

STATE OF MICHIGAN

IN THE CIRCUIT COURT FOR THE COUNTY OF WASHTENAW

ATTORNEY GENERAL FOR THE STATE OF
MICHIGAN, ex rel, MICHIGAN DEPARTMENT
OF ENVIRONMENTAL QUALITY,

Plaintiffs,

File No. 88-34734-CE

v

Honorable Donald E. Shelton

GELMAN SCIENCES, INC.,
a Michigan corporation,

Defendant.

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Agriculture Division
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Attorney for Plaintiffs

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**PLAINTIFFS' MOTION TO ENFORCE CONSENT JUDGMENT
AND REQUEST FOR ADDITIONAL RESPONSE ACTIVITY**

Plaintiffs, the Attorney General of the State of Michigan and the Michigan Department of Environmental Quality ("MDEQ"), as successor to Plaintiffs Michigan Natural Resources Commission, Michigan Water Resources Commission, and Michigan Department of Natural Resources under Executive Orders 1991-31 and 1995-18, by their undersigned counsel hereby

move this Court pursuant to MCR 2.119 and 3.310, to use its inherent powers, See, *St. Clair Commercial & Savings Bank v. Macauley*, 66 Mich App 210 (1975); *Schaeffer v Schaeffer*, 106 Mich App 452 (1981); *Cohen v Cohen*, 125 Mich App 206 (1983); and MCL 600.611., to enforce the Consent Judgment, as amended, between the Parties and the Court's Opinion and Order Regarding Remediation of the "Unit E" Aquifer, dated December 17, 2004 and/or require the Defendant to perform additional investigation and response activities pursuant to Section XVIII.E of the Consent Judgment, for the reasons set forth in the attached Brief in Support of Plaintiffs' Motion to Enforce Consent Judgment and Request for Additional Response Activity.

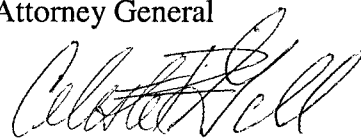
Relief Requested

The Plaintiffs request that this Court:

- A. Enter the Proposed Order, attached as Exhibit 1; and
- B. Grant Plaintiffs such further relief as the Court finds appropriate and just.

Respectfully submitted,

Michael A. Cox
Attorney General



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Dated: August 14, 2009

LF:Gelman/Motion to Enforce Order

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**ORDER TO ENFORCE CONSENT JUDGMENT AND TO PERFORM
ADDITIONAL REMEDIAL INVESTIGATION AND RESPONSE ACTIVITIES**

At a session of said Court, held in the Courtroom thereof, in the
City of Ann Arbor, County of Washtenaw, State of Michigan, this

PRESENT: _____
CIRCUIT COURT JUDGE

The Court, being fully advised in the premises, hereby orders Defendant, Pall Life Sciences, Inc. (PLS), to do the following with regard to the 1,4-dioxane groundwater contamination at and emanating from the Gelman Sciences Site:

A. Wagner Road Area.

1. PLS shall install an extraction well in the vicinity of MW-94s, screened at similar depths, by November 30, 2009, and begin extracting from the new extraction well by December 31, 2009. PLS shall obtain court ordered access, if necessary, to install, operate, and maintain the extraction well.

2. PLS shall submit a work plan, to determine the vertical and horizontal extent of 1,4-dioxane contamination greater than 85 ppb along Wagner Road, south of MW-105d and north of MW-94s, to the Michigan Department of Environmental Quality (MDEQ) for approval within thirty (30) days after entry of this Order. Within thirty (30) days after completion of the work plan, PLS shall submit a report of the investigation to the MDEQ.

3. PLS shall submit a feasibility study to MDEQ by April 15, 2010, analyzing the feasibility of capturing 1,4-dioxane contamination greater than 85 ppb at Wagner Road, including an evaluation of the effectiveness of the new extraction well in capturing 1,4-dioxane contamination greater than 85 ppb north of MW-94s.

4. If the entire width and depth of 1,4-dioxane contamination is not being captured at Wagner Road, and the feasibility study reveals that it is feasible to do so, PLS shall submit a work plan to MDEQ, upon its request, to capture the entire width and depth of 1,4-dioxane at Wagner Road. PLS shall install any extraction wells or other remedial systems within sixty (60) days after MDEQ's approval of the work plan. PLS shall obtain court ordered access, if necessary, to install, operate, and maintain the extraction well(s) or other remedial systems.

B. Evergreen Subdivision Area.

1. PLS shall submit a work plan to MDEQ by October 31, 2009 to complete the goals of the August 7, 2007 Stipulation and Order Regarding the AE-3 Dispute Resolution:

(a) determine if groundwater contamination from the south is being drawn into the Evergreen Subdivision area by operation of the Evergreen Subdivision area extraction wells; and (b) determine whether 1,4-dioxane contamination above 85 ppb is migrating past the capture zone of extraction wells LB-1 and LB-3. The work plan shall also include vertical profiling in the area of AE-3. PLS shall implement the work plan within thirty days (30) after MDEQ's approval.

