

Hoff VC HSCA Site  
Groundwater VOCs 1,4 Dioxane Results, Waste Pit Area  
May 2019 - Jan. 2020

Hoff VC HSCA Site, Groundwater Sampling			May 2019				August 2019					
Well ID	PADEP MSCs		MW-A	MW-B	MW-13		MW-A	MW-B	MW-6	MW-8	MW-10	MW-13
Sample ID			MW-A	MW-B	MW-13	DUP-051419	Hoff MW-A	Hoff MW-B	Hoff MW-6	Hoff MW-8	Hoff MW-10	Hoff MW-13
Screen Interval:	Used Aquifer		15'-35'	16'-36'	10'-25'		15'-35'	16'-36'	1'-11'	15'30'	1'-8'	10'-25'
	TDS ≤ 2500											
Date Sampled:	Residential	Non-residential	5/13/2019	5/13/2019	5/14/2019	5/14/2019	8/7/2019	8/7/2019	8/7/2019	8/7/2019	8/7/2019	8/7/2019
Matrix:	GW		GW	GW	GW	GW	GW	GW	GW	GW	GW	GW
<b>Volatile Organics. All Results and Standards in ug/L</b>												
Acetone	38000	110000	31.3	8.8 B	ND	ND	ND	23.2	ND	ND	ND	ND
Benzene	5	5	ND	ND	0.75	0.64	ND	<b>30.1 Q</b>	<b>39 Q</b>	2.5	<b>5.7</b>	ND
Bromomethane	10	10	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Butanone			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon disulfide	1500	6200	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	100	100	ND	ND	ND	ND	ND	<b>8830</b>	1900	64.7	<b>283</b>	12.9
Chloroethane	250	1200	0.73	ND	ND	ND	ND	7.8 Q	ND	ND	2.4	ND
Chloroethene (Vinyl Chloride)	2	2	ND	ND	1.8	1.7	ND	ND	<b>3.1</b>	0.54	<b>3.4</b>	<b>2</b>
Chloroform	80	80	1.9	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloromethane			ND	ND	ND	ND	ND	28.8 Q	19.3 Q	ND	ND	ND
Ethylbenzene	700	700	ND	ND	ND	ND	ND	9.4 Q	3.4	ND	ND	ND
Isopropylbenzene	840	3500	ND	ND	ND	ND	ND	6.8 Q	ND	ND	ND	ND
4-Isopropyltoluene			ND	ND	ND	ND	ND	8	ND	ND	ND	ND
cis-1,2-Dichloroethene	70	70	ND	ND	10.4	10.8	ND	<b>2370 Q</b>	0.69	6.4	3.6	12.3
1,2-Dichlorobenzene	600	600	3	2	17.5	17.9	1.1 B	<b>2330 Q</b>	10.4 Q	3	1.8	12.8
1,3-Dichlorobenzene	600	600	ND	ND	ND	ND	ND	37.6	2	ND	ND	ND
