ATTORNEY GENERAL, et al v GELMAN SCIENCES, INC.

(Washtenaw County Circuit Court No. 88-34734-CE)

ATTACHMENT H

OPTIONS ARRAY

Pursuant to Section V.A.10 of the Consent Judgment, as amended, Gelman is submitting this Options Array, which sets forth various options for addressing the potential, if unlikely, risks that:

1. Gelman requires more extraction/treatment capacity to maintain compliance with the Eastern Area objectives than the 200 gpm provided by the current infrastructure; and

2. The northern portion of the deep transmission line fails.[1]

Gelman believes that each of the options discussed below is "implementable" within the identified limitations and subject to obtaining the necessary approvals and/or Court-ordered access. Obviously, the necessary approvals and access rights can only be sought if and when there is an actual set of circumstances that gives rise to the need for such approvals/access. Gelman reserves the right to identify additional alternatives if and when such a specific situation arises.

SCENARIO 1 MORE THAN THE CURRENTLY AVAILABLE 200 GALLONS PER MINUTE IS NEEDED TO MEET EASTERN AREA OBJECTIVES

The deep transmission line currently allows Gelman to convey up to 200 gallons per minute (gpm) from the Evergreen Subdivision and Maple Road areas back to the Wagner Road facility for treatment and then disposal via Gelman's permitted surface water discharge. The following alternatives are options for addressing the possibility that Gelman will need to extract more than a total of 200 gpm to meet its Eastern Area cleanup objectives, excluding groundwater extracted from the proposed Parklake Well.

Alternative A: Treatment and Groundwater Injection in Maple Road or Alternative Area

Description. Gelman could utilize a mobile treatment unit similar to that previously used in the Maple Village area along with injection wells to treat and dispose of water. This process was employed previously in the Evergreen and Maple Village areas.

Limitations: This option will take time to implement. Injection locations will need to be identified and necessary permits obtained, infrastructure would need to be installed and, if the existing mobile treatment unit was still in use in connection with the Parklake Well, an additional unit would need to be constructed.

Alternative B: Treatment and Discharge to Ann Arbor Sanitary Sewer System

[1] Gelman already has in place a redundant near-surface pipeline that could replace the capacity of the Southern transmission line (the portion that begins at the Porter Lot) in the event that part of the transmission line fails.

Description: Discharge of treated water into the sanitary sewer is a possible method of handling additional water beyond the 200 gpm capacity of the deep transmission line. This alternative would involve treatment of the groundwater by a mobile unit and then disposal of the treated groundwater into the City's sanitary sewer. The location of the sewer connection would depend on where the groundwater was extracted and the availability of the necessary City infrastructure.

Limitations: This disposal method would have to be authorized by the City of Ann Arbor. The City Council has previously adopted a resolution that would require Gelman to treat the groundwater to below 3 ppb of 1,4-dioxane before discharging to the sanitary sewer. A mobile unit would utilize ozone to treat 1,4-dioxane contaminated groundwater, which would generate low levels of bromate as a bi-product, particularly if required to treat to such a low level for 1,4-dioxane. Gelman cannot predict how the City would react to a request for such a discharge. In addition, when this discharge option was evaluated in connection with the Unit E Feasibility Analysis, the City informed Gelman that there was insufficient capacity in the sewer system for the high volume of water that would be needed to address that plume. The City would need to confirm what, if any, capacity would exist for this alternative to be feasible. Moreover, costs for this alternative are expected to be high because of the need to operate a mobile treatment system and the cost of sewer fees. This alternative will likely not be implementable due to likely treatment requirements and/or capacity limitations except for low flow and/or temporary situations.

Alternative C Treatment and Discharge to Ann Arbor Storm Sewer

Description: Discharge of treated water into the City's storm sewer is also a possible alternative. This alternative would involve treatment of the groundwater by a mobile treatment unit and then disposal of the treated groundwater into the City's storm sewer. The location of the sewer connection and discharge point would depend on where the groundwater was extracted and the availability of the necessary City infrastructure.

Limitations: The storm sewer system has well-documented capacity limitations. This alternative would require approval from the City of Ann Arbor, the Washtenaw County Drain Commissioner and the State of Michigan, and the installation of the necessary infrastructure to connect to the system. It is likely that this alternative would require flow (discharge) into the storm to be temporally suspended during times when the storm sewer is at or near capacity, such as during storm events. Given the capacity concerns and the governmental approvals that would be needed, this alternative may only be implementable in low flow and/or temporary situations.

