ANN ARBOR WATER
Committed to Excellence

CITY OF ANN ARBOR, MICHIGAN

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May 6, 2024

Ms. Debra Shore, Regional Administrator
United States Environmental Protection Agency, Region 5
77 West Jackson Boulevard
Chicago, IL 60604-3507

Subject: City of Ann Arbor Comments on National Priorities List Proposal for Gelman Sciences, Inc.

Dear Ms. Shore,

Thank you for the opportunity to comment on the U.S. Environmental Protection Agency's (EPA) proposed rulemaking to add the Gelman Sciences site in Ann Arbor, Michigan to the Superfund National Priorities List (NPL). The City of Ann Arbor (City) strongly supports the inclusion of the Gelman Sciences site on the NPL to strengthen efforts to address the 1,4-dioxane groundwater contamination impacting large portions of Ann Arbor and surrounding areas. The City has a vested interest in the remediation of the 1,4-dioxane plume due to the potential adverse impacts to public health and the environment, including the risk of contamination of the City's drinking water source.

Despite years of litigation, settlement negotiations, and regulatory oversight by the State of Michigan, progress in delineating, containing, and remediating the contamination has been insufficient. Of chief concern is the recent discovery that 1,4-dioxane has migrated outside of the court-established Prohibition Zone toward the Huron River, where 85% of the City's drinking water is sourced.[1] The City's drinking water is used by more than 125,000 people.

Background

The contamination of groundwater by 1,4-dioxane in this area all originated from releases to soil and groundwater from the Gelman Sciences Wagner Road facility just west of Ann Arbor. Unfortunately, the local geology is not homogeneous. There is no simple plume that moves in a predictable direction. Instead the last glacial ice age left behind a complex, heterogeneous mix of layers, which include interspersed ancient river beds, clay, and imbedded sand, gravel and bedrock that result in unpredictable movement of contaminated groundwater from Gelman's site. The years of investigations of this situation have shown that the contamination frequently moves in narrow underground rivulets, often in unexpected directions. This means that widely spaced monitoring wells can miss the contamination.

[1] Residential well monitoring completed between July 2021 and July 2023 by the Washtenaw County Health Department, the State of Michigan, Scio Township, Ann Arbor Township, and residents found detectable levels of 1,4-dioxane in approximately 40 residential wells in Scio Township (immediately northwest of Ann Arbor). Results indicate that the plume has reached up to 1.25 miles north of the Prohibition Zone, and 0.12 miles from the Huron River.

For decades, the City has been engaged in efforts to address the Gelman contamination. The City brought litigation against Gelman in 2004 after Gelman's 1,4-dioxane contaminated the City's Northwest Supply Well (a/k/a, the Montgomery Well), which the City used as a public drinking water source. The City took the Northwest Supply Well offline because of the presence of 1,4-dioxane. As EPA's HRS report confirms, decades later, concentrations of 1,4-dioxane persist in that well.

In 2016, the City (as well as other municipal entities and a non-profit organization) intervened in the State of Michigan's long-running enforcement lawsuit against Gelman after the State reduced the drinking water cleanup criterion for 1,4-dioxane from 85 parts per billion (ppb) to 7.2 ppb, and the Groundwater- Surface Water Interface (GSI) cleanup criterion was reduced from 2,500 to 280 ppb. The City intervened to have a "seat at the table" during negotiations between the State and Gelman over the terms of a fourth amended consent judgment, intended to implement changes necessary to apply the revised cleanup criteria. Prior to the intervention, those negotiations had been carried out between the State and Gelman without public input. After the court granted the City intervenor status, the City and the other intervenors spent years negotiating with the State and Gelman, which ultimately resulted in a proposed fourth amended consent judgment. That document contained numerous improvements over the draft, revised consent judgment that the State and Gelman had negotiated prior to the intervenors' participation. However, the public, and ultimately, the intervenors' governing bodies, concluded that even that improved document was inadequate.

