



JENNIFER M. GRANHOLM
GOVERNOR

STATE OF MICHIGAN
DEPARTMENT OF ENVIRONMENTAL QUALITY
JACKSON DISTRICT OFFICE



STEVEN E. CHESTER
DIRECTOR

October 31, 2007

VIA ELECTRONIC AND US MAIL

Mr. Farsad Fotouhi

Corporate Vice President
Environmental Engineering
Pall Life Sciences, Inc.
600 South Wagner Road
Ann Arbor, MI 48103-9019

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Williams Acosta, PLLC
535 Griswold Street
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Mr. Michael L. Caldwell
Zausmer, Kaufman,
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31700 Middlebelt Road,
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Farmington Hills, MI 48334

Dear Sirs:

SUBJECT: Gelman Sciences, Inc. Remedial Action
Sampling Schedule Revisions dated August 15, 2007

We received the above referenced submittal by electronic mail from Mr. Fotouhi. I have already informed Mr. Fotouhi by electronic mail, dated September 14, 2007, that the monthly frequency for monitoring wells in the Maple Road area could be reduced to quarterly, and that we planned to respond to the entire proposed sampling schedule revisions in October.

Mr. Fotouhi indicated that the proposed changes were determined based on the location of the wells, their geological formation, and the sampling history; however, no details of this analysis were provided for our review. We have recently become aware of guidance and tools that are available to determine appropriate sampling schedules for large-scale sites of groundwater contamination. The software presents a formal, qualitative approach and statistical tools for optimization of long-term remedial systems. We believe it would be appropriate to consider utilizing such guidance and tools for the Gelman site, and request that Pall Life Sciences, Inc. (PLS) do so within the next six months. Two examples of such tools (*Roadmap to Long-Term Monitoring Optimization* and *Demonstration of Two Long-Term Groundwater Monitoring Optimization Approaches*) are available at the following EPA web site:
<http://www.epa.gov/tio/pubichar.htm>.

We have now completed an informal review of the proposed revisions. Enclosed is a table with an additional column, "DEQ Sampling Interval", indicating what we believe to be the appropriate schedules for each monitoring well, without the benefit of considering the software tools referenced above. We have accepted many of your proposed revisions. In other cases, we believe the current schedule should be maintained, or a frequency greater than proposed by PLS, but less than the current frequency is adequate. Changes to PLS's proposed revisions are shaded. We also note that MW-105s is listed twice, once as a Unit C₃ aquifer well and once as a Unit E aquifer well. Temporary extraction wells can revert to their previous schedule when extraction ceases.

There is one schedule change of particular note. We have indicated that MW-100 should be sampled monthly. This monitoring well is on the northern edge of the Prohibition Zone and is used to determine if the Unit E plume is migrating outside of the Prohibition Zone. The concentration of 1,4-dioxane in MW-100 has increased steadily since it was first sampled in April 2006, and in September 2007 was at 87 parts per billion (ppb). This is above the generic residential cleanup criterion for 1,4-dioxane in groundwater (85 ppb), and indicates that the Unit E plume has reached the Prohibition Zone at this location. The Evergreen Subdivision is

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immediately north of the Prohibition Zone in this area, and is being remediated to generic residential standards as required by the Consent Judgment. This circumstance will have to be considered and discussed to determine how it should be addressed considering the legal and technical complexities that this situation poses. Until that time, MW-100 must be monitored monthly. The results of this monitoring may provide useful information for making an eventual decision.

As part of our review of the monitoring schedule, we also reviewed information from wells that are not on a regular sampling schedule. We believe the current concentration of 1,4-dioxane in some of these wells should be determined. The following wells should be sampled at least once within the next six months: MW-2s, MW-33 and the four PLS production wells that were last sampled in 2002.

This schedule did not address the frequency of static water level measurements and we understand that no changes to that schedule are intended.

The schedule shown in the "DEQ Sampling Interval" column in the enclosed table should be implemented starting in November 2007. Any reduction to the "DEQ Sampling Interval" schedule will be considered upon receipt of PLS's detailed technical justification. Please review the web site listed above regarding long-term monitoring tools. After your review, we can discuss this in more detail at a future technical meeting. Please contact me if you have any questions about this letter or the enclosed schedule.

