Oregon
Kate Brown, Governor

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March 11, 2022

Kelly Madalinski (via email to kelly.madalinski@portofportland.com)
Harbor Environmental Manager
Port of Portland
Portland, OR

Re: **Comments on *Annual 2021 Groundwater Monitoring and LNAPL Removal Report***
Terminal 4 Slip 3 Upland Facility
ECSI No. 272

Dear Mr. Madalinski:

The Department of Environmental Quality reviewed the Port of Portland (Port) document entitled *Annual Groundwater Monitoring and LNAPL Removal Report, Terminal 4 Slip 3 Upland Facility* dated February 14, 2022. The report and associated appendices describe groundwater monitoring and product removal associated with ongoing implementation of the upland Record of Decision (ROD) and to support achieving control of contamination sources that could impact the in-water remedy. DEQ offers the following comments on the report:

General Comments

1) DEQ cautions the Port against moving too fast to suspend LNAPL monitoring/recovery and groundwater monitoring activities when the relevant upland ROD criteria appear to have been satisfied. Recent work has revealed measurable LNAPL and/or significant concentration increases in HC-5 and BEBRA wells BE-1 and BE-5, with wide variations between annual monitoring events, indicating the former pipeline release area continues to be a source of contamination in Slip 3. As the in-water work moves further into remedial design, DEQ suggests there is value in continuing this upland work, and even expanding the scope as necessary, in helping to remove LNAPL mass remaining in the subsurface and to achieve source control in Slip 3.

2) The Port should consider the December 2021 detection of measurable LNAPL in HC-5 (0.04 feet), as well as detections in 2018 and 2019, as it develops a scope for a supplemental pre-design investigation as part of the in-water remedial design process. Porewater data from Slip 3 near monitoring well HC-5 would help clarify the source control status of the known groundwater plume and may help inform future cap placement and design decisions for the in-water work.

Specific Comments

3) Section 5.1 Chemical Analytical Results – DEQ suggests the Port should not read too much into the magnitude of decreases in benzo(a)pyrene concentrations in BE-5 (96%) and TPH-D concentrations in HC-5 (96 and 94% in April and July 2021, respectively) relative to data from the December 2020 sampling event. Those apparent decreases reflect the magnitude of the antecedent concentration spikes in 2020 and DEQ does not believe that meaningful conclusions can be drawn from comparing these two data points.

4) Section 5.2.1 BEBRA Wells – In discussing the statistical evaluation of TPH-D concentrations in BE-1, the Port states that the detection from the January 2019 resampling (430 µg/l) was used in place of the December 2018 detection (19,000 µg/l). Lacking a firm basis for this substitution, it appears the Port is "cherry picking" the data to provide a favorable result in the regression analysis presented in Appendix F (see Specific Comment 5). All relevant data should be utilized in the Mann-Kendall and regression analyses. In addition, DEQ notes that the samples from BE-1 and BE-5 were collected directly from the well during the 2021 sampling event, without purging the well prior to collection of the samples. Therefore, the sample results may not be entirely indicative of the groundwater within the surrounding formation. DEQ suggests that if there is a concern about slow recharge, the wells could be purged dry and then sampled on a subsequent day. Although this would necessitate an additional mobilization to sample such wells, it would help ensure the groundwater samples are representative of conditions in the formation.

5) Section 5.2.1 BEBRA Wells – The Port suggests that regression analysis for TPH-D concentrations in BE-1 reveals a flat to negative slope. However, as pointed out in Specific Comment 4, the data used for the regression do not include all sampling points. In addition, as shown in Appendix F, the R^2 value for the regression is quite low, indicating a high variability of the data points around the regression line. As a result, the Port's conclusion regarding the trend for TPH-D in BE-1 should acknowledge the sources of uncertainty within the evaluation. This comment also applies to similar language in Section 6.0.

6) Section 6.0 Conclusions and Recommendations - DEQ concurs that the requirements of the LNAPL monitoring and removal program have technically been met but agrees with the Port's recommendation to continue annual LNAPL monitoring and recovery coincident with annual groundwater monitoring, except for monitoring well HC-5. Based on the detection of measurable LNAPL in HC-5 as recently as December 2021, DEQ requests that LNAPL monitoring and recovery continue in HC-5 on a quarterly basis in 2022. As with the monitoring program as implemented in 2021, if measurable LNAPL is not detected in HC-5, then a sample should be collected for laboratory analysis. DEQ also recommends that observations of the riverbank down-gradient of HC-5 be performed (i.e., to the extent practicable) at a frequency at least equivalent to the quarterly gauging of that well.

7) Section 6.0 Conclusions and Recommendations - DEQ agrees with the Port's recommendation to expand the groundwater monitoring program to include C10-C12 aliphatic hydrocarbons and metals. However, DEQ suggests that at least four quarters of data for the expanded analyte list be collected to ensure they adequately reflect seasonal variability. Such data would prove beneficial for evaluating the degree to which the groundwater pathway has been controlled under source control.

8) Table 1 – For completeness, DEQ requests that locations where sheen was observed but no measurable NAPL confirmed or recovered (i.e., BE-4 on 1/20/21 and HC-12D on 12/22/21) be identified on the table with a note to provide an accurate record of product indicators at the Site. Also, the field form from 12/21/2021 indicates a total of 0.312 gallons of NAPL was removed from HC-5, which differs from the 0.30 gallons recorded in Table 1.

Please provide a Response to Comment and revise the report in accordance with the comments herein provided and resubmit within 45 days. If the Port requires additional time, please contact me to arrange a

mutually agreeable alternative timeframe. DEQ appreciates the continued efforts of the Port to meet its source control obligations and will continue to work collaboratively with the Port to ensure timely review of future submittals. Please contact me at by phone (503) 229-5024 or email (jeff.schatz@deq.oregon.gov) if you have questions.

Sincerely,

Jeff K. Schatz, R.G.
Project Manager
Northwest Region Cleanup Program

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