1,4-Dichlorobenzene	75	75	0.54	0.56	3.1	3.3	ND	<b>476 Q</b>	57.4 Q	0.91	9 Q	2.4
1,1-Dichloroethane	31	160	25.4	ND	<b>42.9</b>	<b>43.4</b>	11.3	<b>158 Q</b>	ND	ND	ND	<b>46</b>
1,1 Dichloroethene	7	7	0.7	ND	<b>8.4</b>	<b>8.5</b>	ND	<b>35.9 Q</b>	ND	1.1	0.55	<b>7.3</b>
1,2-Dichloropropane	5	5	ND	ND	ND	ND	ND	0.97	ND	ND	ND	ND
Methyl Tert-Butyl Ether (MTBE)	20	20	ND	ND	0.53	0.54	ND	0.53	0.76	ND	ND	0.68
Naphthalene	100	100	ND	ND	ND	ND	ND	18.8 Q	9.4 Q	ND	ND	ND
n-Butylbenzene	2100	5800	ND	ND	ND	ND	ND	1.4	ND	ND	ND	ND
n-Propylbenzene	2100	8800	ND	ND	ND	ND	ND	9.9 Q	ND	ND	ND	ND
Sec-Butylbenzene	4200	12000	ND	ND	ND	ND	ND	2.8	ND	ND	ND	ND
Styrene	100	100	ND	ND	ND	ND	ND	0.77	ND	ND	ND	ND
t-Butylalcohol	4200	12000	ND	ND	ND	ND	ND	7.9	15.8	7	ND	ND
Tert-Butylbenzene	4200	12000	ND	ND	ND	ND	ND	0.93	0.51	ND	ND	ND
Tetrahydrofuran	26	130	ND	ND	1.2	1.2	ND	ND	ND	ND	ND	ND
Tetrachloroethene	5	5	ND	ND	ND	ND	ND	ND	ND	0.68	ND	ND
Toluene	1000	1000	ND	ND	ND	ND	ND	5.3	0.84	ND	ND	0.62
trans-1,2-Dichloroethene	100	100	ND	ND	ND	ND	ND	38.2 Q	1.3	ND	ND	ND
1,1,1-Trichloroethane	200	200	ND	ND	ND	ND	ND	84.1 Q	ND	ND	ND	ND
Trichloroethene	5	5	ND	ND	<b>21</b>	<b>21.3</b>	ND	<b>45.2 Q</b>	ND	ND	ND	<b>21.3</b>
1,2,3-Trichlorobenzene	70	70	ND	ND	ND	ND	ND	1.1	ND	ND	ND	ND
1,2,4-Trichlorobenzene	70	70	ND	ND	ND	ND	ND	7.6 Q	ND	ND	ND	ND
1,2,4-Trimethylbenzene	15	62	ND	ND	ND	ND	ND	<b>46.7 Q</b>	2	ND	ND	ND
1,3,5-Trimethylbenzene	420	1200	ND	ND	ND	ND	ND	3.6	1.1	ND	ND	ND
α-Xylene	10000	10000	ND	ND	ND	ND	ND	22.9 Q	4.4	ND	ND	ND
m/p-Xylene	10000	10000	ND	ND	ND	ND	ND	6.6	2	ND	ND	ND
Total Xylenes	10000	10000	ND	ND	ND	ND	ND	29.5	6.4	ND	ND	ND
<b>1,4 Dioxane. All Results and Standards in ug/L</b>												
1,4 Dioxane	6.4	32	<b>14.1</b>	ND	<b>63.4</b>	<b>62.2</b>	ND	<b>17</b>	5.6	ND	ND	<b>55.3</b>

