

Response to Oregon DEQ Comments
Permapost Feasibility Study
December 20, 2024

ID No.	Section Name/Topic	OR DEQ Comment	Response
1 – General Comments	General Comments	The FS does not correctly evaluate remedial alternatives for non-aqueous phase liquid (NAPL) consistent with Oregon Administrative Rule (OAR) 340-122 or previous DEQ direction. DEQ considers NAPL to be a hot spot. As DEQ stated in General Comment #1 on the Feasibility Study Work Plan ³ (FS Work Plan), NAPL represents source material contributing to unacceptable risk within the locality of facility (LOF). The DEQ approved ⁴ Permapost Groundwater and NAPL Locality of Facility – March 2022 Revision Memorandum ⁵ (LOF Tech Memo) illustrates the NAPL LOF. DEQ requires Permapost to revise the FS to evaluate remedial alternatives for NAPL, including NAPL below the RCRA impoundment, consistent with previous DEQ direction. At minimum, DEQ requires the FS to evaluate the following technologies for NAPL removal or treatment: excavation, in situ solidification/stabilization (e.g., jet grouting), in situ chemical oxidation (ISCO), and NAPL recovery. DEQ notes that if the NAPL is treated, DEQ would expect the reliability of MNA to contain the PCP groundwater plume would increase.	FS is revised to include additional active remedial alternatives for groundwater/NAPL.
2-General Comments	General Comments	The FS incorrectly interprets DEQ’s soil hot spot requirements. As we clarified in our FS Work Plan comments, hot spots include soils with concentrations exceeding hot spot thresholds, regardless of whether or not they are reasonably likely to migrate or are readily containable. <u>In other words, stating that contamination can be reliably contained or that contamination has limited mobility does not address DEQ’s requirements for managing hot spots.</u> DEQ requires the treatment or excavation of soil hot spots <u>to the extent feasible</u>. The FS should establish the feasible limit for hot spot treatment/removal using DEQ’s balancing factors, consistent with ORS 465.315(1)(e). Many sections describe DEQ’s requirements for hot spots as a preference for treatment. For clarification, DEQ requires excavation or treatment of soil hot spots to the extent feasible. The FS must demonstrate the feasible extent/limit of hot spot removal/treatment to show that a capping alternative meets DEQ’s requirements for managing hot spots. The “preference” for hot spot removal/treatment, as discussed in OAR 340-122, is in reference to applying a higher threshold for evaluating cost reasonableness when evaluating the feasible limit for hot spot removal/treatment. Where removal/treatment of soil hot spots is considered implementable with implementation risk that can be effectively mitigated, DEQ will select the alternative with the highest degree of hot spot removal/treatment considered cost feasible. For example, the excavation of hot spot soil in AOI-3 is highly effective, highly implementable, highly reliable, and carries a reasonable amount of implementation risk that can be mitigated using readily available controls and planning. Therefore, the feasible limit for soil hot spot treatment or excavation is based on cost, with a higher threshold for evaluating cost reasonableness. Revise the FS to correctly interpret soil hot spot requirements.	Text revised in section 9 paragraph 2 to indicate soil hot spots are addressed to the extent feasible, using DEQ’s balancing factors. Text revised in Hot Spot Appendix C.
3- General Comments	General Comments	As DEQ stated in General Comment #2 on the FS Work Plan, DEQ’s approval of the LOF Tech Memo and understanding of the conceptual site model assumes that the pentachlorophenol plume is attenuating and is the basis for using the 500-foot Oregon Water Resources Department buffer to eliminate certain groundwater pathways and receptors in the FS. This understanding is the foundation of the FS and remedy selection as well as the determination there is no current or likely future beneficial use of groundwater downgradient of Permapost. DEQ has expressed multiple times ^{7,8,9,10} , that data from semi-annual groundwater monitoring events performed since 2022 suggests the pentachlorophenol groundwater plume is now expanding. DEQ required adding routine sampling at P-18a (in addition to ongoing sampling at P-18b), which are identified as sentinel wells. Plume expansion to the sentinel wells would show that the modeling and assumptions carried into the FS incorrectly represented the groundwater plume. Under this scenario, DEQ assumes the groundwater LOF will eventually re-occupy its historical maximum extent. The CSM and the beneficial uses applicable to groundwater would need to be re-evaluated, and groundwater may become a hot spot. In that case, the NAPL would also be a highly mobile hot spot. The FS is required to include the identification and evaluation of contingency remedial actions to be implemented if PCP is detected in the sentinel wells.	FS is revised to include additional active remedial alternatives for groundwater/NAPL.
4- General Comments	General Comments	Several sections of the FS discuss or reference a gravel cover over the yard as an operational interim remedial action measure (IRAM) designed to prevent potential worker exposure to soil contamination. The FS refers to the gravel cover as an ‘operational cap.’ DEQ clarifies that the gravel cover placement was an action taken by Permapost without DEQ oversight. DEQ does not approve the gravel cover placement as an IRAM or to meet the design requirements for a cap. Likewise, DEQ does not approve the gravel cover placement on the Aloha property to constitute an ‘operational cap.’ The design and monitoring requirements for any cap selected as part of the final remedy is subject to DEQ review and approval. All caps must be engineered to consider the nature of	FS text revised “operational cap” to “cover material.” For example, Aloha property text (section 9.2) revised to indicate additional gravel or other measures as needed to meet engineered cap requirements could be implemented with minimal business disruption.

