135-140	25-35	20-25	56-61	5-10	130-135	67-72	60-65	98-103	13-18	15.7-20.5	50-55	90.2-95
Laboratory Sample ID(s)						UK13023-002 & 19110860-08B	UK07051-005 & 19110333-05B	UK07051-004 & 19110333-04B	UK07025-005 & 19110333-13B	UK07025-004 & 19110333-12B	UK19013-002 & 19110860-13B	UK19013-003 & 19110860-14B	UK19013-004 & 19110860-15B	UK09009-004 & 19110333-26B	UK09009-003 & 19110333-25B	UK07051-003 & 19110333-03B	UK07051-002 & 19110333-02B	UK07051-001 & 19110333-01B
Sample Date						11/12/2019	11/05/2019	11/05/2019	11/06/2019	11/06/2019	11/13/2019	11/13/2019	11/13/2019	11/08/2019	11/08/2019	11/05/2019	11/05/2019	11/05/2019
Parameter (µg/L)																		
Aluminum	50 (V)	NA	NLV	NCL	60,000.00	130	63	25 [J]	17 [J]	470	380	11 [J]	14 [J]	14 [J]	10 [J]	1,300	190	<40
Antimony	6.0 (A)	130	NLV	NCL	23	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Arsenic	10 (A)	10	NLV	NCL	5.2	<2	<2	<2	<2	<2	<2	<2	<2	1.3 [J]	<2	3.7	<2	<2
Barium	2,000 (A)	1,000 (G)	NLV	NCL	11,000.00	150	200	42	21	75	65	22	25	82	34	49	45	8.6
Beryllium	4.0 (A)	25 (G)	NLV	NCL	74	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Boron (Boron and Borates only)	500 (F)	7,200.00	NLV	NCL	12,000.00	20 [J]	<50	28 [J]	15 [J]	17 [J]	39 [J]	26 [J]	30 [J]	16 [J]	25 [J]	24 [J]	51	87
Cadmium	5.0 (A)	2.5 (G)	NLV	NCL	28	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chromium (Total)	NCL	NCL	NCL	NCL	NCL	5	<5	2.5 [J]	1.4 [J]	2.1 [J]	1.5 [J]	2.5 [J]	<5	<5	<5	4.3 [J]	1.7 [J]	1.6 [J]
Trivalent Chromium (Calculated: Total - Hexavalent)	100 (A)	120 (G)	NLV	NCL	67000	5	ND	2.5	1.4	2.1	1.5	2.5	ND	ND	ND	NC	NC	1.6
Hexavalent Chromium	100 (A)	11	NLV	NCL	3.5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	17	8.1	<5
Cobalt	40	100	NLV	NCL	18	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	1.6 [J]	<5	<5
Copper	1,000 (E)	18 (G)	NLV	NCL	2,400.00	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	9	1.7 [J]	1.4 [J]
Iron	300 (E)	NA	NLV	NCL	42,000.00	500	1,400	1,300	930	4,700	930	220	290	490	18 [J]	7,100	1,600	630
Lead	4.0 (L)	14 (G)	NLV	NCL	15	<1	<1	<1	<1	<1	0.36 [J]	<1	<1	<1	<1	4	0.57 [J]	<1
Magnesium	400,000.00	NA	NLV	NCL	NCL	28,000	19,000	25,000	19,000	11,000	13,000	25,000	30,000	27,000	18,000	23,000	26,000	14,000
Mercury	2.0 (A)	0.0013	56 (S)	1.4	1.9	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Molybdenum	73	3,200.00	NLV	NCL	300	2.8 [J]	4.3 [J]	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Nickel	100 (A)	100 (G)	NLV	NCL	1,200.00	2.5 [J]	13	3.6 [J]	2.4 [J]	2.1 [J]	<5	<5	1.4 [J]	<5	<5	6.8	3.7 [J]	1.6 [J]
Selenium	50 (A)	5	NLV	NCL	300	<5	<5	<5	<5	3 [J]	<5	<5	<5	<5	1.7 [J]	<5	2.4 [J]	<5
Silver	34	0.2 (M)	NLV	NCL	280	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Sodium	NCL	NCL	NCL	NCL	NCL	15,000	35,000	33,000	19,000	11,000	13,000	44,000	48,000	300,000	300,000	48,000	43,000	17,000
Thallium	2.0 (A)	3.7	NLV	NCL	0.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Titanium	NCL	NCL	NCL	NCL	NCL	4.3 [J]	1.3 [J]	1.7 [J]	1.5 [J]	8.3	8.2	<5	<5	<5	<5	42	5.3	<5
Vanadium	4.5	27	NLV	NCL	260	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	3.9 [J]	<5	<5
Zinc	2,400.00	230 (G)	NLV	NCL	18,000.00	<10	<10	<10	<10	3.1 [J]	<10	<10	<10	<10	<10	14	4.9 [J]	<10

TABLE 1C
SUMMARY OF GROUNDWATER SAMPLE ANALYSIS - METALS
Wolven/Jewell
Algoma Township, Kent County, MI