Footnotes:

ND - Not detected

1.9 - Detected value

ug/L - microgram per Liter

**46.7** - Exceeded Standard (Used Aquifer, Residential)

# TABLE 1a WPA VOCs Results

Hoff VC HSCA Site  
Groundwater VOCs I,4 Dioxane Results, Waste Pit Area  
May 2019 - Jan. 2020

Hoff VC HSCA Site, Groundwater Sampling			October 2019				January 2020									
Well ID	PADEP MSCs		MW-A	MW-B		MW-13	MW-A	MW-B	MW-C	MW-D	MW-E	MW-6	MW-8	MW-10	MW-13	
Sample ID			Hoff MW-A	Hoff MW-B	Hoff DUP-101519	Hoff MW-13	Hoff MW-A	Hoff MW-B	Hoff MW-C	Hoff MW-D	Hoff MW-E	Hoff MW-6	Hoff MW-8	Hoff MW-10	Hoff MW-13	Hoff DUP-012220
Screen Interval:	Used Aquifer		15'-35'	16'-36'		10'-25'	15'-35'	16'-36'	15'-35'	15'-35'	15'-35'	1'-11'	15'-30'	1'-8'	10'-25'	
	TDS ≤ 2500															
Date Sampled:	Residential	Non-residential	10/15/2019	10/15/2019	10/15/2019	10/15/2019	1/21/2020	1/22/2020	1/22/2020	1/21/2020	1/21/2020	1/23/2020	1/23/2020	1/23/2020	1/22/2020	1/22/2020
Matrix:	GW		GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW
<b>Volatile Organics. All Results and Standards in ug/L</b>																
Acetone	38000	110000	ND	13.6 B	15.1 B	ND	ND	ND	ND	ND	ND	137	ND	11.2 B	11.9 B	
Benzene	5	5	ND	220 Q	218 Q	ND	3.1	49 Q	3.2	ND	0.59	5.8 Q	0.5	4.6	N	ND
Bromomethane	10	10	ND	ND	ND	ND	ND	0.63 B	0.74 B	ND	0.51 B	ND	ND	ND	ND	ND
2-Butanone			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	136	ND	3.2	3
Carbon disulfide	1500	6200	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.2	ND	ND	ND
Chlorobenzene	100	100	ND	34200	34700	18.5	1.5 B	13100	1140	1.6 B	15.7	776	44.8	390	9	9
Chloroethane	250	1200	ND	1.3	1.3	ND	12	10.6 Q	16.4 Q	ND	ND	ND	ND	0.97	ND	ND
Chloroethene (Vinyl Chloride)	2	2	ND	6.1	5.4	1.8	ND	56.4 Q	5.5 Q	ND	ND	ND	1.2	2.6	1.3	ND
Chloroform	80	80	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloromethane			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	700	700	ND	17.2	17.9	ND	0.66	13.9 Q		ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	840	3500	ND	14.5 Q	14.2 Q	ND	ND	11.1 Q	3.5	ND	ND	ND	ND	ND	ND	ND
4-Isopropyltoluene			ND	13 Q	11.8 Q	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	70	70	ND	278 Q	267 Q	71.7 Q	ND	3510 Q	1100	ND	12.8	ND	18	8.2 Q	15.6	16
1,2-Dichlorobenzene	600	600	1.1	1160 Q	1160 Q	13	0.56 B	2820 Q	3820	0.95 B	15.6	6.1 Q	9.3	1.7	9.2	9.3