Sincerely,

Sybil Kolon
Environmental Quality Analyst
Gelman Sciences Project Coordinator
Remediation and Redevelopment Division
517-780-7937

SK/KJ

Enclosure

cc/enc: Ms. Celeste Gill, Department of Attorney General
Mr. Mitchell Adelman, DEQ/Gelman File
Mr. James Cogger, DEQ

Well Name	Aquifer	Screened or TOC to bottom (if screen zone n/avail)	Current Sampling Interval	PLS Proposed Sampling Interval	DEQ Sampling Interval
MW-25s	C2	15.5-18.5	Annual	same	Annual
MW-26	C2	15-18	Annual	same	Annual
MW-1	C3	57.29-60.29	Semi-Annual	same	Semi-Annual
MW-2d	C3	50.5-53.5	Semi-Annual	Annual	Annual
MW-3d	C3	60.08-63.08	Annual	Bi-annual	Annual
MW-4s	C3	34-36	Annual	Bi-annual	Annual
MW-5d	C3	28.5-31.5	Quarterly	Semi-Annual	Quarterly
MW-11s	C3	14.14-16.14	Semi-Annual	Annual	Annual
MW-11i	C3	39-41	Quarterly	Annual	Semi-Annual
MW-12d	C3	61.53-64.53	Annual	Bi-annual	Annual
MW-15s	C3	17.67-19.67	Annual	Bi-annual	Annual
MW-15d	C3	59.38-61.38	Semi-Annual	Bi-annual	Annual
MW-16	C3	87-89	Semi-Annual	Bi-annual	Annual
MW-18d	C3	62-64	Semi-Annual	Annual	Semi-Annual
MW-20	C3	43-45	Semi-Annual	Annual	Annual
MW-22	C3	44-47	Semi-Annual	same	Semi-Annual
MW-23	C3	28-30	Semi-Annual	Annual	Annual
MW-24	C3	23-25	Semi-Annual	Annual	Annual
MW-25d	C3	37.1-40.1	Semi-Annual	Annual	Annual
MW-27	C3	8 to 11	Annual	Bi-annual	Annual
MW-28	C3	46-49	Semi-Annual	Annual	Annual
MW-32	C3	57.5-62.5	Semi-Annual	Annual	Annual
MW-34s	C3	45-50	Annual	Bi-annual	Annual
MW-35	C3	39-42	Annual	Bi-annual	Annual
MW-36	C3	65-70	Annual	Bi-annual	Annual
MW-37	C3	67-70	Quarterly	Annual	Semi-Annual
MW-38s	C3	33-36	Annual	Bi-annual	Annual
MW-39s	C3	50-55	Quarterly	Annual	Quarterly
MW-75	C3	46-51	Semi-Annual	Annual	Semi-Annual
MW-105s	C3	40-45	Quarterly	Semi-Annual	Quarterly
TW-1	C3	40.5-55.5	Extraction Monthly	same	Monthly
DOLPH	C3	43-63	Extraction Monthly	same	Monthly
TW-3	C3	56-71	Extraction Monthly	same	Monthly
TW-6	C3	54-64	Extraction Monthly	same	Monthly
TW-10	C3	50-60	Extraction Monthly	same	Monthly
TW-20	C3	49-59	Extraction Monthly	same	Monthly
333 Jackson Plaza	C3	58-62	Semi-Annual	Bi-annual	Annual
Saginaw Forest Cabin #4	C3	139-144	Semi-Annual	Annual	Annual
ARTESIAN #3	D0		Annual	Random	Annual
MW-31	D0	60-65	Semi-Annual	Bi-annual	Annual
MW-40s	D0	80-85	Semi-Annual	Bi-annual	Annual

