



Gelman Sciences, Inc. d/b/a
Pall Life Sciences
642 South Wagner Road
Ann Arbor, MI 48103
734.436.4025 phone
734.436.4040 fax

January 13, 2016

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**
4th Quarter, 2015
October 1, 2015 to December 31, 2015

Dear Mr. Hamel:

Please find enclosed the Quarterly Progress Report for the period of October 1, 2015 to December 31, 2015.

Should you have any questions regarding this document, please contact me at 734-913-6130.

Sincerely,

A handwritten signature in black ink that reads "Farsad Fotouhi".

Farsad Fotouhi
Vice President
Corporate Environmental Engineering

RECEIVED

JAN 19 2016

MI0201 - RND
JACKSON DISTRICT OFFICE



4th Quarter, 2015

(October, November, December)

RECEIVED

JAN 19 2016

MDEQ - HPCD
JACKSON DISTRICT OFFICE

Table of Contents

Summary of activity during this quarter

Submittals/Responses

Anticipated activities for the next quarter

Quarterly Performance Analysis

Mass Reduction

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

- 10/02/15 - Treatment was shut down briefly due to radio frequency traffic.
- 10/03/15 - TW-21 (D2) and PW-1 (Marshy) were shut down briefly due to radio frequency traffic.
- 10/17/15 - 10/23/15 - PW-1 (Marshy) was shut down for maintenance.
- 10/21/15 - TW-21 (D2) was shut down briefly for maintenance.
- 10/21/15 - TW-16, TW-18, and TW-19 (E) were shut down briefly due to radio frequency traffic.
- 10/26/15 - System 2A was shut down briefly for maintenance.
- 11/16/15 - Extraction and Treatment were shut down for processor updates.
- 11/20/15 - TW-21 (D2), and TW-16, TW-18, TW-19 (E) were shut down briefly due to radio frequency traffic.
- 12/03/15 - TW-21 (D2) TW-16, TW-18, and TW-19 (E) were shut down briefly due to radio frequency traffic.
- 12/11/15 - 12/14/15 - PW-1 (Marshy) was shut down for pump repairs.
- 12/22/15 - System-2A was shut down briefly for maintenance after DTE Energy power fluctuation.
- 12/27/15 - 12/29/15 - TW-21 (D2), TW-20 (C3), and TW-18 (E), were shut down to reduce flow during repairs to System-1B
- 12/29/15 - TW-2 (C3) was shut down to reduce flow during repairs to System-1B .

Field Activities

The Pilot study for evaluating bag sampling for monitoring wells began.

Submittals/Responses

- 10/09/15 PLS submitted Discharge Monitoring Report (DMR) electronically to DEQ;
PLS submitted Monthly Monitoring Report (NPDES) to DEQ
- 10/16/15 PLS submitted 3rd Quarter 2015 Report to DEQ
- 11/16/15 PLS submitted Discharge Monitoring Report (DMR) electronically to DEQ;
PLS submitted Monthly Monitoring Report (NPDES) to DEQ
- 12/14/15 PLS submitted Discharge Monitoring Report (DMR) electronically to DEQ;
PLS submitted Monthly Monitoring Report (NPDES) to DEQ
- 12/29/15 PLS submitted notice of Force Majeure to DEQ

Anticipated Major Activities for the Next Quarter

- Evaluate various ways to measure the low concentrations of hydrogen peroxide applied to the new NPDES permit
- Continue with evaluation/study of the monitoring well bag filter sampling compared to the traditional approach of sampling
- Upgrade communications between the remote processors
- Finalize QAAP

Quarterly Performance Analysis

For the months of October, November, December 2015, over 261 pounds of 1,4-dioxane were removed and 64,661,831 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 91,900 pounds and the total volume of water discharged since May 1997 is over 7.5 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 DETAIL BY AQUIFIER

October 1 - October 31, 2015

	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
C3	TW-2 (Dolph)	457,035	10	0.0	0.4	110
	TW-20	1,784,654	40	0.4	12.7	850
	<i>Sub-Totals</i>	2,241,689	50	0	13	
Marshy	PW-1	148,189	3	0.033	1.0	830
	<i>Sub-Totals</i>	148,189	3	0	1	
E	TW-16	1,417,766	32	0.4	11.0	930
	TW-18	6,856,603	154	0.6	17.2	300
	TW-19	3,121,579	70	0.6	18.2	700
	<i>Sub-Totals</i>	11,395,948	255	1	46	
Southwest	Active Wells	1,190,160	27	0.2	6.4	647
	<i>Sub-Totals</i>	1,190,160	27	0	6	
D2	LB-4	4,466,152	100	0.6	18.0	484
	TW-21	2,364,154	53	0.1	3.1	160
	<i>Sub-Totals</i>	6,830,306	153	1	21	
Overall Totals		21,806,292	488	2.8	88.0	

*SW Active = TW-8, TW-22

November 1 - November 30, 2015

	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
C3	TW-2 (Dolph)	360,573	8	0.0	0.7	250
	TW-20	1,774,782	41	0.4	13.3	897
	<i>Sub-Totals</i>	2,135,355	49	0	14	
Marshy	PW-1	169,151	4	0.0	1.3	903
	<i>Sub-Totals</i>	169,151	4	0	1	
E	TW-16	1,357,563	31	0.4	10.8	950
	TW-18	6,702,925	155	0.6	17.2	307
	TW-19	2,992,587	69	0.6	17.6	707
	<i>Sub-Totals</i>	11,053,075	256	2	46	
Southwest	Active Wells	1,059,938	25	0.2	6.1	686
	<i>Sub-Totals</i>	1,059,938	25	0	6	
D2	LB-4	4,286,444	99	0.6	18.0	503
	TW-21	2,360,095	55	0.1	2.9	153
	<i>Sub-Totals</i>	6,646,539	154	1	21	
Overall Totals		21,064,058	488	2.9	87.9	

*SW Active = TW-8, TW-22

MASS REDUCTION DETAIL BY AQUIFIER

December 1 - December 31, 2015

	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
C3						
	TW-2 (Dolph)	305,284	7	0.0	0.2	93
	TW-20	1,814,474	41	0.4	13.8	910
	<i>Sub-Totals</i>	2,119,758	47	0	14	
Marshy						
	PW-1	143,982	3	0.0	1.1	930
	<i>Sub-Totals</i>	143,982	3	0	1	
E						
	TW-16	1,391,139	31	0.4	11.1	960
	TW-18	6,431,453	144	0.5	15.0	280
	TW-19	3,124,604	70	0.6	18.3	700
	<i>Sub-Totals</i>	10,947,196	245	1	44	
Southwest						
	Active Wells	933,921	21	0.2	5.3	682
	<i>Sub-Totals</i>	933,921	21	0	5	
D0						
	Ann Arbor Cleaning	38,231			0.0175	55
	<i>Sub-Totals</i>	38,231			0.0175	
D2						
	LB-4	4,464,365	100	0.6	17.9	480
	TW-21	2,372,700	53	0.1	2.7	140
	<i>Sub-Totals</i>	6,837,065	153	1	21	
Overall Totals		20,981,922	470	2.8	85.5	

*SW Active = TW-8, TW-22

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

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-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)

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-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)

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-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
Total to date	7514	1226	535	60224	0	69500