Sample Location	Part 201 Generic Residential Groundwater Cleanup Criteria – Drinking Water ²	Part 201 Generic Groundwater Cleanup Criteria – Groundwater Surface Water Interface ²	Part 201 Generic Residential Groundwater Cleanup Criteria – Groundwater Volatilization to Indoor Air Inhalation ²	EGLE Residential Recommended Volatilization to Indoor Air Interim Action Screening Level - Groundwater ³	U.S. EPA Residential Tap Water Regional Removal Management Levels ⁴	WV-MW-8D	WV-MW-8M	WV-MW-8S	WV-MW-9	WV-MW-10D	WV-MW-10M	WV-MW-10S	WV-MW-11D	WV-MW-11D	WV-MW-11S	WV-MW-12D	WV-MW-12M	WV-MW-12S
Sample Name						VW-GW-MW-8D	WV-GW-MW-8M	WV-GW-MW-8S	WV-GW-MW9	WV-GW-MW-10D	WV-GW-MW-10M	WV-GW-MW-10S	WV-GW-MW-11D	WV-GW-MW-11D DUP	WV-GW-MW-11S	WV-GW-MW-12D	WV-GW-MW-12M	WV-GW-MW-12S
Well Screen Interval (Feet below ground surface)						11S-120	60-6S	30-3S	92.3-97.3	16S-170	70-7S	10-1S	1S8.9-163.9	1S8.9-163.9	28.8-33.8	176.5-181.5	144.5-149.4	74.6-79.5
Laboratory Sample ID(s)						UK09009-001 & 19110333-23B	UK0702S-007 & 19110333-15B	UK0702S-006 & 19110333-14B	UK13023-011 & 19110860-06B	UK0702S-003 & 19110333-11B	UK0702S-002 & 19110333-10B	UK0702S-001 & 19110333-09B	UK070S1-006 & 19110333-06B	UK070S1-007 & 19110333-07B	UK070S1-008 & 19110333-08B	UK09008-003 & 19110333-18B	UK09008-002 & 19110333-17B	UK09008-001 & 19110333-16B
Sample Date						11/08/2019	11/06/2019	11/06/2019	11/11/2019	11/06/2019	11/06/2019	11/06/2019	11/05/2019	11/05/2019	11/05/2019	11/07/2019	11/07/2019	11/07/2019
Parameter (µg/L)																		
Aluminum	50 (V)	NA	NLV	NCL	60,000.00	24 [J]	16 [J]	<40	950	98	<40	66	<40	<40	19 [J]	240	960	140
Antimony	6.0 (A)	130	NLV	NCL	23	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Arsenic	10 (A)	10	NLV	NCL	5.2	4.2	<2	<2	2.1	<2	<2	<2	1.8 [J]	<2	<2	1.7 [J]	5.6	<2
Barium	2,000 (A)	1,000 (G)	NLV	NCL	11,000.00	66	90	17	70	210	160	23	54	54	45	12	100	91
Beryllium	4.0 (A)	25 (G)	NLV	NCL	74	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Boron (Boron and Borates only)	500 (F)	7,200.00	NLV	NCL	12,000.00	35 [J]	29 [J]	21 [J]	19 [J]	8.9 [J]	17 [J]	28 [J]	17 [J]	18 [J]	23 [J]	350	140	26 [J]
Cadmium	5.0 (A)	2.5 (G)	NLV	NCL	28	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chromium (Total)	NCL	NCL	NCL	NCL	NCL	<5	2.4 [J]	1.6 [J]	4.7 [J]	1.9 [J]	<5	<5	<5	<5	1.3 [J]	<5	1.8 [J]	<5
Trivalent Chromium (Calculated: Total - Hexavalent)	100 (A)	120 (G)	NLV	NCL	67000	ND	2.4	1.6	4.7	1.9	ND	ND	ND	ND	1.3	NC	NC	ND
Hexavalent Chromium	100 (A)	11	NLV	NCL	3.5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	14	18	<5
Cobalt	40	100	NLV	NCL	18	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Copper	1,000 (E)	18 (G)	NLV	NCL	2,400.00	<5	1.3 [J]	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Iron	300 (E)	NA	NLV	NCL	42,000.00	340	2,100	1,400	2,100	1,700	1,000	1,000	2,100	2,000	1,200	5,000	1,300	860
Lead	4.0 (L)	14 (G)	NLV	NCL	15	<1	<1	<1	0.47 [J]	<1	<1	<1	<1	<1	<1	<1	0.55 [J]	<1
Magnesium	400,000.00	NA	NLV	NCL	NCL	23,000	46,000	29,000	33,000	23,000	15,000	20,000	18,000	18,000	28,000	25,000	21,000	41,000
Mercury	2.0 (A)	0.0013	56 (S)	1.4	1.9	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Molybdenum	73	3,200.00	NLV	NCL	300	3.4 [J]	<10	<10	7.9 [J]	<10	<10	<10	<10	<10	<10	<10	2.9 [J]	<10
Nickel	100 (A)	100 (G)	NLV	NCL	1,200.00	<5	5.6	3.3 [J]	1.9 [J]	2.5 [J]	1.4 [J]	3.1 [J]	3.2 [J]	3.3 [J]	3.2 [J]	<5	1.6 [J]	<5
Selenium	50 (A)	5	NLV	NCL	300	<5	<5	1.6 [J]	<5	1.9 [J]	<5	<5	2.3 [J]	<5	<5	<5	<5	<5
Silver	34	0.2 (M)	NLV	NCL	280	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Sodium	NCL	NCL	NCL	NCL	NCL	16,000	290,000	94,000	7,700	13,000	7,000	50,000	6,200	6,600	22,000	28,000	13,000	6,500
Thallium	2.0 (A)	3.7	NLV	NCL	0.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.31 [J]	0.21 [J]	0.41 [J]
Titanium	NCL	NCL	NCL	NCL	NCL	<5	1.9 [J]	<5	27	3.2 [J]	1.6 [J]	2.4 [J]	1.6 [J]	1.8 [J]	1.7 [J]	6.6	27	3 [J]
Vanadium	4.5	27	NLV	NCL	260	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Zinc	2,400.00	230 (G)	NLV	NCL	18,000.00	<10	<10	<10	<10	3.1 [J]	<10	<10	<10	<10	3.1 [J]	<10	3.3 [J]	2.5 [J]

TABLE 1C
SUMMARY OF GROUNDWATER SAMPLE ANALYSIS - METALS
Wolver/Jewell
Algoma Township, Kent County, MI

Sample Location	Part 201 Generic Residential Groundwater Cleanup Criteria – Drinking Water ²	Part 201 Generic Groundwater Cleanup Criteria – Groundwater Surface Water Interface ²	Part 201 Generic Residential Groundwater Cleanup Criteria – Groundwater Volatilization to Indoor Air Inhalation ²	EGLE Residential Recommended Volatilization to Indoor Air Interim Action Screening Level - Groundwater ³	U.S. EPA Residential Tap Water Regional Removal Management Levels ⁴	WV-MW-13D	WV-MW-13M	WV-MW-13S	WV-MW-14D	WV-MW-14S	WV-MW-15A	WV-MW-15B	WV-MW-15C	WV-MW-15D	WV-MW-15D DUP	WV-MW-16D	WV-MW-16S
Sample Name						WV-GW-MW-13D	WV-GW-MW-13M	WV-GW-MW-13S	VW-GW-MW-14D	WV-GW-MW-14S	WV-GW-MW-15A	WV-GW-MW-15B	WV-GW-MW-15C	WV-GW-MW-15D	WV-GW-MW-15D DUP	WV-GW-MW-16D	WV-GW-MW-16S
Well Screen Interval (Feet below ground surface)						58-63	18-23	1.5-6.5	140-145	9-14	9-14	33-38	37.8-42.6	134.9-137.6	134.9-137.6	91-96	17-22
Laboratory Sample ID(s)						UK09008-006 & 19110333-21B	UK09008-005 & 19110333-20B	UK09008-004 & 19110333-19B	UK09009-002 & 19110333-24B	UK09008-007 & 19110333-22B	UK13023-008 & 19110860-02B	UK13023-009 & 19110860-01B	UK13023-010 & 19110860-03B	UK13023-013 & 19110860-04B	UK13023-014 & 19110860-05B	UK13023-001 & 19110860-07B	UK19013-001 & 19110860-12B
Sample Date						11/07/2019	11/07/2019	11/07/2019	11/08/2019	11/07/2019	11/11/2019	11/11/2019	11/11/2019	11/11/2019	11/11/2019	11/12/2019	11/13/2019
Parameter (µg/L)																	
Aluminum	50 (V)	NA	NLV	NCL	60,000.00	15 [J]	<40	28 [J]	7,000	<40	67	56	22 [J]	1,300	720	530	14 [J]
Antimony	6.0 (A)	130	NLV	NCL	23	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Arsenic	10 (A)	10	NLV	NCL	5.2	<2	12	<2	6.7	<2	1.8 [J]	<2	<2	<2	<2	3.5	<2
Barium	2,000 (A)	1,000 (G)	NLV	NCL	11,000.00	51	57	42	170	49	33	59	30	1,700	880	89	48
Beryllium	4.0 (A)	25 (G)	NLV	NCL	74	<0.4	<0.4	<0.4	0.33 [J]	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Boron (Boron and Borates only)	500 (F)	7,200.00	NLV	NCL	12,000.00	20 [J]	31 [J]	92	37 [J]	22 [J]	19 [J]	36 [J]	54	49 [J]	50	130	82
Cadmium	5.0 (A)	2.5 (G)	NLV	NCL	28	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chromium (Total)	NCL	NCL	NCL	NCL	NCL	<5	<5	<5	27	<5	<5	<5	<5	6.9	4 [J]	1.6 [J]	<5
Trivalent Chromium (Calculated: Total - Hexavalent)	100 (A)	120 (G)	NLV	NCL	67000	ND	ND	ND	NC	ND	ND	ND	ND	6.9	4	1.6	ND
Hexavalent Chromium	100 (A)	11	NLV	NCL	3.5	<5	<5	<5	32	<5	<5	<5	<5	<5	<5	<5	<5
Cobalt	40	100	NLV	NCL	18	<5	1.4 [J]	<5	3.6 [J]	<5	<5	<5	<5	1.7 [J]	<5	<5	<5
Copper	1,000 (E)	18 (G)	NLV	NCL	2,400.00	<5	<5	<5	12	<5	<5	<5	<5	1.5 [J]	<5	<5	<5
Iron	300 (E)	NA	NLV	NCL	42,000.00	25 [J]	13,000	12,000	11,000	<50	1,200	320	1,400	3,900	2,900	3,300	230
Lead	4.0 (L)	14 (G)	NLV	NCL	15	<1	<1	<1	5.7	<1	0.37 [J]	<1	<1	1.6	0.88 [J]	0.27 [J]	<1
Magnesium	400,000.00	NA	NLV	NCL	NCL	39,000	23,000	18,000	56,000	47,000	13,000	12,000	17,000	16,000	15,000	29,000	34,000
Mercury	2.0 (A)	0.0013	56 (S)	1.4	1.9	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Molybdenum	73	3,200.00	NLV	NCL	300	<10	<10	<10	3.9 [J]	<10	<10	<10	3.1 [J]	<10	<10	4.7 [J]	<10
Nickel	100 (A)	100 (G)	NLV	NCL	1,200.00	<5	1.4 [J]	<5	11	<5	<5	3.2 [J]	1.3 [J]	3.7 [J]	4.4 [J]	1.4 [J]	5.2
Selenium	50 (A)	5	NLV	NCL	300	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Silver	34	0.2 (M)	NLV	NCL	280	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Sodium	NCL	NCL	NCL	NCL	NCL	130,000	70,000	22,000	8,600	44,000	3,600	5,500	14,000	5,100	5,000	18,000	33,000
Thallium	2.0 (A)	3.7	NLV	NCL	0.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Titanium	NCL	NCL	NCL	NCL	NCL	<5	<5	1.9 [J]	140	<5	2.1 [J]	3.8 [J]	1.3 [J]	21	12	16	<5
Vanadium	4.5	27	NLV	NCL	260	<5	<5	6.1	13	<5	<5	<5	<5	3.7 [J]	<5	<5	<5
Zinc	2,400.00	230 (G)	NLV	NCL	18,000.00	<10	<10	<10	31	<10	<10	<10	<10	2.7 [J]	<10	2.9 [J]	<10

