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April 17, 2018

Daniel Hamel  
Michigan Department of Environmental Quality  
Environmental Response Division  
Jackson District Office Building  
301 E. Louis Glick Highway  
Jackson, Michigan 49210

Re: **Quarterly Progress Report**  
**1st Quarter, 2018**  
January 1, 2018 to March 31, 2018

Dear Mr. Hamel:

Please find enclosed the Quarterly Progress Report for the period of January 1, 2018 to March 31, 2018.

Should you have any questions regarding this document, please contact me at 386-562-0176.

Sincerely,

A handwritten signature in black ink, appearing to read "L. Gelb".

Lawrence J. Gelb  
Sr. Director Global EHS





**1st Quarter, 2018**  
**(January, February, March)**

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*Isoconcentration Map – Marshy Area – Peat & Sand – will be generated with next semi-annual maps*

## *Summary of Activity*

CEB = Central Environmental Building  
C3 = C3 aquifer  
D2 = D2 aquifer  
E = E aquifer  
SW = Southwest Property Area  
Maple = Maple Road

### *Treatment Activities*

01/18/18 - 01/19/18 - Dolph (C3) was shut down briefly for maintenance.

01/28/18 - Extraction and Treatment were shut down briefly due to a DTE Energy power loss in the area.

02/02/18 - LB-4 (D2) was shut down briefly for maintenance. TW-14 (C3) and TW-17 (E ) were turned on briefly to maintain the Pond level.

02/20/18 - 02/21/18 - Extraction and treatment were shut down for maintenance.

3/2/18 - LB-4 (D2), TW-19 and TW-23 (E) were shut down due to a DTE Energy power loss in the area.

3/7/18 - 3/8/18 - LB-4 (D2), TW-19 and TW-23 (E) were shut down briefly for maintenance.

3/13/18 - Treatment was shut down briefly for maintenance.

### *Field Activities*

New chemical tanks were purchased for the treatment system.

## *Submittals/Responses*

01/09/18      PLS submitted Discharge Monitoring Report (DMR) to DEQ  
                  PLS submitted Monthly Monitoring Report (NPDES) to DEQ

01/09/18      PLS submitted 4th Quarter 2017 Report to DEQ

02/14/18      PLS submitted Discharge Monitoring Report (DMR) to DEQ;  
                  PLS submitted Monthly Monitoring Report (NPDES) to DEQ

03/08/18      PLS submitted Monthly Monitoring Report (NPDES) to DEQ  
                  PLS submitted Discharge Monitoring Report (DMR) to DEQ;

### *Anticipated Major Activities for the Next Quarter*

- Rehabilitation and service of TW-10
- Commission and changeover to newly installed chemical tanks
- Modification and replacement of the Porter pumphouse

### *Quarterly Performance Analysis*

For the months of January, February, March 2018, over 209 pounds of 1,4-dioxane were removed and 63,469,408 gallons of water were extracted from the contaminated aquifers, treated and discharged. The total mass of 1,4-dioxane removed since May 1997 is over 93,900 pounds and the total volume of water discharged since May 1997 is over 8.1 billion gallons.

In general, the performance of the operation was as expected, purging and treating contaminated groundwater to the existing allowable capacities.

