



April 20, 2021

Daniel Hamel  
Michigan Department of EGLE  
Remediation and Redevelopment Division  
Jackson District Office Building  
301 E. Louis Glick Highway  
Jackson, Michigan 49210

Re: **Quarterly Progress Report**  
**1<sup>st</sup> Quarter, 2021**  
January 1, 2021 to March 31, 2021

Quarterly Report 1st Quarter 2021  
2021

Dear Mr. Hamel:

Please find enclosed the Quarterly Progress Report for the period of January 1, 2021 to March 31, 2021.

Should you have any questions regarding this document, please contact me at 269-993-7585.

Sincerely,

FLEIS & VANDENBRINK

Jim Brode, CPG  
Senior Project Manager



**1st Quarter, 2021**

**(January, February, March)**

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## *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*

- 2/2/21 – Treatment system 1A was shut down briefly for maintenance.
- 2/6/21 – TW-23 (E) and TW-19 (E) were shut down briefly due to communication loss from Comcast maintenance in the area.
- 2/8/21-2/9/21 – TW-18 (E), TW-19 (E), TW-21 (D2), TW-23 (E), TW-2 (C3) were shut down due to communication loss from Comcast maintenance in the area.
- 2/9/21-2/11/21 – PW-1 (Marshy) was shut down for pump replacement.
- 2/16/21 – Treatment system 1A was shut down briefly for maintenance.
- 2/20/21-2/28/21 – TW-2 (C3) was shut down due to shorted wire in well pump.
- 2/23/21-2/28/21 – TW-19 (E) was shut down due to system wiring issues.
- 3/1/21-3/2/21 – TW-2 (C3) was shut down for rehabilitation.
- 3/1/21-3/2/21 – TW-19 (E) was shut down for maintenance.
- 3/2/21-3/5/21 – TW-22 (SW) was shut down for rehabilitation.
- 3/5/21-3/10/21 – TW-28 (SW) was shut down for rehabilitation.
- 3/10/21-3/16/21 – TW-20 (C3) was shut down for rehabilitation.
- 3/14/21 – PW-1 (Marshy), TW-2 (C3), TW-18 (E), TW-19 (E), TW-23 (E), TW-21 (D2), TW-22 (SW), TW-28 (SW), LB-4 (D2) were shut down briefly due to communication loss.
- 3/14/21 – Treatment was shut down briefly due to communication loss.
- 3/16/21-3/17/21 – PW-1 (Marshy) was shut down for rehabilitation.
- 3/18/21 – Treatment was shut down briefly due to power failure.
- 3/24/21-3/31/21 – LB-4 (D2) was shut down for rehabilitation.

### *Field Activities*

- Routine groundwater monitoring.
- Investigations into potential causes for slightly increasing bromate concentrations.
- Evaluation of PW-1. Evaluate options for sleeving well due to casing/screen perforations.

**Submittals/Responses**

1/19/21 PLS submitted Discharge Monitoring Report (DMR) to EGLE  
 1/20/21 PLS submitted Monthly Monitoring Report (NPDES) to EGLE  
 PLS submitted 4th Quarter 2020 Report to EGLE

2/17/21 PLS submitted Discharge Monitoring Report (DMR) to EGLE  
 PLS submitted Monthly Monitoring Report (NPDES) to EGLE

3/19/21 PLS submitted Monthly Monitoring Report (NPDES) to EGLE  
 PLS submitted Discharge Monitoring Report (DMR) to EGLE

**Anticipated Major Activities for the Next Quarter**

- Continue to work toward an Amended Consent Judgment.
- Minor modification to some of the piping near the red/green ponds to facilitate future cleaning.
- Work to replace TW-19.

**Quarterly Performance Analysis**

For the months of January, February, and March 2021, over 184 pounds of 1,4-dioxane were removed and 65,233,999 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 96,455 pounds and the total volume of water discharged since May 1997 is over 8.9 billion gallons.

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

<b>QUARTERLY H<sub>2</sub>O<sub>2</sub> INFLUENT</b>	
3/1/2021 and 3/2/2021	
<b>Well Name</b>	<b>H<sub>2</sub>O<sub>2</sub> µg/l</b>
TW-20	<50
TW-18	<50
TW-23	<50
TW-2 (Dolph)	<50
LB-4	<50
TW-19	<50
TW-22	<50
TW-28	<50
TW-21	<50
PW-1	<50

## Mass Reduction

MASS REDUCTION DETAIL BY AQUIFIER

January 1 - January 31, 2021

	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)	825,502	18	0.030	0.94	136
	TW-20	896,575	20	0.20	6.3	836
	<i>Sub-Totals</i>	1,722,077	39	0.23	7.2	
	<b>Marshy</b>					
	PW-1	55,996	1	0.0081	0.25	540
	<i>Sub-Totals</i>	55,996	1	0.0081	0.25	
<b>E</b>	TW-18	7,270,786	163	0.42	13	214
	TW-19	1,783,594	40	0.21	6.4	432
	TW-23	2,683,724	60	0.34	10	465
	<i>Sub-Totals</i>	11,738,104	263	1.0	30	
<b>Southwest</b>	TW-28	1,116,417	25	0.19	6.0	642
	TW-22	24,994	0.56	0.0021	0.065	312
	<i>Sub-Totals</i>	1,141,411	26	0.20	6.0	
<b>D2</b>	LB-4	4,470,425	100	0.49	15	411
	TW-21	2,530,915	57	0.17	5.4	255
	<i>Sub-Totals</i>	7,001,340	157	0.67	21	
<b>Overall Totals</b>		21,658,928	485	2.1	64	