Thereafter, the court scheduled an evidentiary hearing to consider changes to the existing consent judgment. At the hearing, the intervenors argued that the proposed fourth amended consent judgment should be entered with certain modifications and improvements. In support of their position, the intervenors submitted a detailed expert report from their experts, Dr. Larry Lemke, Ph. D., and Keith Gadway, P. E, a copy of which the City encloses with these comments and incorporates herein by reference. In summary, the intervenors identified the following proposed modifications and additions:

Intervenor Concern	Proposed Modification	What this would Achieve	Technical/Scientific Justification
Perimeter monitoring well gaps	Two additional Sentinel wells along northern PZ boundary (AA, BB); replacement well for MW-63 (CC)	Reduce spacing between monitoring wells in key areas of concern	Dioxane is known to migrate through narrower pathways in this complex aquifer system
Size of prohibition zone expansion	More limited PZ expansion to the south	Appropriate buffer to account for uncertainty commensurate with the magnitude of reduction from 85 to 7.2 ppb	Expansion proportional to concentration gradient along southern edge of plume; expansion aligned with expected migration path
Northward migration toward Barton Pond	Three additional monitoring wells north of PZ boundary (DD, EE, FF)	Determine aquifer quality, hydraulic gradient, and presence/absence of dioxane in this area	Reliable information is needed to assess the potential for northward migration and put community concerns to rest

Intervenor Concern	Proposed Modification	What this would Achieve	Technical/Scientific Justification
Discharge to Allen Creek at concentrations exceeding the GSI criterion	Two high resolution transects (T_1-T_1' and T_2-T_2')	Identify zones of high dioxane concentrations migrating at all depths above bedrock that will guide additional remedial actions	High resolution transects are commonly used to quantify mass flux and design remedial strategies
	Two additional downgradient investigation monitoring wells (GG, HH), to evaluate possible GSI exceedances	Delineation of 280 ppb extent in the downgradient Eastern Area	Determine if dioxane is venting to Allen Creek from north or south; detect dioxane migration farther downgradient in artesian area; facilitate placement of 280 ppb containment line downgradient of MW-82s
	Shallow groundwater profiling and monitoring along Allen Creek Drain	Ensure "Groundwater-Surface Water Interface Objective" is met	Ensure "Groundwater- Surface Water Interface Objective" is met
500 ppb extraction well termination criterion is too high	Terminate extraction after pumping no longer contributes to beneficial reduction in 1,4-dioxane mass	Extend benefits of additional mass removal	Extraction well concentrations may not reflect maximum concentrations in the surrounding aquifer.
Public opposition to Parklake Well discharge into First Sister Lake / NPDES permit risk	Pipe treated water to the Gelman Property and discharge under existing NPDES permit	Avoids NDPES permit risk while providing flexibility	200 GPM exchanges the volume of First Sister Lake approximately once each month, giving rise to potential adverse environmental impacts.
Limited reach of Source Area extraction wells pumping at low rates in low conductivity zones	Concurrent pump-and-treat from all 6 identified purge well locations on the Gelman property	Accelerating pumping from the shallow aquifer underlying the Source Area maximizes mass removal in the shortest time frame	Given demonstrated aquifer heterogeneity, wells distributed throughout the Source Area make sense, and there is no compelling reason to wait.
Performance monitoring criteria have not been specified for the phytoremediation systems – How will we know if they're working?	Gelman to develop phytoremediation effectiveness verification plans including monitoring groundwater dioxane concentrations, water table elevations, and dioxane in plant tissue	Ensure that the phytoremediation systems are achieving groundwater table control and mass removal objectives	This is relatively new technology. Performance monitoring is needed to demonstrate effectiveness of phytoremediation systems and verify that the Western Area GSI Objective is attained.
Potential enhancements can be incorporated into the HSVE system design	Install permanent cap prior to HSVE operation and cycle HSVE system before termination.	More efficient HSVE system operation and avoidance of premature termination	The HSVE system will operate more effectively with a cap in place. System cycling if exhaust air concentrations become asymptotic will demonstrate HSVE has reached its effective limit.