Well Name	Aquifer	Screened or TOC to bottom (if screen zone n/avail)	Current Sampling Interval	PLS Proposed Sampling Interval	DEQ Sampling Interval
MW-40d	D0	125-130	Semi-Annual	Bi-annual	Annual
MW-41s	D0	45-50	Semi-Annual	Bi-annual	Semi-Annual
MW-41d	D0	86-91	Semi-Annual	Bi-annual	Semi-Annual
MW-42s	D0	45-50	Annual	Bi-annual	Annual
MW-42d	D0	85-90	Annual	Bi-annual	Annual
MW-51	D0	25-35	Semi-Annual	Bi-annual	Annual
MW-53s	D0	60-70	Semi-Annual	Annual	Annual
MW-53i	D0	100-110	Quarterly	Annual	Quarterly
MW-53d	D0	150-160	Semi-Annual	Bi-annual	Annual
MW-59s	D0	53-63	Semi-Annual	Bi-annual	Annual
MW-60	D0	80-90	Semi-Annual	Bi-annual	Annual
MW-61s	D0	68-78	Semi-Annual	Bi-annual	Annual
MW-61d	D0	126-136	Semi-Annual	Bi-annual	Annual
MW-93	D0	60-65	Semi-Annual	Bi-annual	Annual
4141 Jackson Rd	D0	90-98	Annual	Bi-annual	Annual
5005 Jackson Rd	D0		Quarterly	Bi-annual	Quarterly
5115 Jackson Rd	D0		Annual	Bi-annual	Annual
110 Parkland Plaza	D0	80.2-91	Semi-Annual	Bi-annual	Annual
4401 Park West	D0		Annual	Bi-annual	Annual
4601 Park 4 inch	D0	52	Semi-Annual	Bi-annual	Annual
4601 Park 6 inch	D0	42	Semi-Annual	Bi-annual	Annual
4742 Park Rd	D0	46-50	Semi-Annual	Bi-annual	Annual
A2 Cleaning Supply	D0	100-110	Monthly	same	Monthly
AE-3	D2	112-122	Extraction Monthly	same	Monthly
HZ-S	D2		Extraction Monthly	same	Monthly
LB-1	D2	136-156	Extraction Monthly	same	Monthly
LB-3	D2	100-120	Extraction Monthly	same	Monthly
MW-4d	D2	66.5-69.5	Semi-Annual	same	Semi-Annual
MW-9d	D2	62.33-65.33	Annual	Bi-annual	Annual
MW-11d	D2	87-90	Temp Extraction	same	Monthly
MW-13	D2	133.5-135.5	Annual	Bi-annual	Annual
MW-14d	D2	80-82	Annual	Bi-annual	Annual
MW-17	D2	97.5-99.5	Quarterly	Semi-Annual	Quarterly
MW-30i	D2	137-145	Semi-Annual	Annual	Semi-Annual
MW-34d	D2	88-93	Annual	Bi-annual	Annual
MW-38d	D2	76-81	Quarterly	Semi-Annual	Quarterly
MW-39d	D2	85-90	Quarterly	Semi-Annual	Quarterly
MW-43	D2	85-90	Semi-Annual	Bi-annual	Annual
MW-44	D2	102-107	Semi-Annual	Bi-annual	Annual
MW-47s	D2	100-105	Quarterly	Bi-annual	Quarterly
MW-47d	D2	119-124	Quarterly	Bi-annual	Quarterly

