

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

INTEROFFICE COMMUNICATION

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SUBJECT: Comments on the March 30, 2006, Phase I Downgradient Investigation
Unit E Report (DIR), submitted by Pall Life Sciences, (PLS)

The March 2006 PLS Report summarizes remedial investigation activities for the area east, (downgradient), of Maple Road. Four monitor wells; MW-97s&d, MW-98s&d, MW-99s&d, and MW-102s&d were installed in early 2006 to evaluate hydrogeological conditions between Maple Road and the Huron River. PLS states that the goal of this phase of the downgradient investigation was to determine the probable migration pathway of the Unit E contamination, establish that the 1,4-Dioxane will remain within the prohibition zone, and evaluate the potential impact to downgradient receptors.

The wells were vertically profiled to bedrock. The profiled chemical data reflects that monitor well MW-98d detected 1,4-Dioxane at 2 ug/l during profiling activities in January 2006. 1,4-Dioxane was detected at 3 ug/l during the April 2006 sampling event. It should also be noted that new nested monitor well MW-103s&d had detectable levels of 1,4-Dioxane when sampled in April 2006. MW-103s&d was not considered to be part of the downgradient investigation, but provides a control point for the area downgradient from the Maple Road network, and southern prohibition zone boundary.

PLS utilized bedrock elevation, drift thickness, potentiometric surface, and surface topography data, from the new and existing monitoring well network, for the Unit E groundwater flow direction analysis.

PLS states in the comments section of the report that, "The investigation shows that the likely flow path for 1,4-dioxane will be within portions of the Unit E aquifer system toward the Huron River near the confluence of Allen Creek".

The "Recommendations for Additional Investigation" section of the PLS report references two areas for additional hydrogeological study. The proposed areas are between monitor wells MW-97 and MW-102 near the confluence of the Allen Creek Drain and Huron River, and in the area of Mulholland and Liberty Streets.

RECOMMENDATIONS

- The two proposed additional wells should be installed. The DIR's A - A' Cross Section depicts the Unit E aquifer as splitting into upper and lower saturated intervals, east (downgradient) of monitor wells MW-86, MW-82s&d, and MW98s&d. The upper and lower units are separated by a till unit. As the topography slopes downward, towards West Park and the Allen Creek Drain, a portion of the upper saturated interval appears to vent to the land surface, while the lower aquifer is depicted as underflowing and being hydraulically isolated from the storm sewers and Allen Creek Drain system.

An unknown amount of shallow groundwater is apparently intercepted and/or discharged, along with storm water, into the Allen Creek Drain via Ann Arbor's storm water collection system. The two additional downgradient wells should establish vertical and horizontal hydraulic head gradients, determine drift thickness/depth to bedrock, and evaluate how the upper and lower saturated intervals, the storm water collection system, and the Allen Creek Drain hydraulically interface.

Contingent on getting access to suitable drilling locations, recommended "area 1" should be moved east closer to the Allen Creek Drain, and "area 2" moved northwest closer to the drain and its outfall at the Huron River. PSL states that "the geological resolution obtained from the Rotosonic Drilling Method (RSD), although interesting, is not necessary". Due to access and the space limitations for the two proposed wells locations, RSD may not be feasible. However, the merits of RSD are well established. RSD methods may be requested at future locations where space and access limitations are not an issue.

Upon installation, slug tests should be performed on the new wells and MW-102s&d. The hydraulic parameters of the new wells should be compared with the Maple Village wells so that estimates for contaminant travel times and attenuation coefficients can be calibrated to site conditions.

- There are no monitor wells screened in the upper (shallow) saturated interval east of MW-82s. Groundwater sampling results from MW-82s indicate that 1,4-Dioxane levels have increased slightly since the well was installed in late 2002. Due to the large distances between monitor wells MW-91, MW-82s&d, and MW-103s&d, it can not be assumed that MW-82s is properly located to intercept the plume centerline, and; therefore, represents maximum contaminant levels in the downgradient area.

A portion of the upper Unit E saturated interval vents/seeps to the land surface at locations south of Bath Street and west of 7th Street, and in areas of West Park. It is not clear from available information if the storm sewer network, proximal to these locations, represents a potential receptor for venting groundwater. If 1,4-Dioxane levels continue to increase in MW-82s, a monitoring plan that includes sampling storm sewer effluent, and/or additional hydrogeologic investigation may be required.

- The DIR did not address a sampling schedule for the downgradient monitoring well network. Monitor wells MW-97s&d, MW-98s&d, MW-99s&d, MW-102s&d, and MW-103s&d should be sampled on a quarterly basis. Monitoring should be performed quarterly to evaluate what impact seasonal precipitation events have on potentiometric surface elevations, and/or contaminant levels in the downgradient wells. Monitor wells MW-79s&d should be sampled monthly until chemical and hydraulic head parameters associated with extraction well TW-19 stabilize. Due to the large distances between control points in the downgradient area, it will have to be determined on a case by case basis if an upward trend in contaminant levels, at a specific location, may trigger the need for additional hydrological investigation.

If you have any questions or comments, please let me know.

JC/KJ

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