2. If the investigation described in B.1 above, reveals that the groundwater contamination has migrated past the capture zone of the LB-1 and LB-3 extraction wells, PLS shall submit a work plan, to address that portion of the groundwater contamination, to MDEQ for review and approval, within thirty (30) days after written notice from MDEQ.

3. PLS shall submit a work plan within thirty (30) days after entry of this Order to: (a) determine the vertical and horizontal extent of 1,4-dioxane contamination greater than 85 ppb, north, west and south of 465 Dupont Circle and in the area of MW-100; (b) determine the migration pathway for 1,4-dioxane from the PLS property to 465 Dupont Circle; and (c) determine if LB-1 and LB-3 are capturing the entire vertical and horizontal extent of contamination in the Dupont Circle and the MW-100 areas.

4. If the investigation in B.3 reveals that 1,4-dioxane contamination greater than 85 ppb in the Dupont Circle and the MW-100 areas is not being captured by the LB-1 and LB-3 extraction wells, PLS shall submit a work plan, to address any contamination not being captured, to MDEQ for review and approval, within thirty (30) days after notice from MDEQ.

C. Maple Road Area. PLS shall install the third nested performance monitoring well, that MDEQ requested, in Veteran's Park approximately 100 feet north of boring PLS-07-09 within ninety (90) days after the entry of this Order.

D. Vertical Aquifer Sampling. PLS shall use vertical aquifer sampling, if requested by MDEQ, for the installation of monitoring and extraction wells. PLS shall use a methodology for vertical aquifer sampling that minimizes the introduction of water or drilling fluids into the subsurface, so as not to influence the chemical concentrations in the groundwater samples that are collected. Where fluids are introduced, the volume of fluids introduced must be removed, plus additional volume to assure that the sample ultimately collected is representative of groundwater in the aquifer.

Honorable Donald E. Shelton

Dated: _____, 2009

LF/Gelman/88-34734-CE/Order to Enforce

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**BRIEF IN SUPPORT OF PLAINTIFFS' MOTION TO
ENFORCE CONSENT JUDGMENT AND REQUEST
FOR ADDITIONAL RESPONSE ACTIVITY**

Introduction

On October 26, 1992, the Plaintiffs, the Attorney General of the State of Michigan, and the Michigan Department of Environmental Quality (MDEQ), as successor to Plaintiffs, Michigan Natural Resources Commission, Michigan Water Resources Commission, and Michigan Department of Natural Resources under Executive Orders 1991-31 and 1995-18 and

the Defendant, Pall Life Sciences, Inc. (Defendant or PLS), (collectively, the Parties), entered into a Consent Judgment to address contamination at and emanating from Defendant's facility located at 600 S. Wagner in Scio Township, Michigan that extends eastward and north-eastward into the City of Ann Arbor, and westward and north-westward in Scio Township (the Site). The compound of concern is 1,4-dioxane, which Defendant used in the manufacture of medical filters. Toxicology testing has identified it as a probable human carcinogen (through long-term exposure to low doses.). The overall goal of the Consent Judgment was to clean up the area-wide groundwater contamination.

The Court has supplemented the Consent Judgment with several cleanup related orders, based on information about the nature and extent of contamination acquired after the Consent Judgment was entered. One such order is the Opinion and Order Regarding Remediation of the Contamination of the "Unit E" Aquifer ("Unit E Order"), dated December 17, 2004.

As described below and in the attachments, Defendant has repeatedly failed or refused to comply with the requirements of the Consent Judgment and the Unit E Order and Plaintiffs seek to enforce the Consent Judgment and the Unit E Order. Plaintiffs also believe that additional investigation and response activities are needed to carry out the goals of the Consent Judgment and the Unit E Order, and ask that the attached Proposed Order be entered requiring the Defendant, to: Perform additional investigation and response activities at Wagner Road; Submit a study analyzing the feasibility of capturing 1,4-dioxane greater than 85 parts per billion (ppb) at Wagner Road; Conduct or complete additional remedial investigations in the Evergreen Subdivision area (including with regard to the AE-3 dispute, the Dupont Circle Area, and the MW-100 Area); Install a third nested performance monitoring well in Veteran's Park, as more specifically described in the Proposed Order.

Factual and Procedural Background

The Consent Judgment required the Defendant to design, install, operate, and maintain several remediation systems to "contain the plumes of groundwater contamination emanating from the [Defendant's] property ... and to extract the contaminated groundwater from the aquifers at designated locations for treatment (as required) and disposal. It also required Defendant to implement a monitoring program to verify the effectiveness of these systems." Consent Judgment, p. 6. One of the groundwater remediation systems required by the Consent Judgment is the Evergreen System.