Intervenor Concern	Proposed Modification	What this would Achieve	Technical/Scientific Justification
Documented presence of 1,4-dioxane in Allen Creek, Third Sister Lake, unnamed tributary to Honey Creek	Annual sampling of surface water bodies and drainage systems	Detection will trigger investigation to determine risk of exceeding the GSI criterion	Changes indicating venting of groundwater with 1,4-dioxane at new locations or rising concentrations will not be detected without regular surface water body testing.
Western Area Non-Expansion Cleanup Objective verification threshold is too high	Reduce exceedance threshold from 7.2 to 3.5 ppb	Expansion of Western Area groundwater contamination will be detected before it has migrated to the compliance well location	An increase in concentrations to 7.2 ppb at a compliance well is evidence that expansion of the horizontal extent of contamination has already taken place.
Inconsistent requirements to initiate and subsequently scale back response activities based on threshold exceedances	Adopt a consistent three-month-in-a-row requirement to initiate or cease responses at Sentinel, Boundary, and Compliance Wells	A three-in-a-row requirement to both initiate and interrupt remedial activities is more consistent and more protective	Statistical variation is just as likely to result in low concentration measurements as high concentration measurements.
1,4-dioxane detections in residential drinking water wells	Municipal Water Connection Contingency Plan (MWCCP) for Breezewood Ct; three-in-a-row requirement to stop bottled water supply	Proactive planning for Breezewood Ct residents (same as Elizabeth Rd); More consistent and protective bottled water requirements	1,4-dioxane has been detected in a residential well on Breezewood Ct (just like Elizabeth Rd). The same protections should be afforded there. Three-in-a-row is consistent with response activity threshold frequencies elsewhere.

After the hearing, on July 1, 2021, the court entered an order requiring Gelman to implement the proposed fourth amended consent judgment, without any of the modifications for which the intervenors advocated, but with a quarterly review process to review the progress of the response activities and to consider the implementation of the additional or modified response activities that the intervenors had proposed ("Response Activity Order"). A copy of the order is included with these comments.

Gelman immediately appealed the Response Activity Order. On appeal, the State "strongly" supported the additional remedies imposed by the Response Activity Order and argued that "[t]he additional remedies are necessary, go a long way towards implementing the new cleanup criteria, and ensure continued and additional protection of the public health and environment."

Unfortunately, on September 15, 2022, the Michigan Court of Appeals vacated the Response Activity Order. The Court of Appeals held that the trial court should not have imposed the

Response Activity Order and Gelman and the State were free to negotiate an amendment to the consent judgment without the trial court's involvement.

As a result of the Court of Appeals opinion, the State and Gelman negotiated an amended consent judgment without involving the intervenors or the public. On March 24, 2023, the State and Gelman filed a joint motion for entry of a new, less stringent, proposed fourth amended consent judgment. Despite the State previously telling the Court of Appeals in its brief on appeal that the response activities in the Response Activity Order were "necessary" and "ensure continued and additional protection of the public health and environment," the new proposed amended consent judgment was less protective than the Response Activity Order, as described below:

- Made it easier to expand the Prohibition Zone by removing the "clear and convincing" evidentiary standard and replacing it with a lower "compelling reasons" standard.
- Contained less robust procedures for ongoing review and possible contraction of the Prohibition Zone boundary.
- Eliminated several extraction requirements at the Gelman property source area which would result in less 1,4-dioxane being removed from the groundwater and soil, making it more likely for the plume to expand:
    - Eliminated the Heated Soil Vapor Extraction (HSVE) system.
    - Eliminated an extraction well at the Gelman source area.
    - Eliminated a phytoremediation system at the Gelman source area.
- Eliminated the Parklake Extraction Well.
- Contained inadequate measures (such as monitoring, remediation, or other response activities) to provide a warning system and to ensure 1,4-dioxane would not migrate north of the Prohibition Zone boundary and reach the Huron River upstream of the City's water supply intake in Barton Pond.
- Did not provide opportunity for intervenors to have input on the remedial activities in the future.

The intervenors opposed entry of the new proposed fourth amended consent judgment and requested that the trial court set a 60-day public comment period. But the trial court concluded that, in light of the Court of Appeals opinion, the trial court was required to sign the document as presented and without public comment. The Fourth Amended and Restated Consent Judgment was entered by the trial court on May 17, 2023.