TABLE 1D
SUMMARY OF GROUNDWATER SAMPLE ANALYSIS - INORGANICS/GENERAL CHEMISTRY
Wolver/Jewell
Algoma Township, Kent County, MI

Sample Location	Part 201 Generic Residential Groundwater Cleanup Criteria – Drinking Water ²	Part 201 Generic Groundwater Cleanup Criteria – Groundwater Surface Water Interface ²	Part 201 Generic Residential Groundwater Cleanup Criteria – Groundwater Volatilization to Indoor Air Inhalation ²	EGLE Residential Recommended Volatilization to Indoor Air Interim Action Screening Level - Groundwater ³	U.S. EPA Residential Tap Water Regional Removal Management Levels ⁴	WV-MW-1	WV-MW-2D	WV-MW-2S	WV-MW-3D	WV-MW-3S	WV-MW-4	WV-MW-5D	WV-MW-5S	WV-MW-6D	WV-MW-6S	WV-MW-7D	WV-MW-7M	WV-MW-7S
Sample Name						WV-GW-MW-1	WV-GW-MW-2D	WV-GW-MW-2S	WV-GW-MW-3D	WV-GW-MW-3S	WV-GW-MW-4	WV-GW-MW-5D	WV-GW-MW-5S	VW-GW-MW-6D	VW-GW-MW-6S	WV-GW-MW-7D	WV-GW-MW-7M	WV-GW-MW-7S
Well Screen Interval (Feet below ground surface)						135-140	25-35	20-25	56-61	5-10	130-135	67-72	60-65	98-103	13-18	15.7-20.5	50-55	90.2-95
Laboratory Sample ID(s)						UK13023-002 & 19110860-08A/C	UK07051-005 & 19110333-05A/C	UK07051-004 & 19110333-04A/C	UK07025-005 & 19110333-13A/C	UK07025-004 & 19110333-12A/C	UK19013-002 & 19110860-13A/C	UK19013-003 & 19110860-14A/C	UK19013-004 & 19110860-15A/C	UK09009-004 & 19110333-26A/C	UK09009-003 & 19110333-25A/C	UK07051-003 & 19110333-03A/C	UK07051-002 & 19110333-02A/C	UK07051-001 & 19110333-01A/C
Sample Date						11/12/2019	11/05/2019	11/05/2019	11/06/2019	11/06/2019	11/13/2019	11/13/2019	11/13/2019	11/08/2019	11/08/2019	11/05/2019	11/05/2019	11/05/2019
Parameter (µg/L)																		
Acetic Acid	4,200	8,800 (G)	NLV	NCL	NCL	<25,000	<25,000	<25,000	<25,000	<25,000	<25,000	<25,000	<25,000	<25,000	<25,000	<25,000	<25,000	<25,000
Formic acid	10,000	ID	7,700,000	NCL	1.9	<25,000	<25,000	<25,000	<25,000	<25,000	<25,000	<25,000	<25,000	<25,000	<25,000	<25,000	<25,000	<25,000
Cyanide - Total	200	5.2	NLV	NCL	4.4	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Cyanide, Available	200 (A)	5.2	NLV	NCL	NCL	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Hardness (total)	NCL	NCL	NCL	NCL	NCL	310,000	350,000	370,000	240,000	120,000	180,000	330,000	400,000	320,000	260,000	320,000	310,000	170,000
Ammonia - N (gas diffusion)	NCL	NCL	NCL	NCL	NCL	<100	620	<100	<100	1,400	570 [B]	<100	<100	<100	<100	<100	<100	<100
Nitrate-Nitrite - N	NCL	NCL	NCL	NCL	NCL	130	42	3,700	1,500	30	<20	5,900	3,400	<20	1,600	240	1,100	4,500
Nitrate-Nitrite - N + Ammonia - N (Calculated)	10,000 (N)	NCL	NCL	NCL	NCL	130	660	3,700	1,500	1,400	570	5,900	3,400	ND	1,600	240	1,100	4,500
<i>Unionized Ammonia (Calculated based on pH 8.0, 20°C)</i>	NCL	29 (CC)	NCL	250,000	NCL	ND	24	ND	ND	53	22	ND	ND	ND	ND	ND	ND	ND
Chloride	250,000 (E)	NCL (FF)	NLV	NCL	NCL	30,000	88,000	62,000	41,000	43,000	2,200	62,000	72,000	340,000	460,000	89,000	82,000	13,000
Phosphorus (Total)	63,000	1,000 (EE)	NLV	NCL	NCL	26 [J]	<50	<50	<50	60	99	<50	<50	<50	<50	42 [J]	<50	<50
Sulfate	250,000 (E)	NA	NLV	NCL	NCL	43,000	39,000	14,000	8,700	230 [J]	2,900	11,000	14,000	16,000	18,000	21,000	15,000	10,000
Sulfide	NCL	NCL	NCL	NCL	NCL	<1,000	<1,000	<1,000	<1,000	1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000

TABLE 1D
SUMMARY OF GROUNDWATER SAMPLE ANALYSIS - INORGANICS/GENERAL CHEMISTRY
Wolver/Jewell
Algoma Township, Kent County, MI