The objectives of this system shall be: (a) *to intercept and contain the leading edge of the plume of groundwater contamination detected in the vicinity of the Evergreen Subdivision area*; (b) to remove the contaminated groundwater from the affected aquifer; and (c) to remove all groundwater contaminants from the affected aquifer *or upgradient aquifers within the Site*. (Emphasis added.)

Consent Judgment Section V.A.I. Section.

The Evergreen System originally consisted of one extraction well, LB-1. Extraction well LB-2 was installed in 1998 to capture shallower contamination. Both are located along Evergreen Drive. Because that system could not contain the plume, another extraction well, AE-1, was installed along Allison Street to capture any 1,4-dioxane migrating past the LB wells. Exhibit 1, Mandle Affidavit ¶ 6.a. Based on representations by the Defendant, that the extent of contamination had been delineated and would be cleaned up within five years, the Court entered its Remediation and Enforcement Order (REO) on July 17, 2000 which required the Defendant to submit a detailed plan to "reduce the dioxane in all affected water supplies below legally acceptable levels within a maximum period of five years." An order adopting the Five Year Plan was entered by the Court on January 10, 2001. And, based on the record before it, the Court set

a minimum purge rate of 200 gallons per minute (gpm) for the LB-1, LB-2, and AE-1 purge wells that made up the Evergreen System.¹

In May 2001, as the result of a MDEQ requested and court ordered investigation of the Western System, the Parties determined that the groundwater contamination at the Site was deeper than originally thought, there was no confining layer of clay separating what was known as the Evergreen or "D2" aquifer from what was thought at the time to be a separate aquifer, designated as the "Unit E" aquifer, and that 1,4-dioxane contamination had migrated into the Unit E aquifer in an area east of the PLS property. The Unit E aquifer was generally believed to be located at lower depths than the Unit D2 aquifer (more than 200 feet below ground level). It has subsequently been determined that Units E and D2 communicate hydraulically and are not separate aquifers, although the extent of the communication and the contamination both on and off the PLS property is not fully known.

The Court held, in the Unit E Order, that the Unit E aquifer was part of the "Western System"² and therefore subject to the terms of the Consent Judgment, including its the overall objective of cleaning up the area-wide contamination. The Court agreed with MDEQ's rationale "that controlling groundwater contamination at or near its source is more efficient than trying to capture it later as it spreads through the aquifer, stating "there is ample support for that position." Unit E Order, p. 8. As a result the Court ordered the Defendant to submit a work plan to MDEQ which would, *to the maximum extent feasible, prevent further migration of groundwater*

¹ The Five-Year Plan provided for a minimum purge rate of 35 gpm for AE-1 well (subsequently reduced to 25 gpm, based on a Capture Zone Analysis (CZA) submitted by Defendant in November 2002 and approved by MDEQ on May 19, 2004). Extraction well AE-1 was subsequently replaced by AE-3, thus making the 25 gpm minimum extraction rate apply to the current Evergreen System extraction well AE-3. Extraction well LB-2 has also been replaced by LB-3, so as currently designed the Evergreen System consists of LB-1, LB-3 and AE-3.

² The Western System was broadly defined as encompassing groundwater contamination outside the "Core" and "Evergreen" System area. [Consent Judgment Section V.C.]

contamination above 85 ppb of 1,4 dioxane eastward into the Unit E aquifer." Unit E Order, p. 9. (Emphasis added).

On or about August 1, 2005, Defendant submitted its Work Plan for Groundwater Extraction, Wagner Road, Unit E Aquifer to MDEQ for review and approval. According to the Defendant, test well (TW-18) operating at 200 gpm would capture the Unit E plume along Wagner Road and therefore the Work Plan proposed using test well (TW-18) as an extraction well.³ Defendant made this assertion while at the same time recognizing that some uncertainty remained as to the southern boundary of the 85 ppb plume. Exhibit 2, pp. 4-5. By a letter dated November 16, 2005, MDEQ conditionally approved the Work Plan, noting that "[o]ur position remains that PLS must take all necessary steps to capture the entire width of the Unit E plume at Wagner Road and prevent further migration of groundwater contaminated above 85 ppb east of Wagner Road. PLS has not shown, nor do the current data establish, that it is not feasible to capture the entire width of the Unit E plume." See, Exhibit 3.

To resolve a dispute in 2007 between the parties regarding the Defendant's prolonged shutdown of the Evergreen System's AE-3 extraction well (which replaced the AE-1), and failure to operate it at the minimum 25 gpm extraction rate the Parties entered into a Stipulation that was approved by the Court on August 7, 2007, requiring Defendant to:

(A) submit an Amended Work Plan for installing an additional monitoring well in the Evergreen Subdivision near Valley Drive (generally between MW-107 and 400 Clarendon Drive) to determine if (i) groundwater contamination from the south (Unit E contamination) is being drawn into the Evergreen Subdivision area by operation of the Evergreen Subdivision extraction wells as asserted by PLS' Motion to Amend Consent Judgment and Petition for Dispute Resolution; and (ii) groundwater contamination has migrated past the capture zones of extraction wells LB-1 and LB-3.

