

Department of Environment, Great Lakes, and Energy (EGLE)  
Public Comment Responsiveness Summary, November 9, 2020,  
for the proposed Fourth Amended and Restated Consent  
Judgment (4th Amended CJ) for the Gelman Sciences Site of  
Environmental Contamination.

The proposed 4<sup>th</sup> Amended CJ, like its predecessors, addresses the release of 1,4-dioxane from the Gelman Sciences, Inc. (Gelman) property, located at 600 South Wagner Road, Ann Arbor, Michigan (Gelman Property) and where the contamination has come to be located (Facility). A main objective of the proposed 4<sup>th</sup> Amended CJ is to incorporate the updated 1,4-dioxane cleanup criterion for groundwater used as drinking water. In addition to this and other criteria being updated, other changes were made to the proposed 4<sup>th</sup> Amended CJ that put even more safeguards into place to ensure protection of human health and the environment. Some of the additional safeguards include increasing the number of groundwater extraction wells, increasing the number of sentinel, prohibition zone (PZ) monitoring wells, and compliance monitoring wells, increasing source removal efforts on the Gelman Property and preparing contingency plans to extend municipal water to four areas that rely on wells for drinking water if it is determined to be needed.

Starting August 31, 2020, EGLE made the proposed 4<sup>th</sup> Amended CJ available for public review, which started the public comment period. The comment period ran for a total of three weeks and ended on September 21, 2020. Comments received after Sept 21, 2020 were not included in this Responsiveness Summary Report (Report). On September 14, 2020, EGLE held a public meeting, comments received during the public meeting are also included in this Report.

-10 Verbal comments were received at the Public Meeting. Each person was allowed 3 minutes to speak. Because time permitted, people who wanted to speak again were allowed an additional 3 minutes.

-47 written comments were received via email or USPS mail. If a person sent in more than 1 written comment during the comment period, it was only counted as 1.

**EGLE has reviewed all the comments provided to EGLE during the public comment period and the public meeting and compiled them into categories based on their subject. EGLE appreciates those who took the time to provide comments.** Each person who provided a comment to EGLE will not receive an individual response back from EGLE, but the comment will be addressed in this Report. EGLE is responding to comments that are relevant to the provisions of the proposed 4<sup>th</sup> Amended CJ. There were some comments that individuals submitted that pertained to provisions in the Order of Dismissal. EGLE's public comment process is aimed at providing the public with an

opportunity for input and comment on the proposed remedial actions/response activities that are part of the proposed 4th Amended CJ; the negotiated terms of the Intervenor's dismissal from the case are better addressed by the local units of government than by EGLE. There are also some comments that EGLE is not able to address because the information is not available or they do not relate directly to the proposed 4th Amended CJ. All the comments received within EGLE's comment period will be posted, with personally identifiable information redacted, in the "What's New" section on the EGLE Gelman Sciences [webpage](#).

Intervenor Ann Arbor, Scio Township and Washtenaw County held their own public meeting to receive and address public comments. Comments from those sessions are not included in this document. However, many of those comments are similar to the comments received by EGLE and are covered in this Report. Most notably, the discharge of treated groundwater containing 1,4-dioxane into First Sister Lake was the provision in the proposed 4th Amended CJ that generated the most comments.

### **1. Parklake Extraction Well and Treatment System**

The Parklake Extraction Well and Treatment System is a portable ozone/hydrogen peroxide treatment system (to be housed in metal building) to remove 1,4-dioxane from groundwater that is to be located at the City of Ann Arbor's sanitary sewer pumping station at the corner of Parklake Avenue and Jackson Road. The extraction/treatment rate is set at approximately 200 gallons per minute (gpm) provided the aquifer can produce water at that rate, with treated water to be discharged to First Sister Lake via an existing storm sewer outfall. Installation of the Parklake system is contingent upon Gelman obtaining a National Pollutant Discharge Elimination System (NPDES) Permit from EGLE that contains effluent limitations no more restrictive than the NPDES permit for Gelman's Wagner Road treatment system, which uses the same treatment process. Gelman is required to operate the Parklake system for a minimum of two years and may seek EGLE's approval to terminate extraction when extracted groundwater concentrations of 1,4-dioxane are consistently below 500 parts per billion (ppb).

#### Summary of Comments/Responses

##### Comment 1:

Commenters questioned the impacts of the proposed discharge of treated groundwater into First Sister Lake and the surrounding wetlands, asserting that the rate of discharge will be equivalent to a daily 100-year storm event and objecting to permitting any discharge of 1,4-dioxane into the lake, which has recently been at non-detect levels. The presence of bromate in the discharge has also been raised as an issue.