Sample Location	Part 201 Generic Residential Groundwater Cleanup Criteria – Drinking Water ²	Part 201 Generic Groundwater Cleanup Criteria – Groundwater Surface Water Interface ²	Part 201 Generic Residential Groundwater Cleanup Criteria – Groundwater Volatilization to Indoor Air Inhalation ²	EGLE Residential Recommended Volatilization to Indoor Air Interim Action Screening Level - Groundwater ³	U.S. EPA Residential Tap Water Regional Removal Management Levels ⁴	WV-MW-8D	WV-MW-8M	WV-MW-8S	WV-MW-9	WV-MW-10D	WV-MW-10M	WV-MW-10S	WV-MW-11D	WV-MW-11D DUP	WV-MW-11S	WV-MW-12D	WV-MW-12M	WV-MW-12S
Sample Name						VW-GW-MW-8D	VW-GW-MW-8M	VW-GW-MW-8S	VW-GW-MW9	VW-GW-MW-10D	VW-GW-MW-10M	VW-GW-MW-10S	VW-GW-MW-11D	VW-GW-MW-11D DUP	VW-GW-MW-11S	VW-GW-MW-12D	VW-GW-MW-12M	VW-GW-MW-12S
Well Screen Interval (Feet below ground surface)						11S-120	60-65	30-35	92.3-97.3	165-170	70-75	10-15	158.9-163.9	158.9-163.9	28.8-33.8	176.5-181.5	144.5-149.4	74.6-79.5
Laboratory Sample ID(s)						UK09009-001 & 19110333-23A/C	UK07025-007 & 19110333-15A/C	UK07025-006 & 19110333-14A/C	UK13023-011 & 19110860-06A/C	UK07025-003 & 19110333-11A/C	UK07025-002 & 19110333-10A/C	UK07025-001 & 19110333-09A/C	UK07051-006 & 19110333-06A/C	UK07051-007 & 19110333-07A/C	UK07051-008 & 19110333-08A/C	UK09008-003 & 19110333-18A/C	UK09008-002 & 19110333-17A/C	UK09008-001 & 19110333-16A/C
Sample Date						11/08/2019	11/06/2019	11/06/2019	11/11/2019	11/06/2019	11/06/2019	11/06/2019	11/05/2019	11/05/2019	11/05/2019	11/07/2019	11/07/2019	11/07/2019
Parameter (µg/L)																		
Acetic Acid	4,200	8,800 (G)	NLV	NCL	NCL	<25,000	<25,000	<25,000	<25,000	<25,000	<25,000	<25,000	<25,000	<25,000	<25,000	<25,000	<25,000	<25,000
Formic acid	10,000	ID	7,700,000	NCL	1.9	<25,000	<25,000	<25,000	<25,000	<25,000	<25,000	<25,000	<25,000	<25,000	<25,000	<25,000	<25,000	<25,000
Cyanide - Total	200	5.2	NLV	NCL	4.4	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Cyanide, Available	200 (A)	5.2	NLV	NCL	NCL	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Hardness (total)	NCL	NCL	NCL	NCL	NCL	250,000	590,000	370,000	340,000	290,000	200,000	250,000	320,000	330,000	310,000	1,600,000	500,000	340,000
Ammonia - N (gas diffusion)	NCL	NCL	NCL	NCL	NCL	550	<100	<100	120	44 [J]	150	<100	99 [J]	92 [J]	<100	660	640	140
Nitrate-Nitrite - N	NCL	NCL	NCL	NCL	NCL	280	8,400	6,000	11 [J]	12 [J]	<20	490	<20	<20	810	43	<20	60
Nitrate-Nitrite - N + Ammonia - N (Calculated)	10,000 (N)	NCL	NCL	NCL	NCL	830	8,400	6,000	130	56	150	490	99	92	810	700	640	200
Unionized Ammonia (Calculated based on pH 8.0, 20°C)	NCL	29 (CC)	NCL	250,000	NCL	21	ND	ND	4.6	1.7	5.7	ND	3.8	3.5	ND	25	24	5.3
Chloride	250,000 (E)	NCL (FF)	NLV	NCL	NCL	46,000	560,000	180,000	6,600	40,000	1,400	83,000	29,000	30,000	40,000	31,000	6,800	7,000
Phosphorus (Total)	63,000	1,000 (EE)	NLV	NCL	NCL	35 [J]	<50	<50	47 [J]	<50	<50	27 [J]	<50	190	<50	<50	45 [J]	45 [J]
Sulfate	250,000 (E)	NA	NLV	NCL	NCL	27,000	110,000	14,000	30,000	37,000	15,000	12,000	88,000	89,000	13,000	1,500,000	390,000	23,000
Sulfide	NCL	NCL	NCL	NCL	NCL	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000

TABLE 1D
SUMMARY OF GROUNDWATER SAMPLE ANALYSIS - INORGANICS/GENERAL CHEMISTRY
Wolver/Jewell
Algoma Township, Kent County, MI

Sample Location	Part 201 Generic Residential Groundwater Cleanup Criteria – Drinking Water ²	Part 201 Generic Groundwater Cleanup Criteria – Groundwater Surface Water Interface ²	Part 201 Generic Residential Groundwater Cleanup Criteria – Groundwater Volatilization to Indoor Air Inhalation ²	EGLE Residential Recommended Volatilization to Indoor Air Interim Action Screening Level - Groundwater ³	U.S. EPA Residential Tap Water Regional Removal Management Levels ⁴	WV-MW-13D	WV-MW-13M	WV-MW-13S	WV-MW-14D	WV-MW-14S	WV-MW-15A	WV-MW-15B	WV-MW-15C	WV-MW-15D	WV-MW-15D	WV-MW-16D	WV-MW-16S
Sample Name						WV-GW-MW-13D	WV-GW-MW-13M	WV-GW-MW-13S	VW-GW-MW-14D	WV-GW-MW-14S	WV-GW-MW-15A	WV-GW-MW-15B	WV-GW-MW-15C	WV-GW-MW-15D	WV-GW-MW-15D DUP	WV-GW-MW-16D	WV-GW-MW-16S
Well Screen Interval (Feet below ground surface)						58-63	18-23	1.5-6.5	140-145	9-14	9-14	33-38	37.8-42.6	134.9-137.6	134.9-137.6	91-96	17-22
Laboratory Sample ID(s)						UK09008-006 & 19110333-21A/C	UK09008-005 & 19110333-20A/C	UK09008-004 & 19110333-19A/C	UK09009-002 & 19110333-24A/C	UK09008-007 & 19110333-22A/C	UK13023-008 & 19110860-02A/C	UK13023-009 & 19110860-01A/C	UK13023-010 & 19110860-03A/C	UK13023-013 & 19110860-04A/C	UK13023-014 & 19110860-05A/C	UK13023-001 & 19110860-07A/C	UK19013-001 & 19110860-12A/C
Sample Date						11/07/2019	11/07/2019	11/07/2019	11/08/2019	11/07/2019	11/11/2019	11/11/2019	11/11/2019	11/11/2019	11/11/2019	11/12/2019	11/13/2019
Parameter (µg/L)																	
Acetic Acid	4,200	8,800 (G)	NLV	NCL	NCL	<25,000	<25,000	<25,000	<25,000	<25,000	<25,000	<25,000	<25,000	<25,000	<25,000	<25,000	<25,000
Formic acid	10,000	ID	7,700,000	NCL	1.9	<25,000	<25,000	<25,000	<25,000	<25,000	<25,000	<25,000	<25,000	<25,000	<25,000	<25,000	<25,000
Cyanide - Total	200	5.2	NLV	NCL	4.4	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Cyanide, Available	200 (A)	5.2	NLV	NCL	NCL	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	2.8	<2
Hardness (total)	NCL	NCL	NCL	NCL	NCL	450,000	360,000	370,000	780,000	400,000	160,000	180,000	390,000	430,000	450,000	330,000	400,000
Ammonia - N (gas diffusion)	NCL	NCL	NCL	NCL	NCL	<100	470	820	150	<100	73 [J]	190	250	190	200	620	120 [B]
Nitrate-Nitrite - N	NCL	NCL	NCL	NCL	NCL	1,500	<20	82	140	580	55	<20	<20	18 [J]	25	26	62
Nitrate-Nitrite - N + Ammonia - N (Calculated)	10,000 (N)	NCL	NCL	NCL	NCL	1,500	470	900	290	580	130	190	250	210	230	650	180
Unionized Ammonia (Calculated based on pH 8.0, 20°C)	NCL	29 (CC)	NCL	250,000	NCL	ND	18	31	5.7	ND	2.8	7.3	9.6	7.3	7.6	24	4.6
Chloride	250,000 (E)	NCL (FF)	NLV	NCL	NCL	230,000	130,000	85,000	11,000	57,000	6,500	8,900	17,000	720 [J]	720 [J]	1,500	41,000
Phosphorus (Total)	63,000	1,000 (EE)	NLV	NCL	NCL	<50	<50	45 [J]	240	<50	26 [J]	<50	27 [J]	28 [J]	63	44 [J]	<50
Sulfate	250,000 (E)	NA	NLV	NCL	NCL	22,000	4,200	<1,000	29,000	37,000	13,000	70,000	210,000	290,000	290,000	<1,000	9,300
Sulfide	NCL	NCL	NCL	NCL	NCL	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000