Well Name	Aquifer	Screened or TOC to bottom (if screen zone n/avail)	Current Sampling Interval	PLS Proposed Sampling Interval	DEQ Sampling Interval
MW-54s	D2	90-100	Semi-Annual	Bi-annual	Semi-Annual
MW-54d	D2	175-185	Quarterly	Annual	Quarterly
MW-55	D2	160-170	Semi-Annual	Annual	Semi-Annual
MW-56s	D2	95-105	Quarterly	Annual	Quarterly
MW-62s	D2	40-50	Semi-Annual	Bi-annual	Annual
MW-62i	D2	100-110	Semi-Annual	Bi-annual	Annual
MW-63s	D2	40-50	Semi-Annual	Bi-annual	Annual
MW-63i	D2	115-125	Semi-Annual	Bi-annual	Annual
MW-77	D2	160-170	Quarterly	Semi-Annual	Quarterly
MW-92	D2	145-150	Monthly	Semi-Annual	Quarterly
MW-94s	D2	68-73	Quarterly	same	Quarterly
MW-BE-1s	D2	110-113	Semi-Annual	Annual	Semi-Annual
MW-BE-1d	D2	142-145	Semi-Annual	Annual	Semi-Annual
MW-KD-1s	D2	105-108	Quarterly	Annual	Quarterly
MW-KD-1d	D2	132-135	Quarterly	Semi-Annual	Quarterly
MW-KZ-1	D2	101-104	Semi-Annual	Annual	Semi-Annual
TW-5	D2	95-115	Extraction Monthly	same	Monthly
TW-9	D2	105-115	Extraction Monthly	same	Monthly
TW-14	D2	60-75	Extraction Monthly	same	Monthly
544 Allison	D2	131	Semi-Annual	Annual	Annual
545 Allison	D2	143-147	Monthly	Quarterly	Quarterly
593 Allison	D2	125	Quarterly	same	Quarterly
170 Aprill	D2	46-50	Annual	same	Annual
430 Barber East	D2	92	Semi-Annual	Annual	Annual
430 Barber West	D2	103	Quarterly	Annual	Quarterly
435 Barber	D2	103-107	Semi-Annual	Annual	Semi-Annual
476 Barber	D2	80	Semi-Annual	Annual	Annual
MW-400 Clarendon	D2	120-125	Quarterly	Annual	Semi-Annual
456 Clarendon	D2	98-102	Semi-Annual	same	Semi-Annual
2643 Dexter Rd	D2	91-95	Quarterly	Annual	Semi-Annual
2652 Dexter Rd	D2	118	Quarterly	Annual	Semi-Annual
2819 Dexter Rd	D2	104	Semi-Annual	same	Semi-Annual
3225 Dexter Rd	D2		Semi-Annual	Annual	Quarterly
3249 Dexter Rd	D2		Semi-Annual	Annual	Quarterly
453 Dupont	D2		Semi-Annual	Annual	Quarterly
465 Dupont	D2	177-181	Quarterly	Semi-Annual	Quarterly
3365 Jackson Rd	D2	100-101	Semi-Annual	Annual	Semi-Annual
175 Jackson Plaza	D2	92-103	Semi-Annual	Annual	Semi-Annual
3245 Kingwood	D2	90.48	Annual	Bi-annual	Annual
305 Pinewood	D2		Annual	Bi-annual	Quarterly
354 Pinewood	D2	127-131	Annual	Bi-annual	Annual