³ Defendant also indicated that it would continue to use extraction wells TW-11 and TW-17 in conjunction with TW-18.

If the investigation revealed that the leading edge of groundwater contamination had migrated past the capture zone of the extraction wells LB-1 and LB-3, Defendant had to submit a work plan to address that portion of the contamination after written notice from MDEQ (and subject to its right to dispute the interpretation of the data or the need for additional work). The MDEQ reserved the right to request additional vertical profiling in the area of AE-3, if the investigation shows that groundwater contamination is migrating beyond the LB-1 and LB-3 extraction wells. Finally, the Stipulation provided that after the work described in the Amended Work Plan was completed, the Parties would meet to discuss the results and seek in good faith to reach a consensus on how to proceed with regard to the proper operation of the Evergreen System.

According to the Defendant, the results of the work done under the Amended Work Plan were inconclusive and neither issue identified in the Stipulation was answered. Exhibits 4 and 5. The Parties began discussing possible modifications to the remedial objectives at the Site, including the objective for the Evergreen Subdivision area, and the Defendant declined to discuss any follow up to the Amended Work Plan under the guise that it would be addressed in its proposed modifications to the Consent Judgment. Defendant submitted its Comprehensive Proposal to Modify Cleanup Program to MDEQ on May 4, 2009 (the "Proposal"). However, because of the Proposal failed to meet the requirements of Part 201 of the Natural Resources and Environmental Protection Act (NREPA)⁴ (as more specifically described in the attached letter from MDEQ dated June 15, 2009), the MDEQ denied the Proposal.⁵ Exhibit 6.

⁴ MCL 324.20101 *et seq.*

⁵ The denial letter also provided significant comments on the items the Defendant needed to address if it wishes to submit an approvable proposal. However, the purpose of this motion is not to argue for or against those modifications, the letter speaks for itself. Further, MDEQ

In a June 23, 2008 letter, sent to Defendant before the Parties began discussing possible modifications in earnest, MDEQ provided the Defendant with a comprehensive list of the items and issues that MDEQ determined needed to be addressed for the protection of public health, safety, welfare and the environment under the Consent Judgment. See Exhibit 7. While the Defendant provided a brief response to that letter in its August 7, 2008 letter, the Defendant focused on preparing a proposal to modify the Consent Judgment. Exhibit 8. Those issues remain unresolved and the Defendant has not provided MDEQ with modifications that comply with Part 201 of the NREPA. Therefore, the State is left with no option but to enforce the Consent Judgment as supplemented by the Court's orders.

Argument

There has been progress in addressing the area wide groundwater contamination associated with Site and conditions in parts of the Site have improved. Because of the complex geology at this Site, the Parties' understanding of the Site has evolved slowly over time. Since entry of the Consent Judgment the parties have discovered new areas of contamination such as the deep contamination in what has been termed the "Unit E" aquifer. Since entry of the Unit E Order, the Parties have also learned that the "Unit E" and "Unit D2" are not separate aquifers, but in fact, are part of the same formation, with substantial communication. While answering some questions, this evolution in knowledge also raises other questions about what needs to be done to ensure the remedial goals at the Site are met. As a result, there remain several significant areas where more investigation and/or response activities are needed to ensure and maintain the protection of public health, safety and welfare, and the environment.

reserves the right to respond to any motion or other request that the Defendant may file seeking the Court's approval of modifications without MDEQ's consent.

Unfortunately, the Defendant's reluctance and in some instances, refusal to investigate or even consider whether certain conditions can or may exist at this complex site (especially those contrary to the Defendant's preconceived notions about the Site), have resulted in delays in fully addressing the remaining contamination at the Site. Many of the deficiencies identified in MDEQ's review and denial of the Defendant's modification proposal are consistent with concerns that MDEQ expressed in its June 23, 2008 letter, including the lack of supporting evidence for decisions, data inconsistent with Defendant's conclusion, and the need for more investigation and/or better monitoring well network to determine or monitor the effectiveness of existing or proposed response activities to protect public health, safety, welfare, and the environment.

Plaintiffs have identified three primary areas that have not been adequately addressed by the Defendant:

- (1) The monitoring and capture of the "Unit E" contamination west of Wagner Road.
- (2) The delineation and capture of the plume in the Evergreen subdivision area.
- (3) Inadequate performance monitoring at Maple Road.

I. Additional Investigation and Response Activities are Needed to Capture 1,4-dioxane in concentrations above 85 ppb to the extent feasible at Wagner Road.