TABLE 1E
SUMMARY OF GROUNDWATER SAMPLE ANALYSIS - PFAS
Wolver/Jewell
Algoma Township, Kent County, MI

Sample Location	Part 201 Generic Residential Groundwater Cleanup Criteria – Drinking Water ²	Part 201 Generic Groundwater Cleanup Criteria – Groundwater Surface Water Interface ²	Part 201 Generic Residential Groundwater Cleanup Criteria – Groundwater Volatilization to Indoor Air Inhalation ²	EGLE Residential Recommended Volatilization to Indoor Air Interim Action Screening Level - Groundwater ³	U.S. EPA Residential Tap Water Regional Removal Management Levels ⁴	WV-MW-1	WV-MW-2D	WV-MW-2S	WV-MW-3D	WV-MW-3S	WV-MW-4	WV-MW-5D	WV-MW-5S	WV-MW-6D	WV-MW-6S	WV-MW-7D	WV-MW-7M	WV-MW-7S
Sample Name						WV-GW-MW-1	WV-GW-MW-2D	WV-GW-MW-2S	WV-GW-MW-3D	WV-GW-MW-3S	WV-GW-MW-4	WV-GW-MW-5D	WV-GW-MW-5S	VW-GW-MW-6D	VW-GW-MW-6S	WV-GW-MW-7D	WV-GW-MW-7M	WV-GW-MW-7S
Well Screen Interval (Feet below ground surface)						135-140	25-35	20-25	56-61	5-10	130-135	67-72	60-65	98-103	13-18	15.7-20.5	50-55	90.2-95
Laboratory Sample ID(s)						UK13023-002	UK07051-005	UK07051-004	UK07025-005	UK07025-004	UK19013-002	UK19013-003	UK19013-004	UK09009-004	UK09009-003	UK07051-003	UK07051-002	UK07051-001
Sample Date						11/12/2019	11/05/2019	11/05/2019	11/06/2019	11/06/2019	11/13/2019	11/13/2019	11/13/2019	11/08/2019	11/08/2019	11/05/2019	11/05/2019	11/05/2019
Parameter (µg/L)																		
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0038	<0.0036	<0.0039	<0.0037	<0.0037	<0.0036	<0.0038	<0.0036	<0.0036	<0.0039	<0.0038	<0.0039
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0038	<0.0036	0.0049	<0.0037	<0.0037	<0.0036	<0.0038	<0.0036	<0.0036	<0.0039	<0.0038	<0.0039
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0038	<0.0036	<0.0039	<0.0037	<0.0037	<0.0036	<0.0038	<0.0036	<0.0036	<0.0039	<0.0038	<0.0039
N-Methyl perfluorooctane sulfonamide (MeFOSA)	NCL	NCL	NCL	NCL	NCL	<0.007	<0.0077	<0.0073	<0.0078	<0.0075	<0.0074	<0.0072	<0.0077	<0.0072	<0.0072	<0.0078	<0.0076	<0.0078
Perfluorobutane sulfonic acid (PFBS)	NCL	NCL	NCL	NCL	1,200	0.041	0.042	0.013	0.0054	0.0074	<0.0037	0.009	0.0074	0.017	0.0093	0.0097	0.0091	<0.0039
Perfluorodecane sulfonic acid (PFDS)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0038	<0.0036	<0.0039	<0.0037	<0.0037	<0.0036	<0.0038	<0.0036	<0.0036	<0.0039	<0.0038	<0.0039
Perfluoroheptane sulfonic acid (PFHpS)	NCL	NCL	NCL	NCL	NCL	0.22	0.016	0.049	<0.0039	<0.0037	<0.0037	<0.0036	<0.0038	<0.0036	<0.0036	0.012	0.0097	<0.0039
Perfluorononane sulfonic acid (PFNS)	NCL	NCL	NCL	NCL	NCL	<0.007	<0.0077	<0.0073	<0.0078	<0.0075	<0.0074	<0.0072	<0.0077	<0.0072	<0.0072	<0.0078	<0.0076	<0.0078
Perfluorooctane sulfonamide (FOSA)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0038	<0.0036	<0.0039	<0.0037	<0.0037	<0.0036	<0.0038	<0.0036	<0.0036	<0.0039	<0.0038	<0.0039
Perfluoropentane sulfonic acid (PFPeS)	NCL	NCL	NCL	NCL	NCL	0.12	0.13	0.017	<0.0039	0.0054	<0.0037	<0.0036	<0.0038	<0.0036	<0.0036	0.0077	0.0053	<0.0039
Perfluorohexane sulfonic acid (PFHxS)	NCL	NCL	NCL	NCL	NCL	0.77	0.28	0.061	0.0039	0.015	<0.0037	0.0036	<0.0038	<0.0036	0.0039	0.033	0.024	<0.0039
Perfluorobutanoic acid (PFBA)	NCL	NCL	NCL	NCL	NCL	0.029	0.019	0.0081	<0.0039	0.0085	<0.0037	<0.0036	<0.0038	0.0053	0.0098	0.0052	0.0042	0.0053
Perfluorodecanoic acid (PFDA)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0038	<0.0036	<0.0039	<0.0037	<0.0037	<0.0036	<0.0038	<0.0036	<0.0036	<0.0039	<0.0038	<0.0039
Perfluorododecanoic acid (PFDoDA)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0038	<0.0036	<0.0039	<0.0037	<0.0037	<0.0036	<0.0038	<0.0036	<0.0036	<0.0039	<0.0038	<0.0039
Perfluoroheptanoic acid (PFHpA)	NCL	NCL	NCL	NCL	NCL	0.22	0.12	0.023	<0.0039	0.0089	<0.0037	<0.0036	<0.0038	<0.0036	0.0036	0.01	0.0074	0.0054
Perfluorohexanoic acid (PFHxA)	NCL	NCL	NCL	NCL	NCL	0.095	0.057	0.013	<0.0039	0.0063	<0.0037	0.0046	<0.0038	<0.0036	0.0066	0.0081	0.0059	0.0079
Perfluorononanoic acid (PFNA)	NCL	NCL	NCL	NCL	NCL	0.013	<0.0038	0.0059	<0.0039	<0.0037	<0.0037	<0.0036	<0.0038	<0.0036	<0.0036	<0.0039	<0.0038	<0.0039
Perfluorooctanoic acid (PFOA)	0.07 (JJ)	12	NCL	NCL	NCL	2.9	0.92	0.27	<0.0019	0.06	<0.0019	0.0061	0.0026	0.0035	0.024	0.095	0.076	0.011
Perfluorooctane sulfonic acid (PFOS)	0.07 (JJ)	0.012	NCL	NCL	NCL	6.7	0.11	3.1	<0.0039	0.095	<0.0037	<0.0036	<0.0038	<0.0036	0.0089	0.17	0.3	<0.0039
PFOA + PFOS (Calculated)	0.07	NCL	NCL	NCL	NCL	9.6	1.0	3.4	ND	0.16	ND	0.0061	0.0026	0.0035	0.033	0.27	0.38	0.011
Perfluoropentanoic acid (PFPeA)	NCL	NCL	NCL	NCL	NCL	0.036	0.026	0.0079	<0.0039	<0.0037	<0.0037	<0.0036	<0.0038	<0.0036	<0.0036	0.0046	<0.0038	0.0069
Perfluorotetradecanoic acid (PFTeDA)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0038	<0.0036	<0.0039	<0.0037	<0.0037	<0.0036	<0.0038	<0.0036	<0.0036	<0.0039	<0.0038	<0.0039
Perfluorotridecanoic acid (PFTrDA)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0038	<0.0036	<0.0039	<0.0037	<0.0037	<0.0036	<0.0038	<0.0036	<0.0036	<0.0039	<0.0038	<0.0039
Perfluoroundecanoic acid (PFUnDA)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0038	<0.0036	<0.0039	<0.0037	<0.0037	<0.0036	<0.0038	<0.0036	<0.0036	<0.0039	<0.0038	<0.0039
Total PFAS (Calculated)	NCL	NCL	NCL	NCL	NCL	11	1.7	3.6	0.014	0.21	ND	0.023	0.01	0.026	0.066	0.36	0.44	0.037