Response:

EGLE disagrees with the assumptions used in calculations made by commenters asserting that the proposed 200 gpm discharge rate will be equivalent to a daily 100-year storm. It appears the calculation was based upon using the area of First Sister Lake of approximately 2.1 acres. However, this area only reflects the open water area of the lake. The total area that would be potentially affected by the proposed discharge includes both the open water and wetlands surrounding the lake, which is approximately 18 acres. When the larger acreage is applied to the analysis, the increase to overall lake elevation is estimated to be 0.5 inches, not the 5 inches estimated using only the 2.1-acre open water surface area. Also, both calculations of the increase in water elevation do not take into account that the discharged water will continuously flow out of First Sister Lake.

The NPDES permitting process for the proposed Parklake treatment system discharge will take into account the ability of the receiving waters (both the lake and wetlands) to handle the proposed rate of discharge and level of contaminants. Gelman's current permit requires that the concentration of 1,4-dioxane not exceed 7 ppb on a monthly-average basis, with a daily maximum of 22 ppb. This level is slightly below the 7.2 ppb groundwater residential drinking water cleanup criterion. Gelman's actual daily discharge level is usually several ppb lower than the monthly average limit. Because First Sister Lake is not a designated surface water drinking water source, the applicable Surface Water Quality Values for 1,4-dioxane are the Human Cancer Value (HCV) (non-drink) of 280 ppb (protective of lifetime exposures including consuming fish and ingesting water from water-related recreation) and the Aquatic Life Final Chronic Value (FCV) (protective of aquatic organisms over lifespan) is 22,000 ppb.

Bromate is a treatment byproduct also present in the discharge due to naturally occurring bromine in the extracted groundwater, similar to the bromate in Ann Arbor's drinking water as a result of using ozone disinfection. The existing NPDES permit limits bromate discharges to a monthly average of 10 ppb (no daily maximum value). The NPDES permit level is the same as the state and federal Safe Drinking Water Act maximum contaminant level. The HCV (non-drink) Surface Water Quality Value for bromate is 40 ppb and the FCV is 760 ppb.

Thus, the proposed discharge of treated water will comply with all allowable levels for surface water and will, on average, be below levels considered safe to drink for both 1,4-dioxane and bromate.

The NPDES permitting process includes a public notice of the draft permit, a public comment period and a public meeting, if requested, to accept comments or objections to the draft permit. Public comments and objections are considered when making the

final decision to issue the permit. The process allows for administrative and judicial appeals of EGLE's decision on a permit.

EGLE has previously issued NPDES permits where wetland impacts were a potential concern. In such circumstances, applicants are required to perform studies showing the wetlands will not be adversely impacted. Issued permits have contained provisions requiring the permittee to monitor the potentially impacted wetlands to ensure that the wetlands are not being degraded or hydraulically altered by the discharge. The hydraulic capacity of the receiving waters (e.g. here, the lake, wetlands and downstream unnamed tributary) is also addressed as part of the permitting process.

### Comment 2

Commenters have asked whether drinking water wells could be impacted by the discharge to First Sister Lake by sinking into the aquifer below the lake.

### Response:

This scenario is not likely because First Sister Lake is located in the PZ which has no drinking water wells, and groundwater flow in the area is to the east into the PZ. In addition, the concentration of 1,4-dioxane in the treated groundwater proposed to be discharged into First Sister Lake will be less than the residential groundwater drinking water cleanup criterion. There are no drinking water wells adjacent to First Sister Lake and water from it does not flow through Second Sister Lake, which has drinking water wells near it.

### Comment 3:

Will 1,4-dioxane in the discharge evaporate into the air?

### Response:

No. Due to 1,4-dioxane's low Henry's Law constant, it does not readily volatilize (evaporate) from water into the air. As noted previously, the discharge must not exceed a monthly average of 7 ppb. By way of comparison only (because these standards do not apply to surface waters): (A) The current Part 201 rules for Residential Groundwater Volatilization to Indoor Air Inhalation Criteria indicate that 1,4-dioxane is "not likely to volatilize." (B) Current EGLE voluntary guidance for volatilization into indoor air lists a residential screening level of 1,900 ppb for groundwater within 10 feet of the ground surface for a residential building with a basement having a poured concrete slab and concrete walls.

Comment 4:

Commenters inquired about the storage of treatment chemicals at the Parklake extraction/treatment site and safeguards to prevent untreated groundwater discharge if a component of the treatment system fails, such as if a treatment chemical runs out.

Response:

The treatment system and related chemicals will be housed in a metal building to be constructed at the Parklake site. The plans call for two 2,000-gallon chemical storage tanks, one for hydrogen peroxide and the other for sodium bisulfate. The two storage tanks will have secondary containment to contain any leaks or spills.