While the Unit E Order provided for the establishment of the Prohibition Zone (PZ), into which groundwater contaminated with 1,4-dioxane in excess of the health based criteria of 85 ppb was believed to migrate after crossing Wagner Road and dissipate before coming in contact with any sensitive receptors, one of the Court's defined objectives for the remediation of the "Unit E" plume also included capturing the contamination as close as possible to its source, (thereby reducing the further spread of the 1,4-dioxane contamination). Therefore, the Court ordered the Defendant to submit a work plan that captures 1,4-dioxane above 85 ppb to the extent feasible before it crosses Wagner Road.

The Defendant proposed adding another extraction well, TW-18, which it asserted, along with existing extraction wells, would intercept and hydraulically contain the 1,4-dioxane contamination in the deep Unit E aquifer. Exhibit 9. Coger Affidavit, ¶ 8. The basis for Defendant's assertion was a Capture Zone Analysis (CZA) submitted in its August 2005 Wagner Road Work Plan. The capture zone contours for TW-18 were based on a model that predicts hydraulic capture in an aquifer with homogeneous characteristics at certain extraction rates. MDEQ conditionally approved the Work Plan based on the Defendant's modeling. Despite requests from MDEQ, the Defendant has not provided a subsequent analysis of hydraulic head and/or hydraulic gradient data that demonstrates that the modeled capture zone represents actual hydraulic containment in the complex hydrogeological environment that exists in the Wagner Road area. Coger Affidavit, ¶ 9. Because of this, and also due to limited performance monitoring east of Wagner Road, there is insufficient information to verify that the current response activities are actually capturing the so called "Unit E" plume.

Available information indicates that 1,4-dioxane above 85 ppb may not be contained both to the south, and to the north of TW-18. And, while there has been a general downward trend in the 1,4-dioxane concentrations in MW-105d which was installed to monitor the ability of TW-18 to capture 1,4-dioxane contamination along Wagner Road to the south, the data indicates that concentrations of 1,4-dioxane more than eight times the legal limit of 85 ppb continue to extend eastward under Wagner Road and that this concentration extends farther south along Wagner Road than originally depicted. Coger Affidavit, ¶ 11-13.

Data gathered from MW-94s also indicates that TW-18 is not preventing the migration of 1,4-dioxane contamination above 85 ppb eastward along Wagner Road, north of Rhea Street. Coger Affidavit, ¶ 14. Concentrations of 1,4-dioxane in MW-94s remain above 2000 ppb since

the monitoring well was installed in January 2005. The lack of any downward trend indicates a lack of hydraulic containment. Cogger Affidavit, ¶ 14. The fact that MW-94s is a shallower well is irrelevant since, as discussed above and in the Cogger Affidavit, ¶ 15, the aquifers designated by the Defendant as Unit E and D2 are a single indistinguishable, saturated zone in the area of Wagner Road between monitoring wells MW-105d and MW-94s.

Consistent with the Court ordered objective for the Wagner Road area, MDEQ has requested that Defendant either install another extraction well to ensure the capture of 1,4-dioxane above 85 ppb at Wagner Road or explain why it is not feasible to do so. Defendant has made no attempt to demonstrate that capture is not feasible, instead it simply refuses meet this objective asserting that it is simply migrating into an area subject to the Court's PZ Order prohibiting use of groundwater and therefore public, health safety and the environment is protected. However, that is not the standard that the Court provided when it indicated that efforts should be made to capture as much contamination as possible at the source. Defendant's failure to meet this objective, or at least demonstrate that it is not feasible to do so, flies in the face of this Court's command.

Because the northern extent of groundwater contamination along Wagner Road has not been delineated, MDEQ has a concern that 1,4-dioxane may be migrating to areas not covered by the PZ. Exhibit 7. Because of the hydraulic communication between the subsurface units, it is likely that Unit E contamination has already migrated outside of the PZ, including in the Evergreen Subdivision area (one such area is near MW-100),⁶ the implications of which are discussed in more detail below. While MDEQ stated in its October 31, 2007, letter that it "believes that continued monitoring will be protective of public health until the practicality of

⁶ 1,4-dioxane concentrations in MW-100, located in the Evergreen Subdivision, but at the northern boundary of the PZ, has increased steadily and was at 291 ppb in July 2009.

capturing the contamination in the area can be determined," that was suggested only as a temporary state of affairs until more investigation is done and a clear understanding about what, if anything more can be done to capture the plume in this area. Exhibit 10.

Since it has been discovered that Unit E and D2 are part of the same formation, the old designations with regard to the contamination that should be addressed at Wagner Road are obsolete. As discussed below, the Evergreen system has already been compromised, and MDEQ believes that it is no longer prudent to allow for any uncontrolled migration of 1,4-dioxane contamination east of Wagner Road. Therefore, some or all of the shallower contamination should also be captured at Wagner Road. Cogger Affidavit, ¶¶ 17, 18, and 20.