Well Name	Aquifer	Screened or TOC to bottom (if screen zone n/avail)	Current Sampling Interval	PLS Proposed Sampling Interval	DEQ Sampling Interval
373 Pinewood Shallow	D2	96	Semi-Annual	same	Semi-Annual
2950 Valley	D2	115	Annual	Random	None
IW-2	E	194-228	Semi-Annual	Bi-annual	Semi-Annual
MW-30d	E	201-209	Quarterly	Semi-Annual	Quarterly
MW-56d	E	200-210	Semi-Annual	Bi-annual	Annual
MW-59d	E	165-175	Semi-Annual	Bi-annual	Annual
MW-62d	E	185-195	Semi-Annual	Bi-annual	Annual
MW-63d	E	160-170	Semi-Annual	Bi-annual	Annual
MW-64	E	205-215	Temp Extraction	same	Monthly
MW-65s	E	142-152	Semi-Annual	Annual	Annual
MW-65i	E	201-211	Semi-Annual	Annual	Annual
MW-65d	E	252-262	Semi-Annual	Annual	Semi-Annual
MW-66	E	180-190	Semi-Annual	Bi-annual	Annual
MW-67	E	214-224	Semi-Annual	Bi-annual	Annual
MW-68	E	226-236	Semi-Annual	Bi-annual	Annual
MW-69	E	210-220	Semi-Annual	Bi-annual	Annual
MW-70	E	210-220	Semi-Annual	Bi-annual	Annual
MW-71	E	181-191	Quarterly	same	Quarterly
MW-72s	E	118.5-123.5	Quarterly	Semi-Annual	Quarterly
MW-72d	E	190-200	Quarterly	same	Quarterly
MW-76s	E	94-104	Quarterly	Semi-Annual	Semi-Annual
MW-76i	E	185-195	Quarterly	Semi-Annual	Semi-Annual
MW-76d	E	220-230	Quarterly	Semi-Annual	Semi-Annual
MW-79s	E	127-132	Monthly	Quarterly	Quarterly
MW-79d	E	181-186	Quarterly	same	Quarterly
MW-81	E	153-158	Monthly	Quarterly	Quarterly
MW-82s	E	80-85	Quarterly	Annual	Semi-Annual
MW-82d	E	246-251	Semi-Annual	Bi-annual	Annual
MW-83s	E	125-130	Quarterly	same	Quarterly
MW-83d	E	250-255	Quarterly	Bi-annual	Annual
MW-84s	E	108.9-113.9	Quarterly	Annual	Quarterly
MW-84d	E	235-240	Quarterly	Bi-annual	Quarterly
MW-85	E	158-163	Monthly	Quarterly	Quarterly
MW-86	E	131-136	Quarterly	Bi-annual	Annual
MW-87s	E	80-85	Quarterly	Semi-Annual	Quarterly
MW-87d	E	135-140	Quarterly	Semi-Annual	Quarterly
MW-88	E	145-150	Monthly	Semi-Annual	Quarterly
MW-89	E	140-145	Monthly	Annual	Annual
MW-90	E	125-130	Monthly	Annual	Quarterly
MW-91	E	155-160	Monthly	Annual	Semi-Annual
MW-94d	E	215-220	Quarterly	Annual	Quarterly

Well Name	Aquifer	Screened or TOC to bottom (if screen zone n/avail)	Current Sampling Interval	PLS Proposed Sampling Interval	DEQ Sampling Interval
MW-95	E	168-173	Quarterly	Semi-Annual	Quarterly
MW-96	E	194-199	Quarterly	same	Quarterly
MW-97s	E	98-103	Quarterly	Annual	Annual
MW-97d	E	178-183	Quarterly	Annual	Annual
MW-98s	E	105-110	Quarterly	Annual	Semi-Annual
MW-98d	E	170-175	Quarterly	Annual	Semi-Annual
MW-99s	E	40-45	Quarterly	Annual	Annual
MW-99d	E	129-134	Quarterly	Annual	Annual
MW-100	E	218-223	Monthly	Quarterly	Monthly
MW-101	E	155-160	Monthly	Quarterly	Quarterly
MW-102s	E	108-113	Quarterly	Semi-Annual	Semi-Annual
MW-102d	E	158-163	Quarterly	Semi-Annual	Semi-Annual
MW-103s	E	58-63	Quarterly	Semi-Annual	Semi-Annual
MW-103d	E	206-211	Quarterly	Semi-Annual	Semi-Annual
MW-104	E	145-150	Monthly	Annual	Quarterly
MW-105s	E	40-45	Quarterly	same	Quarterly
MW-105d	E	235-240	Quarterly	same	Quarterly
MW-106s	E	110-115	Quarterly	same	Quarterly
MW-106d	E	225-230	Quarterly	Annual	Quarterly
MW-107	E	110-115	Monthly	Annual	Quarterly
MW-108s	E	150-155	Monthly	Quarterly	Quarterly
MW-108d	E	177-182	Monthly	Quarterly	Quarterly
MW-110	E	130 to 135	Quarterly	Semi-Annual	Quarterly
MW-111	E	29-34	Semi-Annual	Annual	Annual
MW-112s (A Series)	E	50 to 55	Quarterly	same	Quarterly
MW-112i (A Series)	E	165 to 170	Quarterly	same	Quarterly
MW-112d (A Series)	E	202 to 207	Quarterly	same	Quarterly
TW-11	E	159-179	Extraction Monthly	same	Monthly
TW-12	E	240-260	Extraction Monthly	same	Monthly
TW-15	E	125-155	Monthly	same	Monthly
TW-17	E	121-141	Extraction Monthly	same	Monthly
TW-18	E	164-184	Extraction Monthly	same	Monthly
TW-19	E	170-200	Extraction Monthly	same	Monthly
373 Pinewood Deep	E	229-233	Semi-Annual	Bi-annual	Semi-Annual
Saginaw Forest Cabin #1	E	132	Semi-Annual	Bi-annual	Annual
Saginaw Forest Cabin #2	E	195-203	Semi-Annual	Bi-annual	Annual
AMW-1	Marshy	3.5-6.5	Semi-Annual	Annual	Annual
AMW-2	Marshy	4 to 7	Semi-Annual	Annual	Annual
MOW-1	Marshy	5'	Semi-Annual	Annual	Annual
NMW-1s	Marshy	4 to 7	Semi-Annual	Annual	Annual
NMW-1d	Marshy	10.5 to 13.5	Semi-Annual	Annual	Annual