1,3-Dichlorobenzene	600	600	ND	120 Q	117 Q	ND	ND	78.4 Q	25.7	ND	0.63	1.5	25.7	1	ND	ND
1,4-Dichlorobenzene	75	75	ND	697 Q	678 Q	2.9	ND	748 Q	442 Q	ND	1.5	33.1 Q	2.2	13.6 Q	2	2.1
1,1-Dichloroethane	31	160	9.3	27.4 Q	26 Q	34.6	2.9	202 Q	244 Q	0.56	0.54	ND	2.6	2.6	24.5	25.7
1,1 Dichloroethene	7	7	ND	8 Q	8.4 Q	6.4	ND	50.6	25.8 Q	ND	ND	ND	0.73	ND	4.2	4.3
1,2-Dichloropropane	5	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methyl Tert-Butyl Ether (MTBE)	20	20	ND	ND	ND	0.58	ND	0.68	ND	ND	ND	ND	ND	ND	ND	0.5
Naphthalene	100	100	ND	41.6 Q	40.3 Q	ND	3.2	35.9 Q	2.4	0.78	0.68	2.4	ND	ND	0.52	0.5
n-Butylbenzene	2100	5800	ND	11.5 Q	11 Q	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Propylbenzene	2100	8800	ND	34.9 Q	33.8 Q	ND	ND	20.6 Q	ND	ND	ND	ND	ND	ND	ND	ND
Sec-Butylbenzene	4200	12000	ND	9.8 Q	9	ND	ND	7.8 Q	1.8	ND	ND	ND	ND	ND	ND	ND
Styrene	100	100	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
t-Butylalcohol	4200	12000	ND	7.4	ND	ND	ND	ND	6	ND	ND	ND	6	ND	ND	ND
Tert-Butylbenzene	4200	12000	ND	2.6	2.4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrahydrofuran	26	130	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	144 E	ND	ND	ND
Tetrachloroethene	5	5	ND	ND	ND	ND	ND	ND	0.81	ND	ND	ND	ND	ND	ND	ND
Toluene	1000	1000	ND	9.8 Q	10.2 Q	ND	ND	7.4 Q	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	100	100	ND	5	4.9	ND	ND	54.8 Q	14.7 Q	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	200	200	ND	10 Q	9.9 Q	ND	ND	106 Q	31.8 Q	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	5	5	ND	12 Q	12.6 Q	103 Q	ND	15.4 Q	230 Q	ND	0.77	ND	1.1	ND	4.4	4.2
1,2,3-Trichlorobenzene	70	70	ND	1.4	1.5	ND	ND	3.2	3.5	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trichlorobenzene	70	70	ND	14 Q	14.8 Q	ND	ND	18.4 Q	26.6 Q	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trimethylbenzene	15	62	ND	314 Q	310 Q	ND	ND	136 Q	ND	ND	ND	1.1	ND	0.62	ND	ND
1,3,5-Trimethylbenzene	420	1200	ND	89 Q	86.4 Q	ND	ND	21.3 Q	ND	ND	ND	1	ND	ND	ND	ND
α-Xylene	10000	10000	ND	60.8 Q	59.3 Q	ND	0.68	34.4 Q	ND	ND	0.53	2.7	ND	ND	ND	ND
m/p-Xylene	10000	10000	ND	46.6 Q	45.5 Q	ND	1	11.2 Q	ND	ND		1.3	ND	ND	ND	ND
Total Xylenes	10000	10000	ND	107.4	104.8	ND	1.68	45.6	0	0	0.53	4	0	0	0	0
<b>1,4 Dioxane. All Results and Standards in ug/L</b>																
1,4 Dioxane	6.4	32	5.6	5.2	5.5	58.8	ND	25.8	28.8	ND	ND	ND	ND	ND	47	46.2