Alternative D New Pipeline from Maple Road or Evergreen Area - Treatment at Wagner Road Facility

Description: A new, near-surface, pipeline could be installed to connect the Evergreen Subdivision or Maple Road areas to the Wagner Road facility for treatment. Approximately 600 gpm of treatment capacity would be available to treat water from the Eastern Area (not including groundwater from the Parklake area). It is anticipated that this treatment capacity would be sufficient to accommodate any foreseeable necessary flow from these areas and the pipeline could be sized appropriately. A feasibility study would need to be conducted to determine the best route for the line.

Limitations: This option may be cost effective if additional capacity needs are relatively high (greater than 100 gpm) and the need for the capacity is long term. This option would require right-of-way access from the City and potentially, Scio Township and MDOT or court-ordered access. This option would require significant construction time before it could be implemented.

Future Alternatives

Gelman reserves the right to identify additional alternatives if and when a specific situation requiring capacity beyond that provided by the current infrastructure arises.

SCENARIO 2 NORTH HORIZONTAL TRANSMISSION PIPELINE FAILS

The northern portion of the deep horizontal transmission line is a HDPE pipeline that Gelman inserted into the original northern horizontal well after the original steel transmission pipeline failed in 2008. Gelman has supplied documentation of the HDPE pipeline's 50 year life expectancy. To supplement this information, Gelman has identified the following alternatives, which are options for addressing the possibility that the pipeline fails despite its expected reliability.

Alternative A: Treatment and Groundwater Injection in Maple Road or Alternative Area

Description. Gelman could utilize a mobile treatment unit similar to that previously used in the Maple Village area along with injection wells to treat and dispose of water. This process was employed previously in the Evergreen and Maple Village areas.

Limitations: This option will take time to implement. Injection locations will need to be identified and necessary permits obtained, and infrastructure would need to be installed.

Alternative B: Treatment and Discharge to Ann Arbor Sanitary Sewer System

Description: Discharge of treated water into the sanitary sewer is a possible method of handling additional water beyond the 200 gpm capacity of the deep transmission line. This alternative would involve treatment of the groundwater by a mobile unit and then disposal of the treated groundwater into the City's sanitary sewer. The location of the sewer connection would depend on where the groundwater was extracted and the availability of the necessary City infrastructure.

Limitations: This disposal method would have to be authorized by the City of Ann Arbor. The City Council has previously adopted a resolution that would require Gelman to treat the groundwater to below 3 ppb of 1,4-dioxane before discharging to the sanitary sewer. A mobile unit would utilize ozone to treat 1,4-dioxane contaminated groundwater, which would generate low levels of bromate as a bi-product, particularly if required to treat to such a low level for 1,4-dioxane. Gelman cannot predict how the City would react to a request for such a discharge. In addition, when this discharge option was evaluated in connection with the Unit E Feasibility Analysis, the City informed Gelman that there was insufficient capacity in the sewer

system for the high volume of water that would be needed to address that plume. The City would need to confirm what, if any, capacity would exist for this alternative to be feasible. Moreover, costs for this alternative are expected to be high because of the need to operate the mobile treatment system and the cost of sewer fees. This alternative will likely not be implementable due to likely treatment requirements and/or capacity limitations except for low flow and/or temporary situations.

Alternative C Treatment and Discharge to Ann Arbor Storm Sewer

Description: Discharge of treated water into the City's storm sewer is also a possible alternative. This alternative would involve treatment of the groundwater by a mobile treatment unit and then disposal of the treated groundwater into the City's storm sewer. The location of the sewer connection and discharge point would depend on where the groundwater was extracted and the availability of the necessary City infrastructure.

Limitations: The storm sewer system has well-documented capacity limitations. This alternative would require approval from the City of Ann Arbor, the Washtenaw County Drain Commissioner and the State of Michigan, and the installation of the necessary infrastructure to connect to the system. It is likely that this alternative would require flow (discharge) into the storm to be temporally suspended during times when the storm sewer is at or near capacity, such as during storm events. Given the capacity concerns and the governmental approvals that would be needed, this alternative may only be implementable in low flow and/or temporary situations.

Alternative D New Pipeline from Maple Road or Evergreen Area - Treatment at Wagner Road Facility

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Limitations: This option may be cost effective if additional capacity needs are relatively high (greater than 100 gpm) and the need for the capacity is long term. This option would require right-of-way access from the City and potentially, Scio Township and MDOT or court-ordered access. This option would require significant construction time before it could be implemented.

Future Alternatives

As noted above, Gelman reserves the right to identify additional alternatives if and when a specific situation affecting the availability of the transmission line arises. For example, when the original transmission line failed, the parties determined that it was leaking in an already contaminated portion of the aquifer and agreed that it could continue to operate while repairs were made, with appropriate monitoring. Similar fact-specific alternatives will likely be identified if and when such a contingency arises.