The MDEQ believes that it is feasible for Defendant to do more to capture 1,4-dioxane above 85 ppb before it crosses Wagner Road: "Hydraulic containment of 1,4-dioxane contamination exceeding 85 ppb at Wagner Road can be achieved with the installation of additional purge wells at variable elevations within the aquifer, and at locations north and south of TW-18." Cogger Affidavit, ¶16. In a letter dated March 7, 2006, MDEQ requested that Defendant consider installing an extraction well near MW-94s, "as a source control measure." See, Exhibit 11. In addition to the proposed extraction well(s), MDEQ believes that additional investigation is needed to completely delineate the vertical and horizontal extent of 1,4-dioxane that needs to be captured along Wagner Road. Cogger Affidavit, ¶ 18.

To the extent there is a concern about discharge capacity for increased response activity, there is currently over 100 gpm of available capacity under Defendant's NPDES permit. And, to the extent additional capacity is needed, MDEQ recommends that under a purge well optimization plan, Defendant evaluate whether other existing extraction wells may be turned off or operated at reduced rates for a period of time. Cogger Affidavit ¶ 19. Finally, it may also be

possible to modify the NPDES discharge permit to allow for additional capacity. To Plaintiffs' knowledge, the Defendant has not attempted to evaluate any of these (or possibly other) alternatives.

Plaintiffs request that the Court enter an order requiring the Defendant to comply with the Consent Judgment, as modified by the Unit E Order, including conducting additional investigation to fully delineate the extent of 1,4-dioxane contamination along Wagner Road and taking additional response activity including installing another extraction well in the MW 94-s area to capture the entire width of the groundwater contamination at Wagner Road. Because the groundwater contamination throughout the formation may not be captured with the current extraction well system, the Defendant should be required to evaluate the feasibility of capturing all 1,4-dioxane throughout this 100-foot thick formation.

In addition, the Consent Judgment authorizes MDEQ to seek and the Court to approve additional investigation and response activities in certain situations. Section XVIII, Plaintiff's Covenant Not to Sue and Reservation of Rights, of the Consent Judgment provides in part in subparagraph E:

Notwithstanding any other provision in this Consent Judgment: (1) *Plaintiffs reserve the right to institute proceedings in this action or in a new action seeking to require Defendant to perform any additional response activity at the Site*; and (2) Plaintiffs reserve the right to institute proceedings in this action or in a new action seeking to reimburse Plaintiffs for response costs incurred by the State of Michigan relating to the Site. Plaintiff's rights in D.1. and D.2. apply if and only if the following conditions are met:

1. For proceedings prior to Plaintiffs' certification of completion of the Remedial Action concerning the Site,

a. conditions at the Site, previously unknown to Plaintiff's, are discovered after the entry of the Consent Judgment, or new information previously unknown to Plaintiffs is received after the effective date of the Consent Judgment; and

b. these previously unknown conditions indicate that the Remedial Action is not protective of public health, safety, welfare, and the environment; (emphasis added)

* * *

The Court explicitly found that "the Unit E contamination is subject to the Consent Judgment in this case." Unit E Order, p. 4. Therefore, it is potentially subject to the section quoted above. The existence of the Unit E contamination was unknown at the time the Consent Judgment was entered. While the Unit E contamination is generally believed to be at depth, recently discovered information regarding the communication between the deeper Unit E portion of the formation and the shallower, Unit D2 demonstrates that if the 1,4-dioxane contamination is not properly addressed at Wagner Road there are implications downgradient beyond just the concentration of 1,4-dioxane in the PZ. Under Section XVIII.E of the Consent Judgment the Court can and should order Defendant to perform the activities described above.

II. Defendants may be in violation of Requirements of Consent Judgment with regard to Evergreen System/Area and Additional Investigation and Response Activities are Needed

A. Indications are that current operation of Evergreen System is not sufficient to capture leading edge of plume in violation of Consent Judgment.

Section V.A.I. of the Consent Judgment provides the objectives for the Evergreen System:

The objectives of this system shall be: (a) to intercept and contain the leading edge of the plume of groundwater contamination detected in the vicinity of the Evergreen Subdivision area; (b) to remove the contaminated groundwater from the affected aquifer; and (c) to remove all groundwater contaminants from the affected aquifer or upgradient aquifers within the Site.

The July 2000 REO supplemented these requirements when it directed the Defendant to submit a detailed plan to "reduce the dioxane in all affected water supplies below legally

acceptable levels within a maximum period of five years," and, established the minimum purge rate of 200 gpm for the Evergreen System. The current minimum extraction rate of 25 gpm for AE-3 was approved by MDEQ based upon the Defendant's November 2002 CZA. MDEQ has not approved a lower extraction rate for AE-3 although, it had agreed not to pursue penalties for reduced purging as part of the AE-3 dispute resolution.