The Parklake treatment system will employ safeguards that provide multiple levels of protection to protect against the release of untreated water. The treatment chemical feeds are equipped with sensors that continuously monitor flow/pressure and concentration. Flow continuity is also measured as well as leak detection. In the event a problem is detected, the system will automatically either shut off or go into recirculation mode and an alarm is sent to the operators. Similar safeguards employed at Gelman's Wagner Road treatment system have proven reliable and effective for many years.

Comment 5:

Is there a contingency plan if Gelman is unable to get an NDPES permit?

Response:

No, there is not a contingency plan. Gelman is not required to install the Parklake extraction well/treatment system unless it obtains the permit.

**I. Gelman Property**

## Summary of Comments/Responses

Comment 6:

It appears that 3 new extraction wells at Gelman each will be 75 GPM, 3 additional wells may also be added - what will drive that decision?

Response:

Three Phase I extraction wells and up to three additional Phase II extraction wells are proposed on the Gelman property in the proposed 4<sup>th</sup> Amended CJ. Phase I will capture 1,4-dioxane mass in the shallow groundwater aquifer (surface to approximately 60 feet below ground surface) on the Gelman property. Contaminated groundwater movement in the shallow aquifer under the Gelman property is highly dependent on the permeability of the aquifer material. The amount of groundwater yielded from the shallow groundwater tends to be lower and inconsistent and for these reasons additional groundwater extraction wells are proposed. The decision to add more extraction wells will depend on the influences of the first three extraction wells.

Comment 7

What treatment technology is being used for the new wells on the Gelman property?

Response:

The contaminated groundwater collected from the proposed extraction wells on the Gelman property will be treated using the current ozone/hydrogen peroxide chemical oxidation treatment system located in the treatment system building on the Gelman property and discharged under the existing NPDES permit.

Comment 8:

The objective for Gelman Property is to prevent migration from soil to ground water that can cause non-compliance in the western area (Section VI.A) The extraction well objective of 500 ug/L, exceeds both the drinking water and GSI criteria Migration of groundwater with concentrations of 500 ug/L could result in increasing concentrations in the western area and possibly eventual expansion of the extent of contamination. How is the extraction well objective protective of public health and the environment?

Response:

The Gelman Property Objective is to prevent contamination migration into any aquifer at concentrations or locations that cause non-compliance with the Non-Expansion Cleanup and GSI Objectives in the Western Area. The extraction wells reduce the mass of 1,4-dioxane in groundwater and support these objectives, compliance with which is demonstrated by sampling Compliance Monitoring Wells for the Non-Expansion

Objective and GSI investigation monitoring wells for the GSI Objective. Meeting these objectives is protective of human health and the environment.

Comment 9:

The proposed cap over the burn pit (Section VI.C.4.b) could change redox conditions in soil and mobilize other contaminants. Has this possibility been assessed?

Response:

The possibility of a change in redox conditions in soils has not been evaluated. The proposed cover is intended to reduce the potential for infiltration of water to remobilize 1,4-dioxane in soil.

Comment 10:

Ozone hydrogen peroxide system is not the most effective technology available as we understand. Why is Gelman not using best management practices?

Response:

The proposed 4<sup>th</sup> Amended CJ provides that groundwater remediation treatment can be accomplished using either ozone and hydrogen peroxide or ultraviolet light and oxidizing agent technologies. The ozone/hydrogen peroxide system has been in use since 2005. During this operation period Gelman has complied with the discharge limitations of the NPDES permit. In addition, the Interstate Technology and Regulatory Council (ITRC) identifies ozone/hydrogen peroxide oxidation treatment as a fully demonstrated treatment for 1,4-dioxane across a wide range of starting concentrations.

Comment 11:

What happens to the dead trees with 1,4-dioxane?

Response:

Phytoremediation utilizing trees treats 1,4-dioxane by root uptake of contaminated groundwater and evapotranspiration of the groundwater by the leaves. Significant residual 1,4-dioxane is not likely to remain in the wood of the tree. Gelman is required

to submit an installation report which will document the operation and maintenance of the system.

Comment 12:

What data supports phytoremediation in the marshy and pond areas and the heated soil vapor extraction in the burn pit area on the old plant site and the placement of additional monitoring wells?

Response:

Gelman provided data to the Intervenors and EGLE that supports use of phytoremediation and heated soil vapor extraction in order to prevent the deeper long-term migration from such shallow areas. The data, however, remains subject to the confidentiality order governing the parties' discussions and negotiations of the proposed 4<sup>th</sup> Amended CJ. The ITRC identifies phytoremediation as a demonstrated treatment technology for this type of remediation project and contaminant. ITRC identifies heated soil vapor extraction as an emerging treatment technology. Decisions made regarding the location of additional monitoring wells are made based on where additional data is needed to guide decisions and ensure that human health and the environment remain protected.