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		underlying contamination and be compatible with current and potential future uses. If capping is selected for areas where Permapost has placed a gravel cover, DEQ will review its suitability for capping during remedial design. Revise the discussions of gravel cover in the FS accordingly.	
5-General Comments	General Comments	DEQ did not request or approve the plume stability analysis presented Section 3.4 and attached as Appendix A. Based on the documented pentachlorophenol rebound and increasing concentrations at the distal end of the groundwater plume, DEQ finds that the ability for natural attenuation to outpace continued plume expansion is uncertain. Remove all references to the Plume Stability Analysis and Stroo report from the FS.	Permapost completed an evaluation of plume stability in response to prior DEQ comments regarding the possibility that the PCP plume will continue to expand, particularly as related to PCP detected in monitoring well P-19b (also see DEQ general comment #3 and references therein [#7 and #8]). Permapost has retained the analysis, however the FS is revised to include active remedial alternatives for groundwater/NAPL to address potential future plume expansion.
6-General Comments	Dioxin/Furans Units	The FS interchanges ng/kg and pg/g units throughout. Pick a unit and use consistently throughout the document.	Main text and appendices revised to pg/g.
7-General Comments	General Comments	There are many places throughout the FS text (especially Sections 8 and 9) and appendices where the human health CSM pathways are referenced and "excavation worker" or "excavation worker PRGs" are noted. Both construction worker and excavation worker receptors need to be mentioned in this context, because these are two different potentially complete pathways and receptors. To refer to this pathway as "excavation worker" is inaccurate and implies that construction worker exposure is not of concern.	Text has been revised throughout to include excavation and construction workers.
1-Specific Comments	Section 3.1 Remedial Investigation Summary	Delete the last bullet in this section. DEQ did not request or approve the referenced technical memorandum.	Text has been revised.
2 – Specific Comments	Section 3.3 Investigation Areas of Interest (AOI-2)	Add NAPL and groundwater COCs for the Aloha property.	Text has been revised.
3a– Specific Comments	Section 3.3 Investigation Areas of Interest (AOI-3)	The first paragraph states “...the LNAPL, while present beneath the cap, has been demonstrated to be immobile and not migrating...). The MFA LOF Tech Memo11 states the LNAPL is “stable and not subject to migration” and “...since closure of the RCRA impoundments, the LNAPL has not significantly migrated...” and “...the LNAPL LOF is located completely within the groundwater LOF...” DEQ does not agree with characterizing the LNAPL plume as immobile and has not approved this classification. Revise the description of LNAPL to be consistent with the MFA LOF Tech Memo.	Text has been revised to indicate LNAPL is stable and not subject to migration.
3b – Specific Comments	Section 3.3 Investigation Areas of Interest (AOI-3)	The third paragraph should be revised to focus solely on summarizing complete exposure pathways for OU-1 (defined as the RCRA cap and treating area) such as excavation worker. Any discussion of methods to address the complete pathway such as institutional controls is premature as these types of tools are part of a remedial actions that has not yet been selected and is the purpose of the FS.	Text has been revised.
3c – Specific Comments	Section 3.3 Investigation Areas of Interest (AOI-3)	The last paragraph lists COCs for each media within OU-1. Revise this paragraph to include LNAPL as a COC.	Text has been revised.
4 – Specific Comments	Section 3.3 Investigation Areas of Interest (AOI-5)	AOI-5 consists of four residential properties not three even though access has not been granted for the fourth property. This section needs to be revised to include the fourth property and that investigation of this property has not been performed. This section also needs to be updated to reflect Property 1 will remain residential.	Text has been revised.

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5a – Specific Comments	Section 3.4 RD&D Program Background and Purpose	Delete “DEQ” from the following sentence in the first paragraph. “...Rock Creek is well outside the groundwater DEQ LOF...”	Text has been revised.
5b – Specific Comments	Section 3.4 RD&D Program Background and Purpose	The second paragraph states that Permapost has demonstrated that there is no current or likely future beneficial use of groundwater downgradient of Permapost. DEQ clarifies that this determination is contingent upon pentachlorophenol at sentinel wells (P-18 well cluster) remaining non-detect.	Noted.
5c – Specific Comments	Section 3.4 RD&D Program Background and Purpose	The last sentence states that data were used to evaluate if PCP concentrations measured during the RD&D program are significantly different from those measured during operation of the pump and treat corrective action. DEQ requests that Permapost further discuss their evaluation of post-pump and treat corrective action operation groundwater er data to assess pentachlorophenol rebound.	Discussion is provided in Appendix A. The FS is revised to include active remedial alternatives for groundwater/NAPL to address potential future plume expansion.
6 – Specific Comments	Section 3.4 RD&D Risk Exposure Pathways	The evaluation of the ecological and human health pathways discussed in this section is contingent upon pentachlorophenol at sentinel wells (P-18 well cluster) remaining non-detect.	Noted.