Need for listing and direct EPA management

As is evident from the foregoing discussion, more action is required for the Gelman site. Despite the original consent judgment's requirement that Gelman remove and treat all contaminated groundwater, Gelman's 1,4-dioxane continues to contaminate billions of gallons of the public's groundwater and multiple groundwater contaminant plumes stretch more than four miles under the City and Scio Township. Although the City greatly appreciates all that the State has done over the years to address the plume, as a result of various state court rulings and other circumstances, NPL listing and direct EPA involvement is necessary to address the extensive shortcomings in the existing remedy, i.e., the Fourth Amended and Restated Consent Judgment.

The City's primary concern is the protection of the public drinking water supply. Gelman's contamination already has forced the City to take one source of public drinking water offline and the contamination now threatens the City's primary source—Barton Pond, located in the Huron

River. As described above and in the HRS report for the site, recent residential well sampling has detected 1,4-dioxane far north of the Prohibition Zone institutional control, towards Barton Pond. As the HRS report (p. 25) further recognizes, the highly complex hydrogeology at the site is one reason why the contamination has travelled in directions other than the primary northeastward flow direction. One very recent example illustrates this point. In connection with a settlement agreement between the City and Gelman, Gelman installed two monitoring well nests, one on Bemidji Drive and one on Ventura Court, intended to detect the movement of 1,4-dioxane towards the Northwest Supply (Montgomery) well. None of the wells in these nests have detected 1,4-dioxane, even though 1,4-dioxane is consistently detected in the Northwest Supply well.

In order to protect Barton Pond, the area's complexity demands, at minimum, additional delineation and mass removal to detect migration before it reaches Barton Pond and to make it less likely that such migration will occur in the first instance.[2] The proposed Fourth Amended and Restated Consent Judgment is woefully inadequate in these areas.

The risk to Barton Pond has been exacerbated by the State's recent proposal to issue Gelman a NPDES permit to discharge process water to a tributary to Honey Creek, which flows to Honey Creek and eventually to the Huron River, upstream of the City's drinking water intake in Barton Pond. The City objected to the draft permit and a copy of its objections are enclosed. As described in the City's objections, the risk to Barton Pond is very real. The City has detected 1,4-dioxane in Barton Pond in December 2018; February, April, and September 2019; and February and August 2020. The City has detected 1,4-dioxane in the finished water supplied to customers in February 2019 and February 2020 at very low levels.[3]

Due to the lack of appropriate action to address the magnitude of the contamination, the City has been forced to allocate significant ratepayer dollars and staff resources to protect its residents and its drinking water intake on Barton Pond. Ongoing legal discussions, stakeholder meetings, additional water quality monitoring, hydrogeologic modeling, and the implementation of a sentinel monitoring well program are examples of some of the activities the City has undertaken.

The City urges the EPA to take decisive action to add the Gelman Sciences site to the NPL. The EPA's expertise and resources are crucial to achieving meaningful progress in addressing this long-standing issue and safeguarding public health and the environment.

Sincerely,

Molly Maciejewski, Water Treatment Services Unit Manager

Cc: John Fournier, Deputy City Administrator
Atleen Kaur, City Attorney, City of Ann Arbor
Tim Wilhelm, Deputy City Attorney, City of Ann Arbor

[2] In response to the Court of Appeals opinion, the City used its own funds to install a sentinel well north of the Prohibition Zone in the Garden Homes Park area, near one of the areas intervenors had proposed to detect potential migration toward Barton Pond. As explained previously, however, the complexity of the geology in the area demands a more extensive monitoring well network.

[3] The City's 1,4-dioxane testing data is publicly available at our website.

Erin Donnelly, Environmental Services Manager, City of Ann Arbor

Attachments

Attachment A: Intervenor Expert Report, dated April 30, 2021

Attachment B*: 2021 Response Activity Order to Comply with Revised Cleanup Criteria and Fourth Amended and Restated Consent Judgement; dated June 1, 2021

(**Attachment B submitted in 5 parts due to size limits*)

Attachment C: 2024 City of Ann Arbor Comments on Gelman Sciences Draft NPDES Permit; dated February 16, 2024