**I. General Proposed 4<sup>th</sup> Amended CJ**

Summary of Comments/Responses

Comment 13:

Why is the dispute resolution procedure final decision left up to EGLE?

Response:

The dispute resolution procedure is the same as in prior versions of the proposed 4<sup>th</sup> Amended CJ and is subject to Court review. Dispute resolution procedures under state agreements typically end with the state agency, but final decisions by the state agency are subject to Court review.

EGLE will be responsible for day-to-day oversight of Gelman's activities under the 4<sup>th</sup> Amended CJ. The Intervenors are not part of the day-to-day oversight of Gelman's activities going forward because they will not be parties to the proposed 4<sup>th</sup> Amended



CJ. But the Intervenor do have a designated role in overseeing the activities and requirements of the proposed 4<sup>th</sup> Amended CJ.

A separate Court Order resolving the intervention will give the local government Intervenor the right to participate and engage in the same dispute resolution procedures, including seeking the Court's review, on certain critical decision points under the proposed 4<sup>th</sup> Amended CJ, examples of which include:

- modification of the cleanup criteria
- expansion of the PZ
- termination or significant reduction of response activities
- termination of the CJ

Comment 14:

The current CJ and the proposed 4<sup>th</sup> Amended CJ is inconsistent with Michigan's Part 201 statute and rules because it allows a "remedial action that does not attain a degree of control or cleanup of hazardous substances that complies with R 299.3(5) or R 299.3(6) . . .," as required in Section 20118(4) of Part 201.

Part 201 Rule 299.3(5) provides that the "horizontal and vertical extent of" contamination shall not be allowed "to increase after the initiation of remedial actions to address an aquifer, except as approved by the director as provided in section 20118(5) and (6) of [Part 201]." Part 201 Rule 299.3(6) provides that "[a]ll remedial actions that address the remediation of an aquifer shall provide for removal of the hazardous substance or substances from the aquifer, . . . except as provided in section 20118(5) and (6) of [Part 201]."

Response:

The current CJ and the proposed 4<sup>th</sup> Amended CJ are consistent with Part 201 and its rules. The Washtenaw Circuit Court considered this question when the Court imposed the PZ, and the Court addressed and decided this issue in its December 17, 2004 Opinion and Order Regarding Remediation of the Contamination of the "Unit E" Aquifer ("Unit E Order"):

[P]rovisions of the rules require an administrative "waiver". Pursuant to MCL 324.20118(6)(d), such a waiver would require "other institutional controls necessary to prevent unacceptable risk from exposure to the hazardous substances". MCL 324.20120b(5) states the mechanisms for such institutional controls "include, but are not limited to, an ordinance that prohibits the use of groundwater or an aquifer in a manner and to a degree that protects against unacceptable exposures as defined by the cleanup criteria approved as part of the remedial plan". Applied to this case, this means that there must be enforceable restrictions on the human

use of water from the Unit E aquifer during remediation. Unit E Order at 11.

The Court agreed with Gelman's assertion "that the Washtenaw County Rules and Regulations for the Protection of Groundwater adopted on February 4, 2004, if supplemented by an appropriate order from this Court, meet th[e] statutory requirement." *Id.* The Court directed EGLE and Gelman to "submit a proposed order to this Court" that provides for the institutional controls that created what is now known as the PZ. *Id.* at 11-12. On May 17, 2005, the Court entered its Order Prohibiting Groundwater Use, which established the PZ and its requirements. Copies of these Orders are available on EGLE's Gelman Site [webpage](#).

#### Comment 15:

The proposed 4<sup>th</sup> Amended CJ identifies a GSI Objective to prevent 1,4-dioxane from venting into surface waters above the 280 ppb Generic GSI criterion in the Eastern Area except in compliance with Part 201. Part 201 allows establishment of a Mixing Zone-Based criterion to demonstrate GSI compliance. The resulting Mixing Zone-Based criterion will be much greater than 280 ppb and will likely not require Gelman to take any actions. The proposed 4<sup>th</sup> Amended CJ should not allow Gelman to utilize a Mixing Zone-Based criterion to attain compliance with the GSI Objective.

#### Response:

Any GSI remedy will comply with Part 201, specifically Section 20120e. Under Section 20120e a Mixing-Zone-Based criterion, which is consistent with Part 31, is allowed to demonstrate compliance with the requirements for a response activity for venting groundwater. It should be noted that Part 201 allowed a mixing zone for GSI compliance before enactment of Section 20120e.

#### Comment 16:

The definition of Groundwater-Surface Water Interface in the proposed 4<sup>th</sup> Amended CJ does not consider a drinking water supply. The proposed 4<sup>th</sup> Amended CJ lists the Generic GSI criterion as 280 ppb 1,4-dioxane. This value assumes that venting does not enter upstream of a public water supply. A portion of the plume is moving northward towards Barton Pond, a City of Ann Arbor water supply.