# Mass Reduction

**MASS REDUCTION SUMMARY**  
**Mass Removed Per Month (lb)**

<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>	<b>F</b>	<b>G</b>
Month	Mass Removed from Unit E Only	Mass Removed from Southwest Only	Mass Removed from Marshy Only	Mass Removed from Units C3 and D2 Only	Mass Removed from Unit D0	Total Mass Removed from Units E, D2, C3, D0, Southwest and Marshy
Aug-00	0	0	8	366		374
Sep-00	0	0	9	332		341
Oct-00	0	5	9	583		597
Nov-00	0	3	12	1160		1175
Dec-00	0	0	10	1040		1050
Jan-01	0	0	7	816		823
Feb-01	0	0	7	1056		1063
Mar-01	0	0	11	1379		1390
Apr-01	0	0	9	1140		1149
May-01	0	1	8	990		999
Jun-01	0	2	8	933		943
Jul-01	0	2	10	1121		1133
Aug-01	0	2	13	1018		1033
Sep-01	0	1	9	909		919
Oct-01	0	5	8	896		909
Nov-01	0	4	5	827		836
Dec-01	0	6	4	768		778
Jan-02	0	6	5	753		764
Feb-02	0	4	6	691		701
Mar-02	0	7	7	663		677
Apr-02	0	6	7	682		695
May-02	100	9	7	898		1014
Jun-02	94	9	6	889		998
Jul-02	56	10	7	640		713
Aug-02	53	8	6	745		812
Sep-02	51	8	6	860		925
Oct-02	33	6	4	603		646
Nov-02	57	8	5	880		950
Dec-02	48	9	5	842		904
Jan-03	45	8	6	839		898
Feb-03	37	6	6	767		816
Mar-03	44	8	7	763		822
Apr-03	39	8	3	716		766
May-03	36	13	5	725		779
Jun-03	34	15	5	683		737
Jul-03	29	15	5	678		727
Aug-03	31	15	6	676		728
Sep-03	27	16	5	644		692
Oct-03	34	17	5	701		757
Nov-03	26	12	5	663		706
Dec-03	29	14	6	635		684
Jan-04	28	15	6	667		716
Feb-04	8	11	5	485		509
Mar-04	23	14	7	573		617
Apr-04	27	15	6	537		585
May-04	16	10	5	439		470
Jun-04	21	11	5	499		536
Jul-04	36	12	5	506		559



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Month	Mass Removed from Unit E Only	Mass Removed from Southwest Only	Mass Removed from Marshy Only	Mass Removed from Units C3 and D2 Only	Mass Removed from Unit D0	Total Mass Removed from Units E, D2, C3, D0, Southwest and Marshy
Aug-04	54	12	5	480		551
Sep-04	34	9	5	382		430
Oct-04	30	10	5	358		403
Nov-04	30	9	5	395		439
Dec-04	33	11	5	442		491
Jan-05	29	11	4	404		448
Feb-05	26	9	4	390		429
Mar-05	27	9	4	409		450
Apr-05	33	4	3	396		436
May-05	27	8	2	364		401
Jun-05	31	9	3	361		404
Jul-05	31	8	1	279		319
Aug-05	12	6	2	275		295
Sep-05	13	8	2	327		350
Oct-05	16	6	3	297		322
Nov-05	13	7	4	291		315
Dec-05	12	8	4	325		349
Jan-06	115	7	3	308		433
Feb-06	144	7	3	290		444
Mar-06	148	8	3	331		490
Apr-06	125	7	3	291		426
May-06	137	9	3	402		551
Jun-06	119	5	2	329		456
Jul-06	107	8	3	310		427
Aug-06	104	8	2	307		421
Sep-06	97	9	3	300		409
Oct-06	93	9	3	327		432
Nov-06	80	7	2	268		357
Dec-06	68	6	2	238		314
Jan-07	91	8	2	305		406
Feb-07	84	8	2	284		378
Mar-07	91	8	3	306		408
Apr-07	84	8	2	280		374
May-07	82	8	2	288		380
Jun-07	81	8	2	279		370
Jul-07	66	8	2	256		332
Aug-07	73	8	2	270		353
Sep-07	77	8	2	247		334
Oct-07	73	8	2	244		327
Nov-07	68	8	2	263		341
Dec-07	69	8	2	260		339
Jan-08	65	7	2	237		311
Feb-08	53	6	2	203		264
Mar-08	56	7	2	220		285
Apr-08	54	7	2	200		263
May-08	55	7	2	206		270
Jun-08	52	6	2	195		256
Jul-08	39	1	2	139		181