TABLE 1E
SUMMARY OF GROUNDWATER SAMPLE ANALYSIS - PFAS
Wolver/Jewell
Algoma Township, Kent County, MI

Sample Location	Part 201 Generic Residential Groundwater Cleanup Criteria – Drinking Water ²	Part 201 Generic Groundwater Cleanup Criteria – Groundwater Surface Water Interface ²	Part 201 Generic Residential Groundwater Cleanup Criteria – Groundwater Volatilization to Indoor Air Inhalation ²	EGLE Residential Recommended Volatilization to Indoor Air Interim Action Screening Level - Groundwater ³	U.S. EPA Residential Tap Water Regional Removal Management Levels ⁴	WV-MW-8D	WV-MW-8M	WV-MW-8S	WV-MW-9	WV-MW-10D	WV-MW-10M	WV-MW-10S	WV-MW-11D	WV-MW-11D	WV-MW-11S	WV-MW-12D	WV-MW-12M	WV-MW-12S
Sample Name						VW-GW-MW-8D	VW-GW-MW-8M	VW-GW-MW-8S	VW-GW-MW9	VW-GW-MW-10D	VW-GW-MW-10M	VW-GW-MW-10S	VW-GW-MW-11D	VW-GW-MW-11D DUP	VW-GW-MW-11S	VW-GW-MW-12D	VW-GW-MW-12M	VW-GW-MW-12S
Well Screen Interval (Feet below ground surface)						11S-120	60-65	30-35	92.3-97.3	165-170	70-75	10-15	158.9-163.9	158.9-163.9	28.8-33.8	176.5-181.5	144.5-149.4	74.6-79.5
Laboratory Sample ID(s)						UK09009-001	UK07025-007	UK07025-006	UK13023-011	UK07025-003	UK07025-002	UK07025-001	UK07051-006	UK07051-007	UK07051-008	UK09008-003	UK09008-002	UK09008-001
Sample Date						11/08/2019	11/06/2019	11/06/2019	11/11/2019	11/06/2019	11/06/2019	11/06/2019	11/05/2019	11/05/2019	11/05/2019	11/07/2019	11/07/2019	11/07/2019
Parameter (µg/L)																		
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	NCL	NCL	NCL	NCL	NCL	<0.0037	<0.0039	<0.0037	<0.0038	<0.0039	<0.0037	<0.0035	<0.0037	<0.0037	<0.0036	<0.0035	<0.0034	<0.004
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	NCL	NCL	NCL	NCL	NCL	<0.0037	<0.0039	<0.0037	<0.0038	<0.0039	<0.0037	<0.0035	<0.0037	<0.0037	<0.0036	<0.0035	<0.0034	<0.004
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	NCL	NCL	NCL	NCL	NCL	<0.0037	<0.0039	<0.0037	<0.0038	<0.0039	<0.0037	<0.0035	<0.0037	<0.0037	<0.0036	<0.0035	<0.0034	<0.004
N-Methyl perfluorooctane sulfonamide (MeFOSA)	NCL	NCL	NCL	NCL	NCL	<0.0075	<0.0078	<0.0074	<0.0077	<0.0078	<0.0074	<0.007	<0.0074	<0.0074	<0.0072	<0.0071	<0.0068	<0.007900001
Perfluorobutane sulfonic acid (PFBS)	NCL	NCL	NCL	NCL	1,200	<0.0037	0.08	0.013	0.015	0.0039	<0.0037	0.009	<0.0037	<0.0037	<0.0036	<0.0035	<0.0034	<0.004
Perfluorodecane sulfonic acid (PFDS)	NCL	NCL	NCL	NCL	NCL	<0.0037	<0.0039	<0.0037	<0.0038	<0.0039	<0.0037	<0.0035	<0.0037	<0.0037	<0.0036	<0.0035	<0.0034	<0.004
Perfluoroheptane sulfonic acid (PFHpS)	NCL	NCL	NCL	NCL	NCL	<0.0037	<0.0039	<0.0037	0.038	<0.0039	<0.0037	0.016	<0.0037	<0.0037	<0.0036	<0.0035	<0.0034	<0.004
Perfluorononane sulfonic acid (PFNS)	NCL	NCL	NCL	NCL	NCL	<0.0075	<0.0078	<0.0074	<0.0077	<0.0078	<0.0074	<0.007	<0.0074	<0.0074	<0.0072	<0.0071	<0.0068	<0.007900001
Perfluorooctane sulfonamide (FOSA)	NCL	NCL	NCL	NCL	NCL	<0.0037	<0.0039	<0.0037	0.021	<0.0039	<0.0037	<0.0035	<0.0037	<0.0037	<0.0036	<0.0035	<0.0034	<0.004
Perfluoropentane sulfonic acid (PFPeS)	NCL	NCL	NCL	NCL	NCL	<0.0037	<0.0039	0.0037	0.043	<0.0039	<0.0037	0.0044	<0.0037	<0.0037	<0.0036	<0.0035	<0.0034	<0.004
Perfluorohexane sulfonic acid (PFHxS)	NCL	NCL	NCL	NCL	NCL	<0.0037	0.01	0.02	0.21	<0.0039	<0.0037	0.021	<0.0037	<0.0037	<0.0036	<0.0035	<0.0034	<0.004
Perfluorobutanoic acid (PFBA)	NCL	NCL	NCL	NCL	NCL	<0.0037	0.0099	0.0056	0.011	<0.0039	<0.0037	0.0051	<0.0037	<0.0037	<0.0036	<0.0035	<0.0034	<0.004
Perfluorodecanoic acid (PFDA)	NCL	NCL	NCL	NCL	NCL	<0.0037	<0.0039	<0.0037	<0.0038	<0.0039	<0.0037	<0.0035	<0.0037	<0.0037	<0.0036	<0.0035	<0.0034	<0.004
Perfluorododecanoic acid (PFDoDA)	NCL	NCL	NCL	NCL	NCL	<0.0037	<0.0039	<0.0037	<0.0038	<0.0039	<0.0037	<0.0035	<0.0037	<0.0037	<0.0036	<0.0035	<0.0034	<0.004
Perfluoroheptanoic acid (PFHpA)	NCL	NCL	NCL	NCL	NCL	<0.0037	0.0049	0.007	0.067	<0.0039	<0.0037	0.0081	<0.0037	<0.0037	<0.0036	<0.0035	<0.0034	<0.004
Perfluorohexanoic acid (PFHxA)	NCL	NCL	NCL	NCL	NCL	<0.0037	0.011	0.0057	0.029	<0.0039	<0.0037	0.0048	<0.0037	<0.0037	<0.0036	<0.0035	<0.0034	<0.004
Perfluorononanoic acid (PFNA)	NCL	NCL	NCL	NCL	NCL	<0.0037	<0.0039	<0.0037	<0.0038	<0.0039	<0.0037	<0.0035	<0.0037	<0.0037	<0.0036	<0.0035	<0.0034	<0.004
Perfluorooctanoic acid (PFOA)	0.07 (JJ)	12	NCL	NCL	NCL	0.0057	0.031	0.092	0.77	0.0026	<0.0018	0.092	<0.0019	<0.0018	<0.0018	<0.0018	<0.0017	<0.002
Perfluorooctane sulfonic acid (PFOS)	0.07 (JJ)	0.012	NCL	NCL	NCL	<0.0037	0.0055	0.034	0.48	<0.0039	<0.0037	0.69	<0.0037	<0.0037	<0.0036	<0.0035	<0.0034	<0.004
PFOA + PFOS (Calculated)	0.07	NCL	NCL	NCL	NCL	0.0057	0.037	0.13	1.3	0.0026	ND	0.78	ND	ND	ND	ND	ND	ND
Perfluoropentanoic acid (PFPeA)	NCL	NCL	NCL	NCL	NCL	<0.0037	0.009	<0.0037	0.011	<0.0039	<0.0037	<0.0035	<0.0037	<0.0037	<0.0036	<0.0035	<0.0034	<0.004
Perfluorotetradecanoic acid (PFTeDA)	NCL	NCL	NCL	NCL	NCL	<0.0037	<0.0039	<0.0037	<0.0038	<0.0039	<0.0037	<0.0035	<0.0037	<0.0037	<0.0036	<0.0035	<0.0034	<0.004
Perfluorotridecanoic acid (PFTrDA)	NCL	NCL	NCL	NCL	NCL	<0.0037	<0.0039	<0.0037	<0.0038	<0.0039	<0.0037	<0.0035	<0.0037	<0.0037	<0.0036	<0.0035	<0.0034	<0.004
Perfluoroundecanoic acid (PFUnDA)	NCL	NCL	NCL	NCL	NCL	<0.0037	<0.0039	<0.0037	<0.0038	<0.0039	<0.0037	<0.0035	<0.0037	<0.0037	<0.0036	<0.0035	<0.0034	<0.004
Total PFAS (Calculated)	NCL	NCL	NCL	NCL	NCL	0.0057	0.16	0.18	1.7	0.0065	ND	0.85	ND	ND	ND	ND	ND	ND