#### Response:

Part 201 does consider a drinking water supply when applying the GSI criterion. Part 201 Rule 299.49(1)(X) identifies that the generic GSI criterion of 280 ppb is not

protective for a groundwater discharge in close proximity to a water supply intake in inland surface waters. There is no documented discharge of 1,4-dioxane contaminated groundwater related to the Gelman site in close proximity to a water supply surface water intake.

Comment 17:

Oppose Section IV of the proposed 4<sup>th</sup> Amended CJ which allows Gelman to temporarily reduce or shut-down such remedial systems for reasonably necessary maintenance according to EGLE-approved operation and maintenance plans.

Response:

Prior versions of the proposed 4<sup>th</sup> Amended CJ provided for the temporary reduction or shutdown of the remedial systems as described in the approved Operation and Maintenance Plans for necessary maintenance activities including equipment upgrades and repair. The system is designed to run 24-7. Regular maintenance activities are necessary to maintain the performance needed to meet the objectives of the proposed 4<sup>th</sup> Amended CJ.

Comment 18:

Why is Groundwater Contamination defined as 7.2 ppb when other states, such as New York, use a 1.0 ppb criterion.

Response:

The current promulgated and enforceable cleanup criterion for groundwater used as drinking water under state law for 1,4-dioxane is 7.2ppb. EGLE amended the Cleanup Criteria Rules for 1,4-dioxane on October 20, 2017, after issuing an emergency rule on October 27, 2016, which was extended for another six months after August 2017. EGLE utilized best available scientific information regarding 1,4-dioxane for the residential drinking water pathway for sites in Michigan utilizing Michigan-specific equations and exposure assumptions to calculate the criterion. Additional information relied upon included the United States Environmental Protection Agency's IRIS Summary and Toxicological Review for 1, 4-dioxane.

Comment 19:

The proposed 4<sup>th</sup> Amended CJ only addresses 1,4-dioxane. Are there other contaminants that should be considered?

Response:

Historically, the contaminant of concern identified in previous CJs was 1,4-dioxane based on sampling that occurred in the early years of investigations at the Gelman Site. In addition, in September 2019 EGLE required Gelman to analyze influent groundwater and treated effluent water for other volatile organic compounds (VOCs) and semi-volatile compounds (SVOCs) as part of the NPDES renewal application. Other VOC and SVOC compounds were not detected in the samples. Also, in 2019, in response to similar questions by stakeholders concerning other contaminants, EGLE and the Washtenaw County Health Department sampled selected residential wells for other VOC and SVOC compounds. Three VOC compounds were detected in one sample at concentrations below both any applicable Part 201 cleanup criterion and drinking water maximum contaminant level. A review of the data indicates that these compounds were not from the Gelman Site. These sampling results collectively indicate that there are no other contaminants requiring treatment at the Gelman Site.

Comment 20:

The proposed 4<sup>th</sup> Amended CJ does not refer to vapor intrusion, which is a potentially complete pathway. The judgment should require evaluation of the vapor intrusion pathway.

Response:

The proposed 4<sup>th</sup> Amended CJ does not rule out assessment and action to address the vapor intrusion pathway, if needed. The newly updated EGLE “Guidance Document for the Vapor Intrusion Pathway” (September 2020) identifies the residential volatilization to indoor air pathway (VIAP) screening level for 1,4-dioxane in shallow groundwater (groundwater 10 feet or less below ground surface) as 1,900 ppb. This document also identifies a non-residential VIAP screening level of 4,600 ppb for 1,4-dioxane in groundwater within five feet of the ground surface (possible utility worker exposure). Current data shows significantly lower concentrations in shallow groundwater. The proposed 4<sup>th</sup> Amended CJ provides for installation of additional groundwater monitoring wells in key areas of the site which will provide additional data to evaluate the VIAP.

Comment 21:

Why is the 100 ppb action level for basement exposure not addressed?

Response:

The referenced 100 ppb action level (screening level) in shallow groundwater relating to wet basements and the VIAP pathway was calculated by a stakeholder and submitted

to EGLE for review. EGLE evaluated the calculations and determined that some of the exposure assumptions used are not appropriate for calculating an area-wide shallow groundwater screening level that adequately represents the risk posed from the VIAP. EGLE recommends a site-specific VIAP evaluation for individual structures with standing water in the basement (a wet basement). EGLE will continue to evaluate the VIAP as new data is collected.

Comment 22:

The 280 ppb GSI criterion seems an issue with 100 ppb action level.