MASS REDUCTION DETAIL BY AQUIFIER

February 1 - February 28, 2021

	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)	412,793	10	0.018	0.51	148
	TW-10	79,121	2.0	0.0090	0.25	363
	TW-20	810,104	20	0.20	5.6	832
	<i>Sub-Totals</i>	1,302,018	32	0.23	6.4	
<b>Marshy</b>	PW-1	49,911	1	0.0096	0.27	639
	<i>Sub-Totals</i>	49,911	1	0.0096	0.27	
<b>E</b>	TW-18	6,514,842	162	0.41	11	209
	TW-19	1,274,069	32	0.16	4.6	429
	TW-23	2,654,975	66	0.39	11	499
	<i>Sub-Totals</i>	10,443,886	259	1.0	27	
<b>Southwest</b>	TW-28	1,012,198	25	0.21	5.9	695
	TW-22	20,741	0.51	0.0023	0.064	373
	<i>Sub-Totals</i>	1,032,939	26	0.21	5.9	
<b>D2</b>	LB-4	4,038,032	100	0.54	15	448
	TW-9	93,538	2.3	0.0089	0.25	369
	TW-21	2,520,753	63	0.21	5.9	279
	<i>Sub-Totals</i>	6,652,323	165	0.76	21	
<b>Overall Totals</b>		19,481,077	483	2.2	61	

MASS REDUCTION DETAIL BY AQUIFER

March 1 - March 31, 2021

	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)	1,078,835	24	0.044	1.35	150
	TW-10	75,070	1.7	0.0077	0.24	380
	TW-20	723,343	16	0.16	5.1	831
	<i>Sub-Totals</i>	1,877,248	42	0.21	6.7	
<b>Marshy</b>						
	PW-1	59,554	1	0.0083	0.26	522
	<i>Sub-Totals</i>	59,554	1	0.0083	0.26	
<b>E</b>						
	TW-18	7,221,501	162	0.43	13	220
	TW-19	1,687,940	38	0.18	5.5	391
	TW-23	2,764,868	62	0.26	8.1	350
	<i>Sub-Totals</i>	11,674,309	262	0.87	27	
<b>Southwest</b>						
	TW-28	941,865	21	0.19	5.8	727
	TW-22	186,994	4.2	0.018	0.56	361
	<i>Sub-Totals</i>	1,128,859	25	0.20	6.3	
<b>D0</b>						
	Ann Arbor Cleaning	30,000			0.012	46
	<i>Sub-Totals</i>	30,000			0.012	
<b>D2</b>						
	LB-1	505,055	11	0.046	1.4	340
	LB-4	3,364,707	75	0.40	12	440
	TW-21	2,751,201	62	0.19	5.7	250
	<i>Sub-Totals</i>	6,620,963	148	0.63	20	
<b>Overall Totals</b>		21,390,933	479	1.9	60	



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

A	B	C	D	E	F	G
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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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

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

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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

**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-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)**

A	B	C	D	E	F	G
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
Apr-18	33	4	0.7	31	0.000	68
May-18	36	4	0.5	35	0.000	75
Jun-18	33	4	0.4	32	0.016	70
Jul-18	33	4	0.3	32	0.000	69
Aug-18	31	4	0.4	33	0.000	68
Sep-18	33	3	0.5	34	0.020	71
Oct-18	39	3	0.6	34	0.000	77
Nov-18	32	3	0.6	33	0.000	69
Dec-18	37	0.8	0.6	35	0.021	73
Jan-19	36	4	0.6	37	0.000	77
Feb-19	26	5	0.4	27	0.000	59
Mar-19	28	6	0.3	31	0.009	65
Apr-19	31	7	0.4	32	0.000	70
May-19	30	6	0.2	33	0.000	70
Jun-19	27	5	0.1	28	0.019	61
Jul-19	33	8	0.2	30	0.000	71
Aug-19	39	8	0.3	31	0.000	78
Sep-19	33	8	0.4	29	0.021	70
Oct-19	33	6	0.0	29	0.000	68
Nov-19	33	6	0.2	27	0.000	67
Dec-19	33	6	0.5	29	0.018	68
Jan-20	25	5	0.4	43	0.000	73
Feb-20	27	7	0.5	31	0.000	65
Mar-20	29	6	0.4	31	0.015	66
Apr-20	28	6	0.3	29	0	63
May-20	28	7	0.3	32	0	68
Jun-20	29	6	0.2	31	0.018	66
Jul-20	33	5	0.2	33	0	71

**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-20	33	6	0.2	28	0	67
Sep-20	28	6	0.2	29	0.013	63
Oct-20	32	7	0.3	31	0	70
Nov-20	35	7	0.3	31	0	73
Dec-20	31	6	0.3	24	0.014	61
Jan-21	30	6	0.3	28	0.000	64
Feb-21	27	6	0.3	28	0.000	61
Mar-21	27	6	0.3	26	0.012	60
<b>Total to date</b>	<b>9662</b>	<b>1561</b>	<b>560</b>	<b>62194</b>	<b>1</b>	<b>73976</b>