TABLE 1E
SUMMARY OF GROUNDWATER SAMPLE ANALYSIS - PFAS
Wolven/Jewell
Algoma Township, Kent County, MI

Sample Location	Part 201 Generic Residential Groundwater Cleanup Criteria – Drinking Water ²	Part 201 Generic Groundwater Cleanup Criteria – Groundwater Surface Water Interface ²	Part 201 Generic Residential Groundwater Cleanup Criteria – Groundwater Volatilization to Indoor Air Inhalation ²	EGLE Residential Recommended Volatilization to Indoor Air Interim Action Screening Level - Groundwater ³	U.S. EPA Residential Tap Water Regional Removal Management Levels ⁴	WV-MW-13D	WV-MW-13M	WV-MW-13S	WV-MW-14D	WV-MW-14S	WV-MW-15A	WV-MW-15B	WV-MW-15C	WV-MW-15D	WV-MW-15D	WV-MW-16D	WV-MW-16S
Sample Name						WV-GW-MW-13D	WV-GW-MW-13M	WV-GW-MW-13S	VW-GW-MW-14D	WV-GW-MW-14S	WV-GW-MW-15A	WV-GW-MW-15B	WV-GW-MW-15C	WV-GW-MW-15D	WV-GW-MW-15D DUP	WV-GW-MW-16D	WV-GW-MW-16S
Well Screen Interval (Feet below ground surface)						58-63	18-23	1.5-6.5	140-145	9-14	9-14	33-38	37.8-42.6	134.9-137.6	134.9-137.6	91-96	17-22
Laboratory Sample ID(s)						UK09008-006	UK09008-005	UK09008-004	UK09009-002	UK09008-007	UK13023-008	UK13023-009	UK13023-010	UK13023-013	UK13023-014	UK13023-001	UK19013-001
Sample Date						11/07/2019	11/07/2019	11/07/2019	11/08/2019	11/07/2019	11/11/2019	11/11/2019	11/11/2019	11/11/2019	11/11/2019	11/12/2019	11/13/2019
Parameter (µg/L)																	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	NCL	NCL	NCL	NCL	NCL	<0.0038	<0.0036	<0.0038	<0.0035	<0.0038	<0.0038	<0.0038	<0.0037	<0.0037	<0.0038	<0.0035	<0.0037
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	NCL	NCL	NCL	NCL	NCL	<0.0038	<0.0036	<0.0038	<0.0035	<0.0038	<0.0038	<0.0038	<0.0037	<0.0037	<0.0038	<0.0035	<0.0037
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	NCL	NCL	NCL	NCL	NCL	<0.0038	<0.0036	<0.0038	<0.0035	<0.0038	<0.0038	<0.0038	<0.0037	<0.0037	<0.0038	<0.0035	<0.0037
N-Methyl perfluorooctane sulfonamide (MeFOSA)	NCL	NCL	NCL	NCL	NCL	<0.0076	<0.0072	<0.0076	<0.007	<0.0076	<0.0077	<0.0076	<0.0074	<0.0074	<0.0075	<0.007	<0.0074
Perfluorobutane sulfonic acid (PFBS)	NCL	NCL	NCL	NCL	1,200	0.0098	0.005	<0.0038	0.03	0.008	<0.0038	<0.0038	<0.0037	<0.0037	<0.0038	<0.0035	0.016
Perfluorodecane sulfonic acid (PFDS)	NCL	NCL	NCL	NCL	NCL	<0.0038	<0.0036	<0.0038	<0.0035	<0.0038	<0.0038	<0.0038	<0.0037	<0.0037	<0.0038	<0.0035	<0.0037
Perfluoroheptane sulfonic acid (PFHpS)	NCL	NCL	NCL	NCL	NCL	<0.0038	<0.0036	<0.0038	0.0036	<0.0038	<0.0038	<0.0038	<0.0037	<0.0037	<0.0038	<0.0035	<0.0037
Perfluorononane sulfonic acid (PFNS)	NCL	NCL	NCL	NCL	NCL	<0.0076	<0.0072	<0.0076	<0.007	<0.0076	<0.0077	<0.0076	<0.0074	<0.0074	<0.0075	<0.007	<0.0074
Perfluorooctane sulfonamide (FOSA)	NCL	NCL	NCL	NCL	NCL	<0.0038	<0.0036	<0.0038	<0.0035	<0.0038	<0.0038	<0.0038	<0.0037	<0.0037	<0.0038	<0.0035	<0.0037
Perfluoropentane sulfonic acid (PFPeS)	NCL	NCL	NCL	NCL	NCL	<0.0038	<0.0036	<0.0038	0.07	<0.0038	<0.0038	<0.0038	<0.0037	<0.0037	<0.0038	<0.0035	<0.0037
Perfluorohexane sulfonic acid (PFHxS)	NCL	NCL	NCL	NCL	NCL	0.0038	0.0056	0.004	0.16	0.01	<0.0038	<0.0038	<0.0037	<0.0037	<0.0038	<0.0035	0.0072
Perfluorobutanoic acid (PFBA)	NCL	NCL	NCL	NCL	NCL	<0.0038	0.0062	0.0078	0.0099	<0.0038	<0.0038	<0.0038	<0.0037	<0.0037	<0.0038	<0.0035	0.02
Perfluorodecanoic acid (PFDA)	NCL	NCL	NCL	NCL	NCL	<0.0038	<0.0036	<0.0038	<0.0035	<0.0038	<0.0038	<0.0038	<0.0037	<0.0037	<0.0038	<0.0035	<0.0037
Perfluorododecanoic acid (PFDoDA)	NCL	NCL	NCL	NCL	NCL	<0.0038	<0.0036	<0.0038	<0.0035	<0.0038	<0.0038	<0.0038	<0.0037	<0.0037	<0.0038	<0.0035	<0.0037
Perfluoroheptanoic acid (PFHpA)	NCL	NCL	NCL	NCL	NCL	<0.0038	<0.0036	<0.0038	0.076	<0.0038	<0.0038	<0.0038	<0.0037	<0.0037	<0.0038	<0.0035	0.0054
Perfluorohexanoic acid (PFHxA)	NCL	NCL	NCL	NCL	NCL	<0.0038	<0.0036	<0.0038	0.033	<0.0038	<0.0038	<0.0038	<0.0037	<0.0037	<0.0038	<0.0035	0.013
Perfluorononanoic acid (PFNA)	NCL	NCL	NCL	NCL	NCL	<0.0038	<0.0036	<0.0038	<0.0035	<0.0038	<0.0038	<0.0038	<0.0037	<0.0037	<0.0038	<0.0035	<0.0037
Perfluorooctanoic acid (PFOA)	0.07 (JJ)	12	NCL	NCL	NCL	0.003	0.015	0.018	0.52	0.013	<0.0019	<0.0019	<0.0019	<0.0018	<0.0019	<0.0018	0.021
Perfluorooctane sulfonic acid (PFOS)	0.07 (JJ)	0.012	NCL	NCL	NCL	<0.0038	0.017	0.085	0.0074	0.009	<0.0038	<0.0038	<0.0037	<0.0037	<0.0038	<0.0035	0.027
PFOA + PFOS (Calculated)	0.07	NCL	NCL	NCL	NCL	0.003	0.032	0.1	0.53	0.022	ND	ND	ND	ND	ND	ND	0.048
Perfluoropentanoic acid (PFPeA)	NCL	NCL	NCL	NCL	NCL	<0.0038	<0.0036	<0.0038	0.012	<0.0038	<0.0038	<0.0038	<0.0037	<0.0037	<0.0038	<0.0035	0.007
Perfluorotetradecanoic acid (PFTeDA)	NCL	NCL	NCL	NCL	NCL	<0.0038	<0.0036	<0.0038	<0.0035	<0.0038	<0.0038	<0.0038	<0.0037	<0.0037	<0.0038	<0.0035	<0.0037
Perfluorotridecanoic acid (PFTrDA)	NCL	NCL	NCL	NCL	NCL	<0.0038	<0.0036	<0.0038	<0.0035	<0.0038	<0.0038	<0.0038	<0.0037	<0.0037	<0.0038	<0.0035	<0.0037
Perfluoroundecanoic acid (PFUnDA)	NCL	NCL	NCL	NCL	NCL	<0.0038	<0.0036	<0.0038	<0.0035	<0.0038	<0.0038	<0.0038	<0.0037	<0.0037	<0.0038	<0.0035	<0.0037
Total PFAS (Calculated)	NCL	NCL	NCL	NCL	NCL	0.017	0.049	0.11	0.92	0.04	ND	ND	ND	ND	ND	ND	0.12