Because the results of the AE-3 Amended Work Plan, to determine whether groundwater contamination from the south is being drawn into the Evergreen Subdivision by the Evergreen System and whether groundwater contamination has migrated past the capture zones of the LB well was inconclusive, MDEQ requested additional investigation to determine whether capture is occurring in its June 23, 2008 letter. Exhibit 7.

Based on concentration trends, MDEQ believes that 1,4-dioxane is escaping the capture zone of the LB wells. See, Mandle Affidavit, ¶ 6.g. DEQ believes that "[a]s long as the LB-series wells do not contain the contaminant plume and allow 1,4-Dioxane to migrate past Evergreen Drive at concentrations exceeding 85 ug/L, as evidenced by the concentration trends shown in Figure 4, a properly designed extraction-well system must be operated and properly maintained downgradient of Evergreen Drive. Presently, there is only a single remaining active extraction well (AE-3) from the extraction well system at Allison Drive." Mandle Affidavit, ¶ 6.h. Defendant continues to pump AE-3 at 15 gpm despite the fact that the approved CZA supports at least a 25 gpm pumping rate to ensure capture.

It is probable that the part of plume intended to be captured by AE-3 has escaped capture because of the prolonged pumping of AE-3 at a reduced rate.⁷ Mandle Affidavit ¶ 6.i, j, and k.

⁷ PLS submitted a Capture Analysis in April 2008 that purports to demonstrate that AE-3 purging at 15 gpm is adequate for capture. MDEQ questions the analysis because it is based on

This is problematic since the Evergreen System is intended as a system of last resort with a stated purpose of capturing anything that has escaped upgradient systems. Clearly, the remediation at the Site has been compromised by the limited operation of the Evergreen area system,⁸ the failure to delineate the contamination site wide (including contamination migrating past Wagner Road to the north and contamination in the Evergreen Subdivision area); and there is still some question as to what happens to 1,4-dioxane once it passes Wagner Road which raises concerns that response activities are not as protective as they could and should be.

B. Failure to delineate full extent of contamination

In addition to the compromised Evergreen System, there are fundamental problems with the Defendant's approach to the Site. The quality of information used by the Defendant to make remedial decisions is not adequate. Mandle Affidavit ¶ 6.a. and b. The deficiencies in the information can be traced to Defendant's failure to fully delineate contamination in the Evergreen Subdivision Area. The northern and northeastern extent of 85 ppb of 1,4 dioxane contamination in Evergreen Subdivision Area has not been fully delineated, including elevated concentrations in the Dupont Circle Area, which calls into question the effectiveness of response activities in that area and what more might need to be done. Mandle Affidavit ¶ 6.c. The deficiencies also relate to the failure to use vertical aquifer sampling (VAS), an industry-wide method used to determine where to place wells and at what depths to screen them to allow the wells to perform at their maximum potential either as monitoring wells or extraction wells.

"Industry standards are to use VAS techniques to fully delineate the vertical and horizontal extent of contamination. Mandle Affidavit, ¶ 6.b. While MDEQ has used VAS

an uncalibrated model and there was inadequate data to support the analysis. See, Rick Mandle's June 19, 2008 memo, an attachment to MDEQ's June 23, 2008 letter in Exhibit 7.

⁸ There is also some concern that the current carrying capacity of the transmission pipeline unnecessarily limits the capacity of the Evergreen area system.

techniques since the early 1980s, its has been the preferred standard for both MDEQ and the United States Environmental Protection Agency (USEPA) at Superfund sites because of its reliability in locating monitoring wells since 1994. See, attachment to Mandle Affidavit.

The Defendant has used VAS at the Site, although not exclusively. MDEQ has requested its use throughout the Gelman Site, especially in the Evergreen Subdivision area, a request that is often resisted by the Defendants under the guise that the MDEQ has "approved" the current monitoring well/extraction well network, it is sufficient, and to now require VAS for future and further investigation and remedial decision making is a waste of the current monitoring system. MDEQ never "approved" the use of monitoring or other wells (e.g. residential wells) in place of or as an equivalent to a well completed using appropriate VAS sampling techniques. It is MDEQ's position that the best decisions are made by employing the appropriate methods and using anything less than appropriate VAS techniques is not adequate.

Although Defendant has sometimes used VAS at the Site, MDEQ has concerns with the particular method employed (Simulprobe), which can introduce hundreds of gallons of water, resulting in a dilution of the groundwater being sampled (although the water in the aquifer maintains the true higher concentration).⁹ The VAS technique used should minimize the introduction of water during vertical profiling to get truer results. Mandle Affidavit, ¶ 6.c. and d. In at least one situation, Defendant has refused to install a monitoring well based on questionable analytical results from samples taken employing the Simulprobe method.