Response:

The 280 ppb GSI criterion cited in the proposed 4<sup>th</sup> Amended CJ will be used to evaluate the GSI exposure pathway. As stated above, site-specific VIAP evaluations for individual structures with standing water in the basement will need to be completed if 1,4-dioxane is present in the standing water.

Comment 23:

Termination level of 500 ppb for the new Gelman Property and Parklake extraction wells is not appropriate. Environmental working groups are using 0.35 ppb.

Response:

The extraction and treatment of contaminated groundwater is included in the proposed 4<sup>th</sup> Amended CJ as a response activity to achieve the PZ Containment Objective in the Eastern Area and the Non-Expansion Objective in the Western Area, which are aimed at reducing contaminant mass. The 500 ppb concentration is referenced in the 4<sup>th</sup> Amended CJ as a level that must be achieved to initiate evaluations to determine if pumping of the Parklake Well in the Eastern Area and the three Phase I Extraction wells on the Gelman property in the Western Area can be terminated. Gelman must submit a written analysis to EGLE, including hydrogeologic data, that supports the conclusion that the concentration of 1,4-dioxane in the groundwater extracted from each of these wells has been consistently reduced below 500 ppb. EGLE will review and must approve the analysis before extraction from these wells can be terminated.

Comment 24:

If residential drinking water wells are being tested only once per year or every two years doesn't that mean we could potentially be drinking contaminated water for a year?

Response:

Decisions on testing frequencies of specific residential drinking water wells are evaluated yearly by EGLE and the Washtenaw County Health Department. Testing frequencies will be adjusted if new information indicates an increased exposure risk.

Comment 25:

How will we be notified in the future of any proposals, decisions and actions impacting our neighborhood?

Response:

EGLE maintains a "Gelman Sciences, Inc. Site of Contamination Information Page" [webpage](#) where current information about the Site is posted monthly. Concerned stakeholders can also sign up to receive email information updates by joining the EGLE-Gelman Listserv.

Comment 26:

The lack of an up-to-date map of the plume (I could not find one on the EGLE's webpage for this project) makes it difficult to review the provisions of the proposed 4<sup>th</sup> Amended CJ. There is a map available from the Washtenaw County Health Department, but it lacks enough detail for some evaluations. The proposed 4<sup>th</sup> Amended CJ should require Gelman prepare a plume map on at least an annual basis. The map should include plume contours for the detection limit, the drinking water criterion and the GSI criterion at a minimum.

Response:

Previous CJs and the proposed 4<sup>th</sup> Amended CJ require Gelman to provide quarterly written progress reports that include all results of sampling and tests and other data. Twice a year these reports contain expanded information including plume maps (iso-concentration maps), and groundwater flow maps (potentiometric maps) of the different areas of the Gelman Site. All quarterly reports are posted under the Selected

Documents section of the EGLE “Gelman Sciences, Inc. Site of Contamination Information Page” [webpage](#).

Comment 27:

How does the Financial Assurance Mechanism (FAM) work? I understand that the legal entity Gelman Sciences, Inc. pays now, but what about 100 years from now?

Response:

The FAM provision in Section XX.C is not new to the proposed 4<sup>th</sup> Amended CJ. Gelman is required to provide a FAM that EGLE can access in order to pay a contractor to perform response activities (defined as “Long-Term Remedial Action Costs”) required under the 4<sup>th</sup> Amended CJ if Gelman fails to implement those response activities. The amount of the FAM is calculated based upon Gelman’s estimated Long Term Remedial Action Costs for the next 30 years, subject to EGLE’s review and approval. The current FAM is a letter of credit in the amount of \$28,431,846.00. Every five years, Gelman is required to provide for EGLE’s review and approval an updated estimate of the Long-Term Remedial Action Costs for the next 30 years and must revise the FAM amount accordingly. This does not mean that Gelman’s obligation to perform under the proposed 4<sup>th</sup> Amended CJ is limited to only 30 years as some have suggested.

Comment 28:

The definition of the plume around Little Lake and the two downstream ponds is not adequate. There are too few wells around Third Sister Lake and the “Smith Ponds” to define the contamination at the GSI. The investigation should include consideration of infiltration of groundwater into storm sewers such as Allen Creek Drain and its tributaries. The GSI investigation required by Section V.B.2.b of the Consent Judgment should include a much better definition of the extent of contamination in these areas and include seasonal monitoring.

Response:

The change to the new, lower GSI compliance criterion is a significant change in the proposed 4<sup>th</sup> Amended CJ. In both the Eastern and Western Areas, the 4<sup>th</sup> CJ’s GSI Objective requires Gelman to prevent 1,4-dioxane from venting into surface waters (including wetlands, ponds, lakes, and streams), above the 280 ppb generic GSI cleanup criterion, except in compliance with Part 201. Gelman is required to submit GSI investigation work plans for EGLE review and approval and if required, GSI response

activity work plans that will identify the activities required to achieve compliance with the GSI Objective.