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Aug-08	50	7	2	198		256
Sep-08	43	5	2	177		227
Oct-08	45	5	2	187		239
Nov-08	45	7	2	197		251
Dec-08	45	5	2	187		239
Jan-09	39	8	2	124		173
Feb-09	34	8	2	122		164
Mar-09	35	8	2	122		166
Apr-09	32	6	1	119		158
May-09	45	7	2	201		254
Jun-09	39	5	1	157		202
Jul-09	38	5	1	152		196
Aug-09	39	7	2	202		250
Sep-09	36	6	2	223		267
Oct-09	36	8	2	206		251
Nov-09	32	7	1	167		208
Dec-09	32	8	1	171		212
Jan-10	34	8	1	175		219
Feb-10	30	7	1	161		198
Mar-10	33	7	1	173		214
Apr-10	33	7	1	175		216
May-10	33	7	1	176		217
Jun-10	29	6	1	130		165
Jul-10	20	7	1	171		200
Aug-10	23	7	1	188		220
Sep-10	21	6	1	148		177
Oct-10	24	7	2	185		218
Nov-10	18	6	2	151		176
Dec-10	26	6	2	164		198
Jan-11	25	6	2	163		195
Feb-11	25	7	2	165		198
Mar-11	27	8	2	174		209
Apr-11	22	6	1	143		171
May-11	20	5	1	138		164
Jun-11	17	5	1	104		127
Jul-11	15	4	1	92		112
Aug-11	14	2	1	80		97
Sep-11	16	6	1	98		121
Oct-11	17	6	1	113		137
Nov-11	33	6	1	105		145
Dec-11	45	6	1	98		150
Jan-12	46	6	1	103		156
Feb-12	40	5	1	89		135
Mar-12	43	5	1	94	0.017	142
Apr-12	47	6	1	105	0.000	159
May-12	47	6	1	100	0.000	154
Jun-12	42	6	0.3	99	0.029	148
Jul-12	30	6	0.1	102	0.000	138

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Month	Mass Removed from Unit E Only	Mass Removed from Southwest Only	Mass Removed from Marshy Only	Mass Removed from Units C3 and D2 Only	Mass Removed from Unit D0	Total Mass Removed from Units E, D2, C3, D0, Southwest and Marshy
Aug-12	29	6	0.0	75	0.000	109
Sep-12	32	5	0.1	62	0.029	100
Oct-12	27	5	0.0	57	0.000	88
Nov-12	33	4	0.0	62	0.000	99
Dec-12	31	3	0.0	52	0.020	86
Jan-13	46	3	0.0	54	0.000	103
Feb-13	46	3	0.0	47	0.000	95
Mar-13	53	3	0.0	53	0.029	109
Apr-13	46	5	0.1	61	0.000	113
May-13	57	8	1.0	60	0.000	126
Jun-13	43	7	0.7	52	0.029	102
Jul-13	57	9	0.9	61	0.000	128
Aug-13	48	7	0.8	63	0.000	120
Sep-13	46	7	0.6	60	0.023	113
Oct-13	46	7	0.8	61	0.000	115
Nov-13	52	7	0.7	57	0.000	117
Dec-13	57	8	1.0	72	0.026	138
Jan-14	47	8	0.7	66	0.000	122
Feb-14	37	7	0.4	48	0.000	92
Mar-14	42	6	0.5	58	0.025	107
Apr-14	44	6	0.4	58	0.000	108
May-14	46	6	0.4	61	0.000	113
Jun-14	38	5	0.3	34	0.019	77
Jul-14	41	4	0.3	32	0.000	78
Aug-14	42	4	0.4	33	0.000	79
Sep-14	39	3	0.3	33	0.020	76
Oct-14	42	3	0.3	33	0.000	79
Nov-14	46	3	0.3	33	0.000	82
Dec-14	50	3	0.3	37	0.000	90
Jan-15	45	2	0.3	32	0.016	80
Feb-15	41	2	0.3	28	0.000	72
Mar-15	46	2	0.5	29	0.027	77
Apr-15	49	2	0.4	29	0.000	80
May-15	47	3	0.3	29	0.000	79
Jun-15	42	5	0.3	33	0.019	81
Jul-15	38	6	0.4	30	0.000	74
Aug-15	44	7	0.7	34	0.000	86
Sep-15	42	7	1.2	33	0.013	82
Oct-15	46	6	1.0	34	0.000	88
Nov-15	46	6	1.3	35	0.000	88
Dec-15	44	5	1.1	35	0.018	85
Jan-16	46	4	1.1	33	0.000	84
Feb-16	43	4	0.8	27	0.000	74
Mar-16	41	6	0.6	33	0.016	80
Apr-16	41	7	0.1	33	0.000	82
May-16	45	7	0.0	36	0.000	87
Jun-16	44	7	0.1	34	0.018	85
Jul-16	44	7	0.4	36	0.000	88