7 – Specific Comments	Section 3.5 WRD Buffer, P-18 & Contingency Actions	DEQ does not approve the proposed contingency actions proposed in this section, which are limited to updating the beneficial use determination, updating the risk assessment, and updating the feasibility study. For clarification, should pentachlorophenol concentrations be detected at sentinel wells (P-18), both exposure pathways discussed in the RD&D Risk Exposure Pathways subsection will apply to the project. DEQ requires the FS to evaluate groundwater treatment technologies. DEQ intends to select a contingency cleanup action for Permapost to implement promptly after observing pentachlorophenol concentrations at sentinel wells (P-18). DEQ notes that if the NAPL is treated, DEQ would expect that the reliability of MNA to contain the PCP groundwater plume would increase and the need for implementation of a contingency cleanup action would be significantly reduced.	Removed section 3.5 from the FS. The FS is revised to include active remedial alternatives for groundwater/NAPL to address potential future plume expansion.
8a - Specific Comments	Section 5.2 Groundwater/LNAPL	Revise the FS to discuss groundwater and NAPL hot spots separately. Different hot spot rules apply to groundwater (water) and NAPL (media other than water).	Text has been revised. Section 5.3 for LNAPL added.
8b - Specific Comments	Section 5.2 Groundwater/LNAPL	Revise the FS to clarify that NAPL is a highly concentrated hot spot, regardless of its mobility.	Text has been revised. Section 5.3 for LNAPL added.
8c - Specific Comments	Section 5.2 Groundwater/LNAPL	DEQ does not agree with the sentence: “The Permapost data show that the LNAPL is not mobile and poses no risk to site users or ecological receptors.” NAPL is a hot spot. The ability to control risk to site users should be discussed in the context of FS balancing factors (e.g., effectiveness and reliability).	Text has been removed. Section 5.3 for LNAPL added.
9a – Specific Comments	Section 6.1 Soil	Figure 6-2 does not show the soil hot spots associated with AOI-5. Revise this figure to include soil hot spots associated with AOI-5 (residential properties) as well as shading the RCRA regulated unit as hot spot.	Figure has been revised.
9b – Specific Comments	Section 6.1 Soil	DEQ does not agree with the last sentence of this section. Soil hot spots from AOI-3 have historically migrated to other AOIs (e.g., AOI-5) at concentrations that result in hot spots, which is the definition of a highly mobile soil hot spot. Revise or delete the last sentence in this section.	Text has been removed.
10 – Specific Comments	Section 6.2 Groundwater/LNAPL	Revise the FS to discuss groundwater and NAPL separately. Provide the areas and volumes of NAPL contamination.	Text has been revised. Section 6.3 for LNAPL added.
11 – Specific Comments	Section 7/Appendix D Permitting and Other Applicable Regulatory Requirements	Revise the second sentence to clarify that DEQ can waive the “on-site” cleanup from state and local permits, licenses, or other authorizations and procedures as long as the substantive requirements of those permits, etc. are met.	Text has been revised.

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12a – Specific Comments	Section 8 Remedial Action Objectives	DEQ does not approve the Remedial Action Objectives (RAOs). Add direct contact “residential (applicable to AOI-5 only)” and “construction worker” receptors in the first bullet point of the RAO (currently: “COCs in environmental media that exceed risk-based concentrations for direct contact to an occupational worker or potential excavation worker through direct contact.”)	Text has been revised.
12b – Specific Comments	Section 8 Remedial Action Objectives	DEQ does not approve the Remedial Action Objectives (RAOs). Delete “as identified in the RI” from the soil ecological RAO.	Text has been revised.
12c – Specific Comments	Section 8 Remedial Action Objectives	DEQ does not approve the Remedial Action Objectives (RAOs). Revise the soil hot spot RAO as follows to be consistent with the FS Work Plan and DEQ’s approval letter: “Remove and/or treat hot spots of contamination to non-hot spot levels in soil by reducing their concentration, volume or mobility through treatment or excavation and offsite disposal to the extent feasible.”	Text has been revised.
12d – Specific Comments	Remedial Action Objectives	DEQ does not approve the Remedial Action Objectives (RAOs). Separate groundwater and LNAPL RAOs.	Text has been revised.
12e – Specific Comments	Remedial Action Objectives	DEQ does not approve the Remedial Action Objectives (RAOs). Revise the NAPL hot spot RAO as follows: “Remove or treat hot spots of contamination to non-hot spot levels by reducing concentration, volume, or mobility to the extent feasible.”	Text has been revised.
13a – Specific Comments	Section 9 Identification, Screening, and Evaluation of Remedial Technologies for Soil	The last paragraph indicates that alternatives were analyzed in terms of protectiveness. DEQ clarifies that OAR 340-122-0085 requires that all remedial alternatives included in the FS to be protective. Protectiveness is not a balancing factor.	Text has been revised.
13b – Specific Comments	Section 9 Identification, Screening, and Evaluation of Remedial Technologies for Soil	Revise the last paragraph to clarify that remedial alternatives are analyzed in terms of all of DEQ’s required balancing factors (i.e., cost reasonableness).	Text has been revised.
14a – Specific Comments	Section 9 Contaminated Soil Management	This section proposes moving and placing soil excavated from residential yards to DU-G on the Permapost property. Based on the information provided in the FS, DEQ does not approve placement of soils in DUs with soils that exceed hot spot thresholds without the necessary design detail. Revise this section based on the pending IRAM Work Plan and any conditions included in DEQ’s approval of the IRAM Work Plan.	Text has been revised to incorporate and reference the DEQ-approved yards IRAM.