**Footnotes:**

ND - Not detected  
1.9 - Detected vs  
ug/L - microgram per Liter  
46.7 - Exceeded S

TABLE 1b WPA FA & NA Parameters

Fatty Acids and Natural Attenuation Parameters Analytical Results  
 Groundwater Sampling May 2019 through Jan 2020  
 Hoff VC HSCA Site, New Hanover Twp, Montgomery Co. Pennsylvania

Sample ID:		Hoff MW-A MW-A	Hoff MW-A MW-A	Hoff MW-A MW-A	Hoff MW-A MW-A	Hoff MW-B MW-B	Hoff MW-B MW-B	Hoff MW-B   DUP-101519 MW-B	Hoff MW-B MW-B	Hoff MW-C MW-C	Hoff MW-D MW-D	Hoff MW-E MW-E	Hoff MW-13   DUP-051419 MW-13	Hoff MW-13 MW-13	Hoff MW-13 MW-13	Hoff MW-13   DUP-012220 MW-13			
Sample Location:																			
Date of Collection:		5/13/2019	8/7/2019	10/15/2019	1/21/2020	5/13/2019	8/7/2019	10/15/2019	1/22/2020	1/22/2020	1/21/2020	1/21/2020	5/14/2019	8/17/2016	10/15/2019	1/22/2020			
Edonors		Monitoring	Monitoring	Monitoring		Monitoring	Monitoring	Monitoring					Monitoring	Monitoring	Monitoring				
Lactic Acid	mg/l	n.a.	n.a.	n.a.	N.D.	n.a.	n.a.	n.a.	n.a.	N.D.	N.D.	0.052 J	N.D.	n.a.	n.a.	n.a.	n.a.	N.D.	n.a.
Acetic Acid	mg/l	n.a.	n.a.	n.a.	0.023 J	n.a.	n.a.	n.a.	n.a.	0.069 J	0.029 J	N.D.	N.D.	n.a.	n.a.	n.a.	n.a.	110	n.a.
Propionic Acid	mg/l	n.a.	n.a.	n.a.	N.D.	n.a.	n.a.	n.a.	n.a.	N.D.	N.D.	N.D.	N.D.	n.a.	n.a.	n.a.	n.a.	17	n.a.
Formic Acid	mg/l	n.a.	n.a.	n.a.	N.D.	n.a.	n.a.	n.a.	n.a.	N.D.	N.D.	N.D.	N.D.	n.a.	n.a.	n.a.	n.a.	0.38 J	n.a.
Butyric Acid	mg/l	n.a.	n.a.	n.a.	N.D.	n.a.	n.a.	n.a.	n.a.	N.D.	N.D.	N.D.	N.D.	n.a.	n.a.	n.a.	n.a.	0.25	n.a.
Pyruvic Acid	mg/l	n.a.	n.a.	n.a.	N.D.	n.a.	n.a.	n.a.	n.a.	N.D.	N.D.	N.D.	N.D.	n.a.	n.a.	n.a.	n.a.	0.044 J	n.a.
i-Pentanoic Acid	mg/l	n.a.	n.a.	n.a.	N.D.	n.a.	n.a.	n.a.	n.a.	N.D.	N.D.	N.D.	N.D.	n.a.	n.a.	n.a.	n.a.	0.028 J	n.a.
Pentanoic Acid	mg/l	n.a.	n.a.	n.a.	N.D.	n.a.	n.a.	n.a.	n.a.	N.D.	N.D.	N.D.	N.D.	n.a.	n.a.	n.a.	n.a.	N.D.	n.a.
i-Hexanoic Acid	mg/l	n.a.	n.a.	n.a.	N.D.	n.a.	n.a.	n.a.	n.a.	N.D.	N.D.	N.D.	N.D.	n.a.	n.a.	n.a.	n.a.	N.D.	n.a.
Hexanoic Acid	mg/l	n.a.	n.a.	n.a.	N.D.	n.a.	n.a.	n.a.	n.a.	N.D.	N.D.	N.D.	N.D.	n.a.	n.a.	n.a.	n.a.	N.D.	n.a.
Natural Attenuation Parameters																			
Ethane	ug/l	n.a.	n.a.	N.D.	N.D.	n.a.	n.a.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	n.a.	n.a.	n.a.	N.D.	N.D.	N.D.
Ethene	ug/l	n.a.	n.a.	n.a.	N.D.	n.a.	n.a.	n.a.	n.a.	N.D.	N.D.	N.D.	N.D.	n.a.	n.a.	n.a.	n.a.	N.D.	N.D.
Methane	ug/l	n.a.	n.a.	1190	204	n.a.	n.a.	2430	2380	2170	208	N.D.	11.9	n.a.	n.a.	n.a.	316	285	306
Propane	ug/l	n.a.	n.a.	N.D.	N.D.	n.a.	n.a.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	n.a.	n.a.	n.a.	N.D.	N.D.	N.D.
Iron (total)	mg/l	130	n.a.	9.418	n.a.	44.8	n.a.	11.41	10.89	n.a.	n.a.	n.a.	0.361	0.324	n.a.	n.a.	1.232	n.a.	n.a.
Iron (dissolved)	mg/l	0.223	0.956	2.146	1.38	7.4	3.8	2.259	2.404	1.14	< 0.1	< 0.1	< 0.1	N.D.	N.D.	< 0.1	0.951	10.8	10.7
17.22 Sulfate (turbidimetric)	mg/l	n.a.	n.a.	n.a.	50.5	n.a.	n.a.	n.a.	n.a.	< 20	< 20	45.2	56.3	n.a.	n.a.	n.a.	n.a.	< 20	< 20

N.D. - Not detected      J - Estimated concentration greater than the set method detection limit (MDL) and less than the set reporting limit (PQL)  
 n.a. - Not analysed  
 B - The analyte was detected in the associated blank  
 d - The analyte concentration was determined from dilution  
 <0.10 - Practical Quantification Limit (PQL). Can be used synonymously with Limit of Quantitation (LOQ)  
 15 - Detected result