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March 17, 2023

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Legacy Site Services LLC
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Subject: Feasibility Study Technical Screening
Arkema Facility, ECSI No. 398

Dear Mr. Slater:

The Oregon Department of Environmental Quality received the *Feasibility Study – Technology Screening Memo* (Technology Screening Memo) dated February 15, 2023. The memo was prepared by Environmental Resources Management (ERM) for Legacy Site Services LLC (LSS). The memo presents proposed remedial technologies to carry forward into the Feasibility Study (FS). DEQ has the following comments.

General Comments

1) The Technology Screening Memo does not organize technologies into "general response actions" consistent with Section 2.2 of the DEQ Guidance for Conducting Feasibility Studies[1]. The FS is required to organize technologies into "general response actions" including, at minimum, no action, engineering and/or institutional controls, treatment, and removal.

2) The Technology Screening Memo does not include an adequate explanation of each remedial technology considered, beyond a few sentences in the "Comments" column of Table 2. The FS is required to include a section and/or subsection(s) that introduces soil, groundwater, and non-aqueous phase liquid (NAPL) remedial technologies, organizes remedial technologies by general response action, provides a brief description of these technologies and generally how they are implemented, and identifies which contaminants of concern and/or chemical classes they address. We understand that the FS will also describe differences in remedial technology process options.

3) The Technology Screening Memo presents a separate technology screening for each Functional Unit (FU). Separate technology screenings for each FU is unnecessary to achieve the objective of the technology screening step. Further, this approach confuses the cursory and conceptual assessment of remedial technologies with a more detailed and technically supported evaluation of assembled remedial alternatives. The remedial

[1] DEQ. 1998. Guidance for Conducting Feasibility Studies. July 1. Updated November 1, 2006 and December 1, 2017.

technology screening step should assess remedial technologies in a conceptual manner consistent with the recommendations provided in Section 2.3 of the DEQ Guidance for Conducting Feasibility Studies with the objective of identifying remedial technologies that will be incorporated into remedial alternatives. While DEQ generally agrees with the remedial technologies retained for further evaluation in the FS, Table 2 does not contain adequate explanation of or support for using a quantitative numerical rating scheme for screening remedial technologies. Quantitative evaluation of remedial technologies (individual or in combination) against DEQ's FS balancing factors for each FU should be reserved for assembled remedial alternatives, and is beyond the Technology Screening memo scope.

4) DEQ observes that certain remedial technologies are only screened for a subset of FUs that contain the same media, but the Technology Screening Memo does not provide an explanation or context for this approach. DEQ does not approve partial technology screenings for each FU in Table 2. Our expectation is that any retained soil, groundwater, or NAPL remedial technology will be carried forward into the FS. The FS should clearly explain the rationale for excluding a retained technology from assembled alternatives in each individual FU. DEQ notes the following:

    a. There are no soil remedial technologies that were only screened out for a subset of the soil FUs. However, in-situ soil flushing, in situ thermal treatment, and soil vapor extraction were not included in the technology screening for FU 2 and in situ phytoremediation was not included in the technology screening for FU 3 or FU 4.

    b. There are no groundwater remedial technologies that were only screened out for a subset of groundwater FUs. However, permeable reactive barriers were not included in the technology screening for FU 8, FU 9, FU 10, or FU 11, and hydraulic control was not included in the technology screening for FU 11.

5) DEQ has not made a trespass plume determination. Until such time, FU 12 needs to be carried forward into the FS. Concurrent with the FS, DEQ recommends LSS prepare a request for a trespass plume determination. This request must include specific information on the trespass contaminates, media, depth, and supporting documentation.

Specific Comments

1) **Section 4 (Technologies by Functional Units), Table 2, and Table 3.** Please review the information provided in Section 4, Table 2, and Table 3 for conflicting information and ensure correct and consistent content is present in the FS. Apparent discrepancies include:

    a. Table 2 does not identify remedial technologies for FU 12, but retained technologies for FU 12 are included in Table 3.

    b. Table 3 indicates that aerobic/anaerobic biodegradation was not retained for FU 3 and 4, but the information in Sections 4.3, 4.4, and Table 2 indicates otherwise.

c. Table 3 does not identify enhanced aerobic/anaerobic biodegradation as being retained for FU 11, but the information in Section 4.11 and Table 2 indicates otherwise.

2) **Section 4 (Technologies by Functional Units), Table 2, and Table 3.** DEQ finds the term 'in situ soil solidification' confusing, as it is applied to soil and groundwater FUs. Further, it is unclear whether in-situ chemical stabilization and in-situ soil solidification are two separate technologies, or the same technology that accomplishes treatment via stabilization and solidification simultaneously. Ensure correct and consistent content is present in the FS.

3) **Section 4.1, FU 1 - Riverbank**. The elevation of 12 feet NAVD 88 (mean high water) seems to be used to define the river elevation. However, this is not consistent with the EPA's Remedial Design Guidelines and Considerations (RDGC) for Portland Harbor which defines the top of bank using the BANCS model and extends the area covered to the shallow region of the river at -2 feet Columbia River datum (CRD). The mean high-water mark is typically higher than -2 feet CRD and the toe of the slope is defined as the point between ordinary high and mean high water where there is a clear change in angle. DEQ requests that the definition of the riverbank be clarified in the FS so that complete coverage of the upland and in-water portions of the facility can be accounted for.

Please contact me at 503-860-3943 or by email at *Katie.Daugherty@deq.oregon.gov* if you have any questions.

Sincerely,

Katie DAUGHERTY

Katie Daugherty, R.G.
Project Manager
NWR Cleanup and Tanks Program

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