14b – Specific Comments	Section 9 Contaminated Soil Management	Remove references to placement of yard soil in DU-G being consistent with a capping remedy. Yard soil exceeds occupational RBCs and would be unsuitable for use as capping material and the remedial action for DU-G has not yet been selected.	Text has been revised to incorporate and reference the DEQ-approved yards IRAM.
15 – Specific Comments	Section 9.1 AOI-1: Terrace, Alternative 1.3 – Targeted Soil Removal, Landfill, Disposal and Carbon Amendment	Provide additional information about how soils outside of DU1 and DU2 that exceed arsenic, chromium, or copper PRGs will be addressed.	Text revised to indicate soils in D1 and D2 above PRGs and hot spot criteria will be excavated. Metals do not exceed PRGS or hotspot criteria outside of D1/2.
16 – Specific Comments	Section 9.1 AOI-1: Terrace, Implementability	DEQ questions whether the difference in excavation volume between Alternatives 1.2 and 1.3 warrants a 2-point difference (out of 5) for implementability. Revise the implementability score accordingly and provide additional supporting rationale/justification for the score.	The ranking for alternative 1.2 has been revised from 2 to 3. However, Alternative 1.2 involves roughly 5 times the excavation volume versus Alternative 1.3 so a difference in implementability between the two Alternatives is retained.

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17a – Specific Comments	Section 9.2 AOI-2: Aloha Property	Since this section only evaluates soil remedies, remove references to groundwater such as the paragraph about groundwater posing a risk to excavation workers. This information should be included in Section 10.	Text referencing groundwater risk to workers moved to section 10.
17b – Specific Comments	Section 9.2 AOI-2: Aloha Property	Revise the COCs for AOI-2 to be specific to soil only (e.g., “Soil COCs for AOI-2 are:”)	Text has been revised.
18 – Specific Comments	Section 9.2 AOI-2 Aloha Property, Alternative 2.2 – Soil Removal, Landfill Disposal, and Backfill to Grade	Add a variation of Alternative 2.2 in which excavated soil is consolidated and placed on the Permapost property.	Text and tables have been revised to include Alternative 2.2B in which excavated soil is consolidated and placed on the Permapost property.
19a – Specific Comments	Section 9.2 AOI-2 Aloha Property, Alternative 2.3 – Cap Contaminated Soil	The first two bullets appear to conflict. This remedial alternative should assume (consistent with the first bullet) that the existing gravel surface would be removed and replaced with a cap, or that a suitable cap (including a demarcation layer) will be placed over the gravel surface. The cap assumed for this alternative must include a demarcation layer and a material and placement method suitable for its use (i.e., operation of equipment and trucks). Revise text accordingly.	Text has been revised to include a demarcation layer.
19b – Specific Comments	Section 9.2 AOI-2 Aloha Property, Alternative 2.3 – Cap Contaminated Soil	Revise institutional control purpose and description to memorialize the presence of an engineered cap, required maintenance, and process required to breach the cap. Any associated groundwater controls should be discussed in Section 10.	Text has been revised.
20a – Specific Comments	Section 9.2 AOI-2 Aloha Property, Effectiveness	Delete the reference to a deed restriction for Alternative 2.2.	Text has been revised.
20b – Specific Comments	Section 9.2 AOI-2 Aloha Property, Effectiveness	Revise Alternative 2.3 discussion to be specific to soil.	Text has been revised.
21a – Specific Comments	Section 9.2 AOI-2 Aloha Property, Reliability	Delete the reference to a deed restriction for Alternative 2.2.	Text has been revised.
21b – Specific Comments	Section 9.2 AOI-2 Aloha Property, Reliability	DEQ questions a reliability rating of 4 for Alternative 2.3. As noted in Table 9-2, long-term reliability should consider the reliability of institutional controls. Alternative 2.3 would require placement of an institutional control on a property not owned by Permapost. Since Permapost is not the property owner, the property owner’s ability or willingness to comply with restricted land use is less certain and the institutional control may be more difficult to enforce. DEQ requests Permapost revise the reliability score for Alternative 2.3 accordingly and provide additional supporting rationale/justification for the score. This discussion should also be specific to soil.	The ranking of 4 is similar to other alternatives that rely on capping. Uncertainty with obtaining an institutional control is addressed under implementability.
22a – Specific Comments	Section 9.2 AOI-2 Aloha Property, Implementability	DEQ questions the implementability rating of 2 for Alternative 2.2. Shallow excavation is easily implementable in AOI-2 using readily available equipment and personnel. Potential disruption to business operations is a consideration for implementation risk, not implementability. DEQ considers this alternative equivalently implementable compared to Alternative 2.3. Revise the implementability score for Alternative 2.2 accordingly and provide additional supporting rationale/justification for the score.	The ranking has been adjusted from 2 to 3—the same as for Alternative 2.3. As stated in DEQ’s FS guidance, “without the voluntary agreement of the affected parties, the remedial action alternative might not be implementable.” The agreement of the Aloha Property owner to excavation across their entire site is not guaranteed and could result in additional delays and costs beyond those estimated to perform the remedial action.

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22b – Specific Comments	Section 9.2 AOI-2 Aloha Property, Implementability	This remedial alternative should assume (consistent with the first bullet) that the existing gravel surface would be removed and replaced with a cap, or that a suitable cap (including a demarcation layer) will be placed over the gravel surface. The Alternative 2.3 discussion should be revised as the current gravel non-engineered cap is not approved by DEQ.	Text has been revised.
