



October 13, 2022

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Estate of Harold Shipshock
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Via Electronic Mail Only to DonGallolaw@outlook.com

Subject: Review of Remedial Action Documentation and Additional Site Investigation Report
Master Drycleaning, 6326 West Bluemound Road, Wauwatosa, WI
DNR BRRTS Activity # 02-41-545142
FID # 241398630

Dear Mr. Lehmann, Mr. Shipshock and Mr. Gallo:

On August 23, 2022, the Department of Natural Resources (DNR) reviewed the *Remedial Action Documentation and Additional Site Investigation Report* (Report) submitted by Fehr Graham for the site identified above. The report was submitted to meet the requirements of Wis. Admin. Code § NR 724.15 and documented the groundwater data collected after the most recent injection to try to break down the tetrachloroethylene (PCE) contamination in soil and groundwater that was the result of a discharge during the dry cleaner operations. Fehr Graham also submitted an emerging contaminants statement. The DNR has reviewed the Report and the emerging contaminants statement and has the following comments and/or recommendations.

Groundwater

1. Groundwater monitoring well MW-20

Groundwater monitoring well MW-20 was installed in July 2020 to define the degree and extent of the PCE and the chlorinated volatile organic compound (CVOC) breakdown products. MW-20 is currently the most downgradient well and was installed in the 64th Street right-of-way. Groundwater samples were collected on June 4, 2021 and October 19, 2021 and were laboratory analyzed for volatile organic compounds (VOCs). Both samples identified PCE at higher concentrations than samples collected from upgradient wells.

- It should be determined whether the elevated concentrations at MW-20 are from a single discharge or possibly multiple, repeated discharges and whether the utility trenches are a conduit for the

contaminated groundwater migration. Discuss whether the previous injections may have pushed the contaminant plume downgradient. Determine whether additional downgradient wells are needed to define the extent of the groundwater plume.

2. Groundwater Chemistry

Natural attenuation field parameters were measured in groundwater samples from the well network as part of the remedial action to establish baseline groundwater chemistry conditions. The parameters included water levels, temperature, specific conductivity, dissolved oxygen (DO), pH and oxidation-reduction potential (ORP). Post-injection groundwater samples were collected from a limited number of wells for analysis for VOCs, methane, ethane and ethene, dissolved RCRA metals, dissolved iron and manganese, total organic carbon (TOC), and sulfate. These parameters were collected to support assessment of the potential for redox to occur, the potential for microbial activity and evidence of degradation processes. Elaborate on the strategy for reviewing these parameters and how the results support or do not support the conclusions that de-chlorination of CVOCs is occurring. The strategy should take into consideration the comments and/or recommendations below.

- Parameters TOC, DO, conductivity, pH, temperature and ORP provide information on whether conditions exist that support de-chlorination. Results provided in Table A.7 in the Report identify fluctuating DO and ORP measurements that do not necessarily support the conclusion that reducing conditions are sustained. It does not appear that adequate TOC is present to support de-chlorination.
- Microbial analysis can be conducted to determine if the species present are the right type and in the right numbers to significantly reduce CVOC concentrations. Discussion should be included in the Remedial Action Plan on how microbial testing will affect the proposed polishing step injection.
- Changes in the concentration of certain compounds may confirm that degradation of CVOCs is occurring. The compounds include chloride, methane, ethane and ethene, and ferric/ferrous iron. Table A.7 identifies increased concentrations of methane, ethane, and ethene occur following injections but are not sustained.
- Reductive de-chlorination can result in increased metal concentrations (arsenic, manganese, and iron) that exceed Wis. Admin. Code ch. NR 140 preventive action limits or enforcement standards. Dissolved iron and manganese data are provided. Arsenic needs to be included.

Remedial Action Plan

Fehr Graham recommends submitting a Remedial Action Plan (RAP) to propose a polishing step injection to further reduce the concentrations of CVOCs at the site. The DNR has the following comments:

- Monitoring should be conducted in the source area for potential rebound of CVOCs in the groundwater from the remaining soil concentrations.
- Wells installed to define the degree and extent of the contamination should be included. This information can confirm that the plume is not expanding because of additional injections and that degradation of the CVOCs is effective.
- Injections inside the source zone prevent additional migration of CVOCs off site. Additionally, injections at locations outside the source zone and off site may be warranted to prevent further migration of CVOCs that have already migrated off site.

Requested Documentation

- Provide a map with both injection locations and monitoring wells.
- Provide cross-section(s) that include utilities and groundwater monitoring wells MW-20, MW-16, SMW-14, SMW-10, PZ-2, SMW-4, SMW-9, PZ-1, SMW-3, SMW-6. The cross-sections should include all soil data and the latest groundwater data.
- Provide figures with historic groundwater isoconcentration contours to evaluate how the extent and concentrations of groundwater contamination have changed over time.

Emerging Contaminants Statement

The DNR is requiring PFAS sampling of the groundwater since the discharge of PCE appears to be associated with a waste stream which entered the sanitary sewer and the subsurface. Studies have demonstrated that dry cleaning waste contains PFAS. The DNR is requesting submittal of a PFAS sampling plan for groundwater with a fee for review and approval.

Next Steps

Within 60 days of receipt of this letter by December 13, 2022, submit a plan for the proposed polishing step injection and the requested information from above. Submit a work plan for the proposed PFAS groundwater sampling.

If you have any questions regarding the information in this letter, contact me, the DNR project manager, at 414-639-4007 or alice.egan@wisconsin.gov.

The DNR appreciates your efforts to restore the environment at this site.

Sincerely,



Alice Egan
Hydrogeologist – Remediation and Redevelopment Program
Southeast Region

cc: Dillon Plamann, Fehr Graham – dplamann@fehrgraham.com