Well Name	Aquifer	Screened or TOC to bottom (if screen zone n/avail)	Current Sampling Interval	PLS Proposed Sampling Interval	DEQ Sampling Interval
NMW-2s	Marshy	4 to 7	Semi-Annual	Annual	Annual
NMW-2d	Marshy	10 to 13	Semi-Annual	Annual	Annual
NMW-3s	Marshy	2 to 5	Semi-Annual	Annual	Annual
NMW-3d	Marshy	5 to 8	Semi-Annual	Annual	Annual
PMW-1	Marshy	3 to 6	Semi-Annual	Annual	Annual
PMW-2	Marshy	5 to 8	Semi-Annual	Annual	Annual
PMW-3	Marshy	4 to 7	Semi-Annual	Annual	Annual
PMW-4	Marshy	3 to 6	Semi-Annual	Annual	Annual
PW-1	Marshy	9.5 to 15.5	Extraction Monthly	same	Monthly
SW-1M	Marshy	not appl	Semi-Annual	Annual	Annual
SW-2M	Marshy	not appl	Semi-Annual	Bi-annual	Annual
SW-3M	Marshy	not appl	Semi-Annual	Bi-annual	Semi-Annual
441 Parkwood	Not Determined	103	Semi-Annual	Bi-annual	Annual
685 S. Wagner	Not Determined		Semi-Annual	Bi-annual	Annual
697 S. Wagner	Not Determined	172	Semi-Annual	Bi-annual	Annual
2575 Valley	Not Determined	105	Semi-Annual	Annual	Annual
MW-5s	SH	7.5 to 9.5	Annual	Bi-annual	Annual
MW-8d	SW	64 to 67	Annual	Bi-annual	Annual
MW-10s	SW	18.4	Annual	Bi-annual	Annual
MW-10d	SW	57.47 to 59.47	Semi-Annual	same	Semi-Annual
MW-45s	SW	35 to 40	Quarterly	Annual	Semi-Annual
MW-45d	SW	52 to 57	Semi-Annual	Annual	Semi-Annual
MW-46	SW	63 to 68	Semi-Annual	Annual	Annual
MW-48	SW	56 to 61	Semi-Annual	Annual	Semi-Annual
MW-49	SW	62 to 67	Semi-Annual	Bi-annual	Annual
MW-50	SW	51 to 56	Extraction Monthly	same	Monthly
MW-52s	SW	64 to 69	Semi-Annual	same	Semi-Annual
MW-52i	SW	80 to 85	Semi-Annual	Bi-annual	Annual
MW-52d	SW	97 to 102	Semi-Annual	Bi-annual	Annual
MW-57	SW	45 to 50	Semi-Annual	Bi-annual	Annual
MW-58s	SW	64 to 69	Semi-Annual	Annual	Semi-Annual
MW-58d	SW	92 to 97	Semi-Annual	Annual	Annual
MW-78	SW	57 to 62	Quarterly	Annual	Semi-Annual
TW-4	SW	55.5 to 65.5	Extraction Monthly	same	Monthly
TW-8	SW	59.5 to 69.5	Extraction Monthly	same	Monthly
TW-13	SW	48 to 53	Extraction Monthly	same	Monthly