22c – Specific Comments	Section 9.2 AOI-2 Aloha Property, Implementability	As noted in Table 9-2, implementability should consider the practical and legal difficulties and unknowns associated with institutional controls. Since the institutional control required for Alternative 2.3 would apply to a property not owned by Permapost, the implementability score should consider the practical and legal difficulty of negotiating a land use restriction that would be acceptable to the property owner and DEQ. Revise the implementability score for Alternative 2.3 accordingly and provide additional supporting rationale/justification for the score.	This ranking has been adjusted from 4 to 3. The original Alternative 2.3 did not include extensive excavation on the property, rather the addition of gravel to areas with thickness less than one foot. In this context, the practical and legal difficulties and unknowns associated with the institutional control was the likely only hinderance to implementing the remedial action. Given the alternative currently includes both an institutional control as well as more extensive work (but not to the level of Alternative 2.2) the implementability of Alternative 2.3 is now the same as Alternative 2.2.
23 – Specific Comments	Section 9.2 AOI-2 Aloha Property, Implementation Risk	DEQ questions an implementation risk score of “5” for Alternative 2.3. Alternatives 2.2 and 2.3 will result in equivalent disruption to consider the business operation. Revise the implementation risk score for Alternative 2.3 accordingly and provide additional supporting rationale/justification for the score.	The score has been revised to 4. The original Alternative 2.3 did not include extensive excavation on the property, rather the addition of gravel to areas with thickness less than one foot and no disturbance of contaminated material. This level of disturbance is not equivalent to the excavation of up to three feet of soil across the property. Given the revised alternative 2.3, the removal of gravel would create more temporary disturbance but not to the extent of a full excavation.
24 – Specific Comments	Section 9.2 AOI-2 Aloha Property, Reasonableness of Cost	DEQ notes that the cost estimate for Alternative 2.2 assumes 3 feet of excavation. As discussed in Section 9.1, vertical migration of dioxins/furans contamination in soils is limited. Considering that the soil results for AOI-2 for the top 6 inches are below hot spot thresholds and that vertical migration of COCs are limited, assuming a 3-foot excavation for AOI-2 produces a conservative “maximum” cost estimate. DEQ recommends revisiting the excavations assumptions associated with Alternative 2.2 and revising as appropriate.	Three feet was retained as an assumption based on lack of bounding data and uncertainty regarding historical site uses and soil management/grading.
25a – Specific Comments	Section 9.3 AOI-3 Permapost Property	This section only evaluates soil remedies. Remove references to groundwater as this information should be included in Section 10.	Text has been revised.
25a – Specific Comments	Section 9.3 AOI-3 Permapost Property	Revise the COCs for AOI-2 to be specific to soil only (e.g., “Soil COCs for AOI-3 are:”).	Text has been revised.
26 – Specific Comments	Section 9.3 AOI-3 Permapost Property	This section assumes that soil excavated from the Permapost property would be classified as hazardous waste. Provide additional discussion on this determination. The DEQ Cleanup Program will coordinate with the DEQ Hazardous Waste Program to determine if a Corrective Action Management Unit (CAMU) is required for on-site management and capping. The FS should assume a CAMU will be required.	Text has been revised to provide additional discussion regarding hazardous waste and CAMU assumption.
27a – Specific Comments	Section 9.3 AOI-3 Permapost Property, Protectiveness	Delete statements that soil contamination on the Permapost Property is immobile. DEQ clarifies soil hot spots from AOI-3 have migrated to other AOIs (e.g., AOI-5) at concentrations that result in hot spots, which is the definition of a highly mobile soil hot spot.	Text has been revised to clarify COCs are relatively immobile chemicals. Note that soil contamination is <i>currently</i> considered relatively immobile as it relates to AOI-3 to AOI-5. A berm, vegetative cover, and French drain have been installed minimizing water flow from Permapost to AOI-5 compared to historical conditions.

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27b – Specific Comments	Section 9.3 AOI-3 Permapost Property, Protectiveness	Excavation of hot spots is part of Alternative 3.3. Revise text to include these conditions as part of evaluating protectiveness.	Text has been revised.
28a- Specific Comments	Section 9.3 AOI-3 Permapost Property, Effectiveness	The effectiveness discussion for Alternative 3.3 mentions “soil consolidation;” however, soil consolidation is not discussed as an element unique to Alternative 3.3. In addition, the effectiveness discussion states that Alternative 3.3 would reliably contain hot spots of contamination; however, the scope of Alternative 3.3 includes removal of hot spots. Revise the effectiveness discussion for Alternative 3.3 to reflect its scope.	Text has been revised.
28b- Specific Comments	Section 9.3 AOI-3 Permapost Property, Effectiveness	DEQ questions the effectiveness rating of “4” for Alternative 3.4. As noted in Table 9-2, effectiveness should consider the magnitude of risk from untreated waste remaining at the facility absent any risk reduction achieved through on-site management of exposure pathways and considering the toxicity and propensity of the contamination to bioaccumulate and/or degrade. DEQ requests that the effectiveness score for Alternative 3.4 acknowledge and consider that this alternative would cap soil hot spots for contamination that does not degrade.	The effectiveness rating for Alternative 3.4 has been changed from 4 to 3.
