REGION 10
SEATTLE, WA 98101

September 25, 2024

MEMORANDUM

SUBJECT: Comments on the 2024 Annual Groundwater Monitoring Report
Northwest Pipe Company, Portland, Oregon
ECSI # 138
August 22, 2024

FROM: Laura Hanna, RG, Remedial Project Manager
Superfund and Emergency Management Division, EPA

TO: Jim Orr, RG, Project Manager
NWR Cleanup, Oregon Department of Environmental Quality

The following is the U.S. Environmental Protection Agency's (EPA's) comment on the document titled *2024 Annual Groundwater Monitoring Report* (report). The report was prepared by Jacobs for the Northwest Pipe Company facility (site). The site is located at 12005 North Lombard Street in Portland, Oregon and listed as Environmental Cleanup Site Information (ECSI) #138. The site groundwater is hydraulically upgradient from the Terminal 4 (T4) remedial design project area within the Portland Harbor Superfund Site (PHSS).

EPA's comment is categorized as "To Be Considered," which, if addressed or resolved, would reduce uncertainty, improve confidence in the document's conclusions, and/or best support the objectives.

To Be Considered

1. Appendix D of the report describes the estimation of attenuation rates using the EPA (2002) method where an ordinary least squares (OLS) linear regression is fit to log-transformed concentration observations as the dependent variable and distance downgradient as the independent variable. The best-fit slope of this linear regression is used to estimate an attenuation rate, but the uncertainty of this estimate is not characterized. Specifically, the null hypothesis that the slope is zero is not tested. Disproving this null hypothesis is necessary to show that the apparent decreasing trend of concentration with distance is not just an artifact of random sampling error. See Appendix I of EPA (2002). For vinyl chloride the p-value of this trend is 0.19, which indicates that the 2024 dataset alone is insufficient to show that the trend is significant.

Given that a temporal trend in concentration observations is also apparent at these monitoring locations, an appropriate method with adequate statistical power for demonstrating the spatial trend may be a multiple linear regression model with log-transformed concentration observations as the dependent variable and both time and distance downgradient as independent variables. Such a model could be easily fit with the "lm" function in R, which would also allow for the convenient production of the model residual diagnostic plots that are necessary to show that the inherent assumptions of OLS are satisfied.

References

U.S. Environmental Protection Agency (EPA). 2002. Calculation and Use of First-Order Rate Constants for Monitored Natural Attenuation Studies. National Risk Management Research Laboratory. EPA/540/S-02/500. November.

cc: David Lacey, DEQ
Mike Romero, DEQ
Rich Francis, EPA
Katie Young, CDM Smith