**MASS REDUCTION SUMMARY**  
**Mass Removed Per Month (lb)**

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Month	Mass Removed from Unit E Only	Mass Removed from Southwest Only	Mass Removed from Marshy Only	Mass Removed from Units C3 and D2 Only	Mass Removed from Unit D0	Total Mass Removed from Units E, D2, C3, D0, Southwest and Marshy
Aug-16	42	7	0.1	34	0.000	83
Sep-16	38	5	0.9	32	0.021	77
Oct-16	40	5	0.9	31	0.000	77
Nov-16	41	6	0.1	33	0.000	79
Dec-16	43	6	0.2	33	0.017	82
Jan-17	44	6	0.8	36	0.000	87
Feb-17	36	5	0.6	29	0.000	71
Mar-17	39	5	0.6	33	0.017	78
Apr-17	34	5	0.3	31	0.000	70
May-17	32	5	0.5	27	0.000	64
Jun-17	31	4	0.3	26	0.018	61
Jul-17	32	5	0.1	36	0.000	73
Aug-17	29	6	0.0	37	0.000	71
Sep-17	31	5	0.0	27	0.033	63
Oct-17	36	4	0.2	28	0.000	67
Nov-17	34	5	0.7	28	0.000	68
Dec-17	32	5	0.8	28	0.020	65
Jan-18	36	6	0.9	32	0.000	75
Feb-18	28	4	0.5	26	0.000	59
Mar-18	37	4	0.6	34	0.019	75
<b>Total to date</b>	<b>8531</b>	<b>1367</b>	<b>548</b>	<b>61077</b>	<b>0.538</b>	<b>71524</b>

**MASS REDUCTION DETAIL BY AQUIFER**

January 1 - January 31, 2018

	Extraction Well	Month To Date Gallons Extracted	Month To Date Average Daily Flow Rate GPM	Month To Date Average Daily Pounds Removed	Month To Date Pounds Removed	Month To Date Average Concentration ppb
<b>C3</b>	TW-2 (Dolph)	645,877	14	0.02	0.55	102
	TW-20	1,336,117	30	0.32	9.8	879
	<b>Sub-Totals</b>	<b>1,981,994</b>	<b>44</b>	<b>0.3</b>	<b>10</b>	
<b>Marshy</b>	PW-1	131,192	3	0.030	0.9	857
	<b>Sub-Totals</b>	<b>131,192</b>	<b>3</b>	<b>0.03</b>	<b>0.9</b>	
<b>E</b>	TW-18	7,131,013	160	0.52	16.2	272
	TW-19	1,381,890	31	0.3	8.4	732
	TW-23	3,059,219	69	0.4	11.8	462
	<b>Sub-Totals</b>	<b>11,572,122</b>	<b>259</b>	<b>1</b>	<b>36</b>	
<b>Southwest</b>	Active Wells	933,613	21	0.2	5.5	705
	<b>Sub-Totals</b>	<b>933,613</b>	<b>21</b>	<b>0.2</b>	<b>5</b>	
<b>D2</b>	LB-4	4,435,181	99	0.6	17.6	477
	TW-21	2,642,579	59	0.1	4.3	200
	<b>Sub-Totals</b>	<b>7,077,760</b>	<b>159</b>	<b>0.7</b>	<b>22</b>	
<b>Overall Totals</b>		<b>21,696,681</b>	<b>486</b>	<b>2.4</b>	<b>75.1</b>	