28c- Specific Comments	Section 9.3 AOI-3 Permapost Property, Effectiveness	Delete references in Alternative 3.4 that the COCs are immobile. DEQ clarifies soil hot spots from AOI-3 have migrated to other AOIs (e.g., AOI-5) at concentrations that result in hot spots, which is the definition of a highly mobile soil hot spot.	See response to Comment 27a.
29a – Specific Comments	Section 9.3 AOI-3 Permapost Property, Implementability	DEQ questions the implementability rating of 2 for Alternative 3.2. Shallow excavation is easily implementable using readily available equipment and personnel. Potential disruption to business operations is a consideration for implementation risk, not implementability. DEQ considers this alternative equivalently implementable compared to Alternatives 3.3 and 3.4. Revise the implementability score for Alternative 3.2 accordingly and provide additional supporting rationale/justification for the score.	The implementability rating for Alternative 3.2 has been changed from 2 to 3.
29b – Specific Comments	Section 9.3 AOI-3 Permapost Property, Implementability	DEQ questions the implementability rating of 3 for Alternative 3.3. Shallow excavation and capping are easily implementable using readily available equipment and personnel. Potential disruption to business operations is a consideration for implementation risk, not implementability. DEQ considers this alternative equivalently implementable compared to Alternatives 3.2 and 3.4. Revise the implementability score for Alternative 3.3 accordingly and provide additional supporting rationale/justification for the score.	The implementability rating for Alternative 3.3 is consistent with the revised score for Alternative 3.2
30 – Specific Comments	Section 9.3 AOI-3 Permapost Property, Implementation Risk	Alternatives 3.2, 3.3, and 3.4 will result in equivalent disruption to business operations. In addition, Permapost does not use a relatively large soil hot spot area as part of their current operations (i.e., DU-G). The degree of separation in the implementation risk scores is not justified. Revise the implementability risk scores accordingly and provide additional supporting rationale/justification for the score.	As stated in DEQ’s FS Guidance, implementation risk requires the consideration of all of the following criteria: A) Potential impacts on the community during implementation of the remedial action and the effectiveness and reliability of protective or mitigative measures; B) Potential impacts on workers during implementation of the remedial action and the effectiveness and reliability of protective or mitigative measures C) Potential impacts on the environment during implementation of the remedial action and the effectiveness and reliability of protective or mitigative measures D) Time until the remedial action is complete E) Any other information related to implementation risk Excavating a large quantity of soils, including hot spot soils, for transport likely to a hazardous waste landfill at least 150 miles away includes far more potential impacts to the community,

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			workers, and the environment than simply importing clean soil for capping.
31 – Specific Comments	Section 9.3 AOI-3 Permapost Property, Preference for Treatment or Excavation of Hot Spots	See General Comment No. 2.	Text revised to include that the treatment or excavation of soil hot spots is required to the extent feasible, where the feasible limit for treatment or excavation is based on cost. Text also added to Reasonableness of Cost section.
32a – Specific Comments	Section 9.4 AOI-5 Residential Properties	Each of the four residential properties may have a different recommended remedial action based on negotiations with property owners. This section should include a discussion related to this consideration and the evaluations may need to be revised to discuss each property or groups of properties.	Text has been revised.
32b – Specific Comments	Section 9.4 AOI-5 Residential Properties	Property 4 should be included in the line listing ownership and/or interests.	Text has been revised.
32c – Specific Comments	Section 9.4 AOI-5 Residential Properties	Add an alternative that include purchase, rezoning, and removal of residential structures. Recommending this remedial action for one or more of the properties, will require recommendation of a contingency remedial action in the event negotiations are not successful within 2 years of the date of the Record of Decision.	Alternative 5.4 has been added.
33a – Specific Comments	Section 9.4 AOI-5 Residential Properties, Alternative 5.3A – Capping and Landfill Disposal	DEQ does not consider capping soil hot spots in the residential yards to be effective. At minimum, all remedial alternatives for AOI-5 (except the no action alternative) must remove soil hot spots.	Text has been revised to include hot spot removal (for property 3, location HA-18) for all alternatives.
33b – Specific Comments	Section 9.4 AOI-5 Residential Properties, Alternative 5.3A – Capping and Landfill Disposal	DEQ questions the protectiveness of a 1-foot soil cap for residential yards and is unlikely to approve a cap of this thickness. Either revise the thickness of the cap or provide additional supporting rationale/justification for the 1-foot thickness.	Based on the flat grades of the property significant soil erosion is unlikely. In addition, a demarcation fabric would be installed to guard against soil contact. Finally, text has been revised to include hot spot removal (for property 3, location HA-18 at 2 feet bgs) and the cap would extend to 2 feet in this area.
34a – Specific Comments	Section 9.4 AOI-5 Residential Properties, Alternative 5.3B – Capping and Consolidation of the Permapost Property	DEQ does not consider capping soil hot spots in the residential yards to be effective. At minimum, all remedial alternatives for AOI-5 (except the no action alternative) must remove soil hot spots.	See response to comment 33a.