Comment 29:

Section V.B.4.e.v requires “economically reasonable” water supply options. Economically reasonable is not defined. An economically reasonable water supply may not protect public health.

Response:

Section V.B.4.e.v addresses circumstances where 1,4-dioxane exceeds 3.0 ppb in an active private drinking water well and bottled water is provided by Gelman as an interim measure until such time it is determined an adequate long-term replacement water supply is necessary as dictated by the terms of proposed 4th Amended CJ. EGLE and the local authorities would not approve a replacement water supply that does not protect public health.

Comment 30:

Section V.B.5 limits additional investigations except as provided in Section V.B.3.c. This should also refer to the Western Area Delineation Investigation in Section V.B.3.b and to the GSI Investigation in Section V.B.2.b. The requirement to petition the court for additional delineation in the western area is time-consuming for both parties and may not allow timely or adequate definition of threats to the public health and the environment.

Response:

Such revisions are not necessary. Section V.B.5 is an update of Section V.B.3 of the Third Amended CJ. Section V.B.3.b is already referenced in Section V.B.3.c and internal investigation of the plume is not needed to enforce the Non-Expansion Cleanup Objective for the Western Area. Section V.B.2.b is a standalone provision requiring submission to EGLE for review and approval of a workplan to investigate the GSI in the Western Area and is not limited by Section V.B.5.

Comment 31:



Section V.D.1.b requires post termination monitoring of the GSI for ten years. The nature and extent of contamination in the western area GSI is not adequately defined. The GSI investigation specified in Section V.B.2.b should be used to define the post termination monitoring.

Response:

Section V.D.1.b addresses continued monitoring of Eastern Area wells for ten years after the termination of groundwater treatment/extraction to ensure compliance with the Eastern Area GSI Objective, not for the Western Area. Post-termination monitoring for the Western Area is addressed in V.D.2, which requires Gelman to conduct GSI compliance monitoring in the Western Area for a minimum of ten years after the termination of groundwater extraction/treatment to verify that Gelman remains in compliance with the GSI Objective under Section V.B.2 for the Western Area. In any circumstance, EGLE must approve any proposal by Gelman to cease post-termination monitoring, which could be granted only if Gelman remained in compliance with the GSI Objective.

Comment 32:

Section VII should include permits from the City for infiltration of groundwater into City storm sewers.

Response:

To the extent that any such permit exists or may be required, those requirements are covered by the general terms of Section VII.

Comment 33:

There are too few monitoring wells and they do not monitor the current area where the highest 22ppb in SG [shallow groundwater] was found last year in the southwest area in West Park. This site has had increasing SG levels since 2016, the time of initial testing at this location. The proposed wells are too far west and not at that location in West Park and too few to be effective and protective.

Aquifers in Ann Arbor have been shown to be connected and will crosstalk and equilibrate potentially causing shallow groundwater exposures into structures in years to come.

Response:

Three new monitoring wells are proposed in the West Park area as part of the continuation of the downgradient investigation required by earlier CJs and incorporated into the current proposed 4<sup>th</sup> Amended CJ. These wells will provide initial data and information concerning the portion of the aquifer in the vicinity of West Park and that also may be entering into the drain. As discussed previously, the September 2020 EGLE Guidance Document for the Vapor Intrusion Pathway identifies a residential VIAP screening level of 1,900 ppb for 1,4-dioxane in groundwater within ten feet of the ground surface. This document also identifies a non-residential VIAP screening level of 4,600 ppb for 1,4-dioxane in groundwater within five feet of the ground surface (possible utility worker exposure). Current data shows significantly lower concentrations in shallow groundwater. Additional investigation will occur in connection with the existing downgradient investigation workplan as required. Additional investigation will also be completed as part of the GSI Objective.

**I. Prohibition Zone**

## Summary of Comments/Responses

Comment 34:

Several commenters made references to the uncertainty whether or not a northerly or northwesterly groundwater flow toward Barton Pond and residential wells is possible near the northern PZ boundary.

Response:

Questions regarding the migration pathway of the plume near the north PZ boundary have been raised numerous times and have been addressed by Gelman, the City of Ann Arbor and EGLE. At EGLE's request, Gelman's experts prepared reports that were reviewed by EGLE in 2009. EGLE did not concur with Gelman's findings. Experts for the City of Ann Arbor also reviewed Gelman's findings and generally agreed that it appears likely the groundwater near the northern PZ boundary will continue to migrate to the east. EGLE and the City's experts agreed that the observation of additional water levels over time, collection of additional water quality data over time, and the installation of more monitoring wells near the northern PZ boundary, should confirm Gelman's and the City's experts' conclusion and reduce uncertainty regarding groundwater flow direction.