NOTES:

- Concentration and criteria units are micrograms per Liter ($\mu\text{g/L}$) or parts per billion (ppb). Calculated criteria and concentrations are rounded to two significant digits. "ND" indicates the parameters used in the calculation were not detected.
"NC" indicates not calculated.
- Michigan Part 201 Groundwater Cleanup Criteria are based on "Table 1, Groundwater: Residential and Nonresidential Part 201 Generic Cleanup Criteria and Screening Levels/Part 213 Tier I Risk Based Screening Levels," Michigan Administrative Code, Cleanup Criteria Requirements for Response Activity, Rules 299.44 and 299.49, effective December 30, 2013; updated June 25, 2018.
Abbreviations Include:
"ID" indicates insufficient data to develop criterion.
"NA" indicates a criterion or value is not available or, in the case of background, not applicable.
"NCL" indicates no criterion listed in EGLE Table 1.
"NLV" indicates the substance is not likely to volatilize under most conditions.
Footnotes Include:
(A) - The criterion is the State of Michigan drinking water standard.
(D) - The calculated criterion exceeds 100 percent, hence it is reduced to 100 percent or $1.0\text{E}+9$ ppb.
(E) - Criterion is the aesthetic drinking water value.
(F) - Criterion is based on adverse impacts to plant life and phytotoxicity.
(G) - Groundwater surface water interface (GSI) criterion depends on the pH or water hardness, or both, of the receiving surface water.
EGLE's Footnote (G) GSI/GSIPC Calculation spreadsheet was utilized to calculate GSI criterion presented. The Rogue River is the receiving surface water for the Site. Hardness ($220\text{ mg CaCO}_3/\text{L}$) and pH (7.5 standard units) used in the calculations were the lowest (most-conservative) of the calculated mean and median of the Rogue River surface water samples collected in Rockford, MI at the former tannery (TA-SW-01, TA-SW-02, TA-SW-03, TA-SW-05, and TA-SW-07) rounded to two significant digits and water hardness or pH for the Rogue River near Rockford published in United States Geological Survey Circular 323, "Water Resources of the Grand Rapids Area, Michigan," Table 1, 1954.
(L) - Criteria for lead are derived using a biologically based model. The generic residential drinking water criterion of $4\text{ }\mu\text{g/L}$ is linked to the generic residential soil direct contact criterion of 400 mg/kg .
(M) - Calculated criterion is below the analytical target detection limit, therefore, the criterion defaults to the target detection limit.
(N) - The concentrations of all potential sources of nitrate-nitrogen (e.g., ammonia-N, nitrite-N, nitrate-N) in groundwater that is used as a source of drinking water shall not, when added together, exceed the nitrate drinking water criterion of $10,000\text{ }\mu\text{g/L}$.
(P) - Amenable cyanide methods or method OIA-1677 shall be used to quantify cyanide concentrations for compliance with all groundwater criteria.
(S) - Criterion defaults to the hazardous substance-specific water solubility limit.
(V) - Criterion is the aesthetic drinking water value.
(W) - Concentrations of trihalomethanes in groundwater shall be added together to determine compliance with the Michigan drinking water standard of $80\text{ }\mu\text{g/L}$.
(AA) - Use $10,000\text{ }\mu\text{g/L}$ where groundwater enters a structure through the use of a water well, sump or other device. Use $28,000\text{ }\mu\text{g/L}$ for all other uses.
(CC) - The generic GSI criteria are based on the toxicity of unionized ammonia (NH_3); the criteria are $29\text{ }\mu\text{g/L}$ and $53\text{ }\mu\text{g/L}$ for cold water and warm water surface water, respectively. As a result, the GSI criterion shall be compared to the percent of the total ammonia concentration in the groundwater that will become NH_3 in the surface water. This percent NH_3 is a function of the pH and temperature of the receiving surface water and was estimated using the table of this footnote titled "Percent NH_3 in Aqueous Ammonia Solutions for $0\text{--}30^\circ\text{C}$ and pH $6\text{--}10$." This approach uses a default temperature of 68°F and 85°F for cold water and warm water surface water, respectively. The percent conversion factor in the table for cold water (20°C or 68°F) and pH (8.0 standard units) is 3.82%.
(EE) - The applicable GSI criteria for phosphorus is $1,000\text{ }\mu\text{g/L}$.
(FF) - The chloride GSI criteria shall not apply for surface waters of the state that are not designated as a public water supply source.
(JJ) - Compliance with the drinking water criteria shall require comparing the sum of the PFOA and PFOS groundwater concentrations to the drinking water criterion of $0.07\text{ }\mu\text{g/L}$.
- EGLE Residential Groundwater Recommended Volatilization to Indoor Air Interim Action Screening Levels (RIASLs) for were based on EGLE's Toxics Steering Group's "Media-Specific Interim Action Screening Levels," published in August 2017. The EGLE published the RIASLs in August 2017, and recently removed the RIASLs from the EGLE website. The EGLE is reportedly evaluating the RIASLs for appropriate use and applicability. These are included for reference.
Abbreviations Include:
"NCL" indicates no value listed in the Media-Specific Interim Action Screening Levels table.
Footnotes Include:
(M) - Site-specific criterion may be below target detection limits (TDL).
- U.S. EPA Residential Tap Water Regional Removal Management Levels (RMLs) were based on "Generic RML Tables," updated November 2018.
- Bold, italic number with thick line border or italic parameter name indicates that parameter was detected above the Michigan Part 201 Groundwater Cleanup Criteria or Media-Specific Interim Action Screening Levels. U.S. EPA RMLs are provided for reference only and results detected above the EPA RMLs are not bolded or italicized.
- Abbreviations include:
"< RL" indicates the parameter was analyzed for but not detected above the method detection limit; RL = Reporting Limit.
"DUP" indicates a duplicate sample.
"B" indicates the parameter was also detected in the method blank.
"J" indicates the parameter was detected at a concentration greater than the limit of quantitation (LOQ) but less than the detection limit (DL) and the result is estimated.
- Sample names presented are from Shealy Environmental Services, Inc. laboratory reports. Sample names presented in ALS Environmental lab reports may have minor differences based on laboratory interpretation of the chains of custody.
- Well screen interval presented is the top of the well screen to the bottom of the well screen in feet below ground surface.