\*SW Active = TW-8, TW-22

**MASS REDUCTION DETAIL BY AQUIFER**

February 1 - February 28, 2018

	Extraction Well	Month To Date Gallons Extracted	Month To Date Average Daily Flow Rate GPM	Month To Date Average Daily Pounds Removed	Month To Date Pounds Removed	Month To Date Average Concentration ppb
<b>C3</b>	TW-2 (Dolph)	1,006,096	25	0.0	0.8	95
	TW-14	12,332	0	0.0	0.0	27
	TW-20	1,186,812	29	0.3	7.8	783
	<b>Sub-Totals</b>	<b>2,205,240</b>	<b>55</b>	<b>0</b>	<b>9</b>	
<b>Marshy</b>	PW-1	80,635	2	0.0	0.5	809
	<b>Sub-Totals</b>	<b>80,635</b>	<b>2</b>	<b>0</b>	<b>1</b>	
<b>E</b>	TW-17	15,303	0	0.0	0.1	500
	TW-18	6,251,760	155	0.4	12.0	229
	TW-19	1,208,654	30	0.2	6.6	650
	TW-23	2,703,692	67	0.3	9.4	418
	<b>Sub-Totals</b>	<b>10,179,409</b>	<b>252</b>	<b>1</b>	<b>28</b>	
<b>Southwest</b>	Active Wells	727,145	18	0.1	3.7	611
	<b>Sub-Totals</b>	<b>727,145</b>	<b>18</b>	<b>0</b>	<b>4</b>	
<b>D2</b>	LB-4	3,928,637	97	0.5	14.1	429
	TW-21	2,279,872	57	0.1	3.5	192
	<b>Sub-Totals</b>	<b>6,208,509</b>	<b>154</b>	<b>1</b>	<b>18</b>	
<b>Overall Totals</b>		<b>19,400,938</b>	<b>481</b>	<b>2.1</b>	<b>58.4</b>	

\*SW Active = TW-8, TW-22

**MASS REDUCTION DETAIL BY AQUIFER**

March 1 - March 31, 2018

	Extraction Well	Month To Date Gallons Extracted	Month To Date Average Daily Flow Rate GPM	Month To Date Average Daily Pounds Removed	Month To Date Pounds Removed	Month To Date Average Concentration ppb
<b>C3</b>						
	TW-2 (Dolph)	1,004,326	22	0.0	0.8	97
	TW-14	58,807	1	0.0	0.0	49
	TW-20	1,339,357	30	0.3	9.6	861
	<i>Sub-Totals</i>	2,402,490	54	0	10	
<b>Marsby</b>						
	PW-1	89,641	2	0.0	0.6	834
	<i>Sub-Totals</i>	89,641	2	0	1	
<b>E</b>						
	TW-17	62,805	1	0.0	0.2	229
	TW-18	7,130,644	160	0.5	14.6	245
	TW-19	1,338,274	30	0.2	6.0	536
	TW-23	3,010,492	67	0.5	16.2	643
	<i>Sub-Totals</i>	11,542,215	259	1	37	
<b>Southwest</b>						
	Active Wells	733,087	16	0.1	3.8	622
	<i>Sub-Totals</i>	733,087	16	0	4	
<b>D0</b>						
	Ann Arbor Cleaning	28,000			0.0192	82
	<i>Sub-Totals</i>	28,000			0.0192	
<b>D2</b>						
	LB-4	4,372,630	98	0.5	15.6	428
	TW-21	2,661,402	60	0.3	7.9	366
	<i>Sub-Totals</i>	7,034,032	158	1	24	
<b>Overall Totals</b>		21,801,465	488	2.4	75.5	

\*SW Active = TW-8, TW-22