Groundwater data from monitoring wells and residential well testing since 2009, collected by Gelman, EGLE and the Washtenaw County Health Department, continues to demonstrate no exposure to contaminated groundwater and that the plume is within the established northern PZ boundary. There is no indication that the plume migrates directly to the northwest or north. If there was a northern migration pathway, it would have manifested itself by now, in either the monitoring wells or a residential well.

However, to address those concerns, the proposed 4<sup>th</sup> Amended CJ includes additional safeguards intended to detect any contaminated groundwater that flows to the northwest and could contaminate residential wells or would flow to the north towards Barton Pond, approximately 1.8 miles away. The proposed 4<sup>th</sup> Amended CJ requires installation of three sentinel monitoring well clusters for up to 9 monitoring wells south of the northern PZ boundary to supplement the current monitoring wells. If 1,4-dioxane levels in any of these wells exceeds 7.2 ppb, in addition to installation and monitoring of PZ boundary wells, Gelman is required to initiate preliminary activities for provision of municipal drinking water to potentially impacted residential wells outside the PZ boundary. If 4.6 ppb of 1,4-dioxane is consistently detected in a PZ boundary well, in addition to implementing plans to prevent migration outside the PZ, Gelman is required to initiate sampling of private drinking water wells and prepare for potential provision of municipal water.

Comment 35:

Why can the PZ be expanded independently? The Remedial Contingency Plan required upon verified exceedance in a sentinel well should not be allowed to include expansion of the PZ as an option.

Response:

The PZ cannot be expanded independently. The proposed 4<sup>th</sup> Amended CJ states that the PZ boundary shall remain in effect unless modified through amendment of the proposed 4<sup>th</sup> Amended CJ in court, even if it is included in a Remedial Contingency Plan. The PZ boundary may not be expanded unless there is a demonstration by clear and convincing evidence that there are compelling reasons that an expansion is needed to prevent an unacceptable risk to human health. This information will be reviewed by the court. The proposed 4<sup>th</sup> Amended CJ also provides that the PZ boundary will be reviewed every 5 years to determine if the PZ boundary can be contracted.

## I. Western Area Comments

### Summary of Comments/Responses

#### Comment 36:

There are no PZ or Land or Resource Use Restrictions (LRURs) in most of the western area. Section V.C requires LRURs only as a condition for terminating extraction wells in the western area. This could take many years. Concentrations of 1,4-dioxane in groundwater in the western area exceed the drinking water criterion. Use of groundwater for drinking water in the western area is a potentially complete exposure pathway that is not adequately addressed by the proposed 4th Amended CJ.

#### Response:

The Non-Expansion Objective was established for the Western Area by the Third Amendment to the CJ in 2011 to maintain no expansion of the horizontal extent of groundwater contamination. Gelman must manage extraction so that it ensures the 1,4-dioxane concentration in compliance wells remains at or below 7.2 ppb. Groundwater use in the Western Area has been well studied and the residential wells are sampled to verify there are no drinking water exposures. EGLE relies on quarterly monitoring of existing compliance wells and the new monitoring wells required in the proposed 4<sup>th</sup> Amended CJ to determine current and future compliance with the Western Area Non-Expansion Objective.

#### Comment 37:

Section V.B.1 states “continued migration of groundwater contamination into the PZ ... shall not be considered expansion and is allowed.” There is no PZ in the western area.

#### Response:

The “continued migration of contaminated groundwater into the PZ” referenced in the section refers to migration from the Gelman property east into the PZ in the Eastern Area, not into the Western Area.

Comment 38:

The “non-expansion” objective (Section V.B.1) for the western area presumes the area of contamination has been defined, which is not the case. This objective is only appropriate after the nature and extent of contamination has been defined.

There may be an undefined “hot spot” near the Ann Arbor Cleaners in the western area. Additional investigations should include defining this possible hot spot.

Response:

The required Western Area Response Activities include a Western Area delineation investigation. The investigation will include the installation of up to 14 monitoring wells to determine the nature and extent of groundwater contamination relative to the revised 7.2 ppb criterion. Additional monitoring wells may be installed based on data obtained during the investigation. After the delineation investigation is complete, the data will be used to identify the network of Compliance Monitoring Wells that will be used to confirm compliance with the Western Area Non-Expansion Cleanup Objective.

Comment 39:

The proposed 4<sup>th</sup> Amended CJ eliminates the Little Lake Area non-expansion objective. This objective should not be eliminated.

Response:

The Little Lake Area is contained within the Western Area identified in the proposed 4<sup>th</sup> Amended CJ. The Western Area has a separate non-expansion objective which will include the Little Lake Area.