Additional investigation is needed to fully delineate 1,4-dioxane migrating from Wagner Road into either the PZ or the Evergreen Subdivision area, the sources and full extent of the

⁹ The most recent example is when MW-122 was installed, vertical profile results showed the highest level of 1,4-dioxane at 33 ppb however, results from the first sample taken from the permanent well was 109 ppb.

contamination in the Evergreen area (including the origin and fate of 1,4-dioxane in the Dupont Circle area), and to confirm the effectiveness of the Evergreen System. See Mandle affidavit, ¶6.e. The origin and fate of contamination in the MW-100 area needs to be determined also.

Plaintiffs request that pursuant to the terms of the Consent Judgment (including Section XVIII.E, if necessary), the Court order Defendant to submit a work plan that completes the investigation began in the Stipulation to resolve the AE-3 dispute, and conduct additional remedial investigation to fully delineate 1,4 dioxane in the Evergreen Subdivision area, including the origin and fate of contamination in the Dupont Circle area and at MW-100. In addition, MDEQ requests that this Court order that appropriate VAS methods, approved by MDEQ, be used by the Defendant to determine the placement of and screening of monitoring wells and extraction wells to ensure that systems are effective and protective of public health, safety, welfare, and the environment.

III. The Defendant's Maple Road Performance Monitoring Is Inadequate

The MDEQ notified the Defendant in a letter dated December 8, 2006 that it needed to install three additional nested monitoring wells in Veterans Park to monitor performance of the Maple Road interim response system to determine its compliance with the court ordered performance objective of purging "enough water so that any water escaping from the purging zone in Unit E will not exceed 2,800 ppb recommended by the MDEQ." Unit E order, page 10. PLS eventually agreed to install the requested wells after an exchange of correspondence and meetings. To date, Defendant has installed only two single monitoring wells (MW-115 and MW-116) in the park because it encountered difficulties installing the monitoring well at the third identified location. Instead, Defendant submitted a proposal to install a monitoring well on the west side of Maple Road which the MDEQ agrees will provide useful characterization

information, but will not meet the performance monitoring requirements of a nested monitoring well installed east of Maple Road.

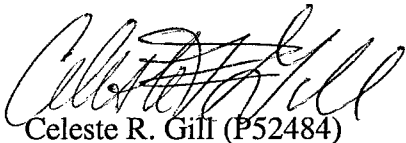
The MDEQ has proposed an alternative location approximately 100 feet north of the former location and suggested the Defendant use an alternative drilling method that is capable of drilling through any difficult materials. Defendant has refused to install such a well. Plaintiff requests that the Court order Defendant to complete a nested monitoring well in the area requested by MDEQ so that the Maple Road Interim Response can be adequately monitored to ensure protection of public health, safety and welfare and the environment, consistent with this Courts' prior orders.

Conclusion and Relief Requested

The Defendant has repeatedly failed or refused to comply with the requirements of the Consent Judgment, and, based on new and continually evolving information about the Site, additional investigation and response activities are appropriate. For all the reasons stated above, the Plaintiffs request that this Court grant the Plaintiffs' Motion and enter the attached Proposed Order.

Respectfully submitted,

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LF/Gelman/Brief in Support

Gelman Sciences Inc.

Exhibits listed in 8/14/09 Attorney General Brief in Support of Plaintiffs' Motion to Enforce Consent Judgment and Request for Additional Response Activity

1. [DEQ Aug 2009 Affidavit of Richard Mandle](#)
2. [PLS August 2005 WP for Groundwater Extraction at Wagner Road](#)
3. [Nov 2005 DEQ response to Work Plan for Groundwater Extraction w/attachments](#) (Interoffice Communications from Richard Mandle, 11/3/05 and James Cogger, 11/10/05)
4. [PLS Aug 2007 WP for Well Installation S of Valley Drive](#)
5. [PLS April 2008 Valley Drive Area Investigation \(w/out attachments\)](#)
6. [DEQ June 2009 Response to PLS Proposal](#)
and
[DEQ June 2009 Memo from James Cogger](#)
and
[DEQ June 2009 Memo from Richard Mandle](#)
7. [DEQ June 2008 Letter from S. Kolon to F. Fotouhi et. al. re: Evergreen System and site wide issues\)](#)
and
[DEQ June 2008 Memo from Richard Mandle \(re: Valley Report and AE-3 Capture Analysis\)](#)
and
[DEQ June 2008 Memo from James Cogger \(re: Dupont Report\)](#)
8. [PLS August 2008 Letter from Michael Caldwell to S. Kolon \(re: Evergreen System and site wide issues\) w/out attachments](#)
9. [DEQ August 2009 Affidavit of James Cogger](#)
10. [DEQ Oct 2007 Letter from S. Kolon to F. Fotouhi et. al. \(re: Wagner Road Interim Response\)](#)
and
[DEQ Oct 2007 Memo from James Cogger \(re: Wagner Road Interim Response\)](#)
11. [DEQ March 2006 Response to Performance Monitoring Plan, Wagner Rd.](#)
and
[DEQ March 2006 Memo from James Cogger \(re: Wagner Rd. PMP\)](#)