34b – Specific Comments	Section 9.4 AOI-5 Residential Properties, Alternative 5.3B – Capping and Consolidation of the Permapost Property	DEQ questions the protectiveness of a 1-foot soil cap for residential yards and is unlikely to approve a cap of this thickness. Either revise the thickness of the cap or provide additional supporting rationale/justification for the 1-foot thickness.	See response to comment 33b.

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ID No.	Section Name/Topic	OR DEQ Comment	Response
35a – Specific Comments	Section 10 Identification, Screening, and Evaluation of Remedial Technologies for Groundwater	The first paragraph states that the cost of accessing contamination below the RCRA impoundment is clearly disproportionate to the benefit compared to protectiveness for potential excavation workers. DEQ does not agree with this statement as written and in the absence of supporting evaluation. For clarification, we expect the FS to evaluate different remedial approaches against DEQ’s FS balancing factors to identify the appropriate remedial alternative.	This paragraph has been removed and the FS is revised to include additional active remedial alternatives for groundwater/NAPL.
35b – Specific Comments	Section 10 Identification, Screening, and Evaluation of Remedial Technologies for Groundwater	DEQ does not consider the RCRA impoundment cap to be an applicable remedial alternative for groundwater contamination. The RCRA impoundment cap does not remove, treat, or contain groundwater contamination.	FS is revised to include additional active remedial alternatives for groundwater/NAPL. RCRA impoundment cap is retained as a remedial technology to be included in all alternatives.
35c – Specific Comments	Section 10 Identification, Screening, and Evaluation of Remedial Technologies for Groundwater	DEQ disagrees that the RCRA impoundment cap is actively reducing the likelihood of infiltration and potential leaching to groundwater. Groundwater data provide empirical evidence that the RCRA impoundment cap is ineffective at controlling leaching to groundwater.	Text has been revised – asphalt reduces infiltration but discussion of leaching to groundwater is deleted. FS is revised to include additional active remedial alternatives for groundwater/NAPL.
35d – Specific Comments	Section 10 Identification, Screening, and Evaluation of Remedial Technologies for Groundwater	This section states that monitored natural attenuation (MNA), enhanced aerobic biodegradation, and chemical reduction were retained for further evaluation in the FS. However, none of the remedial alternatives appear to incorporate chemical reduction.	FS is revised to include additional active remedial alternatives for groundwater/NAPL, including ISCO as recommended by vendors instead of ISCR.
35e – Specific Comments	Section 10 Identification, Screening, and Evaluation of Remedial Technologies for Groundwater	Restructure the remedial alternatives that include groundwater treatment into two sub-alternatives. One alternative that implements the treatment technology now, and the other that implements the treatment technology as a contingency action.	FS is revised to include additional active remedial alternatives for groundwater/NAPL. As discussed with DEQ, the new alternatives are intended to avoid the need for a contingency action.
36 – Specific Comments	Section 10 Alternative GW.3- MNA and ICs and Permeable Reactive Barrier	The description for the permeable reactive barrier (PRB) indicates a series of direct push injections. In addition, Table 10-1 appears to screen out PRBs as a remedial technology. DEQ is not clear what technologies are included for this alternative and how they would be applied. Revise the FS to clarify the groundwater treatment technologies included in the alternatives valuations. Support these descriptions with figures showing the conceptual layout for treatment technologies (e.g., PRB alignments, conceptual injection points).	The FS has been revised to exclude PRBs.
37 – Specific Comments	Section 10 Effectiveness	DEQ questions the effectiveness score for Alternative GW.2 since this technology has been previously used and reached the point of diminishing effectiveness and was shut down. Provide additional justification for the effectiveness score.	The FS has been revised. Alternative GW.2 is now excavation and off-site disposal.

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ID No.	Section Name/Topic	OR DEQ Comment	Response
38- Specific Comments	Section 10 Reliability	DEQ questions the reliability score for Alternative GW.4 given the uncertainty regarding the PCP plume stability. Provide additional justification for the reliability score that considers the plume stability uncertainty.	The FS has been revised and Alternative GW.4 is now In Situ Stabilization
39a – Specific Comments	Section 10 Implementability	Alternative GW.2 references disturbing the RCRA cap for conveyances to an on-site treatment system. DEQ notes this is an implementation risk consideration, not an implementability constraint. Revise text accordingly.	The FS has been revised and Alternative GW.2 is significantly different from the previous iteration.
39b – Specific Comments	Section 10 Implementability	DEQ questions the implementability score for Alternative GW.3. Direct push borings/injections are common and easily implemented. Provide additional justification for the proposed score.	The FS has been revised and direct push borings are no longer included.
40a – Specific Comments	Section 10 Implementation Risk	DEQ questions the implementation risk score for Alternative GW.2. The GW.2 description indicates that extracted groundwater would be treated on-site. DEQ is unclear how the community could be exposed to contaminated groundwater. In addition, Permapost has been removing NAPL for decades without issue. We assume Permapost has developed procedures to easily mitigate the risk community exposure to NAPL. Further, the text indicates that GW.2 would take a significant time to implement, although it does not appear to take any longer to implement than the other alternatives. Finally, the need to modify the existing system to ensure continued effectiveness is not an implementation risk. Revise the rationale to justify the proposed implementation risk score.	The FS has been revised and GW.2 is now excavation and offsite disposal.
40b – Specific Comments	Section 10 Implementation Risk	DEQ questions the implementation risk score for Alternative GW.3, which appears to be driven by drilling activities conducted on the Permapost property. DEQ understands these community impacts to be limited to noise during working hours, and would expect drilling noise to be within requirements established by local ordinances. Revise the rationale to justify the proposed implementation risk score.	The FS has been revised and Alternative GW.3 is now In Situ Stabilization with In Situ Chemical Oxidation.
40c – Specific Comments	Section 10 Implementation Risk	DEQ considers ongoing PCP plume expansion and the ability to effectively enforce an institutional control on a property not owned by Permapost to protect excavation workers to present an implementation risk. Revise the rationale to justify the proposed implementation risk score.	An institutional control is expected to be required on the Aloha property regardless of the Alternative selected. In other words, the implementation risk is common to all alternatives.
41 – Specific Comments	Section 10 Preference to Treat or Excavate Hot Spots	Revise the first sentence of this section to clarify that Oregon’s cleanup law requires treating groundwater hot spots of contamination to the extent feasible.	Text has been revised.
42 – Specific Comments	Section 11 Recommended Remedial Alternatives	Since our FS comments will result in revisions to the remedial alternatives and their scoring, DEQ anticipate revisions to the recommended remedial alternatives in the next version of the FS.	The section has been revised.
43 – Specific Comments	References	Provide DEQ will a copy of the following memorandum. MFA. 2023c. Bill Beadie, CIH, Maul Foster & Alongi, Inc. Updated Worker Exposure Assessment in Permapost Property Decision Units F, G, H, and the Adjacent Aloha Property. Memorandum to Jayne Bond, Permapost Products, Inc. May 25.	Memo will be provided with revised FS submittal
44 – Specific Comments	Table 3-2, Area of Interest Summary	Add NAPL to AOIs 2 and 3.	Table has been revised.
45a – Specific Comments	Table 10-1 Summary of Preliminary Remedial Technology Screening – Groundwater	Remove capping as a remedial alternative for groundwater.	Capping is retained as a remedial technology as the RCRA cap will remain as a component of all alternatives.

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45b – Specific Comments	Table 10-1 Summary of Preliminary Remedial Technology Screening – Groundwater	Add ISCO as a potential groundwater treatment technology.	Table has been revised.
46 – Specific Comments	Figure 3-1 AOI-1 Dioxin/Furan Soil Sampling Results and Sample Locations	Add data for the other COCs that exceed preliminary remediation goals.	Text has been revised in Section 3.3 (in all subsections) to indicate data results for all COCs are presented in Appendix C.
47 – Specific Comments	Figure 6-1 AOI-1 Hot Spots and PRG Exceedances	Add data for the other COCs that exceed PRGs. Add a table indicating the PRGs for each COC.	Data was removed from this Figure. Text has been revised to reference PRG Appendix which provides PRGs for each COC.
48 – Specific Comments	Figure 9-1 AOI-2 and AOI-3 Remediation Areas	Please clarify the differences in areas shaded green and yellow.	Figure has been revised.
49 – Specific Comments	Appendix B Ecological PRGs	Recommend deleting the following sentence: “In addition, human health PRGs will account for any potential ecological receptor exposure at the Aloha property.”	Sentence deleted.
50 – Specific Comments	Appendix B Tables	Table B-1 should be adjusted to show that the “Excavation Soil RBC” applies at the Permapost property.	Table B-1 has been revised.
51a – Specific Comments	Appendix C Hot Spot Evaluation, NAPL	Figures C-4 and C-5 do not show the NAPL LOF. Revise figures accordingly.	Figure C-5 has been added to show NAPL LOF.
51b – Specific Comments	Appendix C Hot Spot Evaluation, NAPL	The discussion of NAPL hot spots is limited to mobility and reliability of containment. DEQ considers NAPL to represent a highly concentrated hot spot.	Noted. Text acknowledges NAPL represents highly concentrated hot spot.
51c – Specific Comments	Appendix C Hot Spot Evaluation, NAPL	NAPL is in direct contact with groundwater, and, as shown in the June 2023 Semiannual Monitoring Report, dissolution from NAPL is contributing to dissolved groundwater concentrations that appear to be rebounding at concentrations that exceed acceptable risk levels. The site-specific determination regarding whether NAPL constitutes a highly mobile hot spot may depend on the groundwater plume stability (refer to General Comment No. 3).	Noted. Text revised to further acknowledge dissolution from NAPL to dissolved GW concentrations.
52 – Specific Comments	Appendix C Hot Spot Evaluation, Soil, Terrance (AOI-1) and Aloha Property (AOI-2)	As previously stated in DEQ’s FS Work Plan comments, DEQ does not consider it appropriate to apply a 50 times threshold to the RBC to determine the hot spot threshold. DEQ requires the ecological soil hot spot threshold concentration to be 10 times the PRG. Remove or revise the paragraph referencing the “... the “highly concentrated” hot spot level is 50 times...” and DEQ’s 1998 hot spot guidance. This recommendation is outdated and not appropriate or applicable.	Text has been revised.
53 – Specific Comments	Appendix E Cost Estimates	For the groundwater remedial alternatives, provide rationale for assuming monitoring periods of 10 years. For remedial alternatives that rely on MNA, monitoring concluding in less than 30 years is unlikely.	Monitoring is assumed at 10 years consistent with the RCRA permit timeframe.

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54a – Specific Comments	Appendix F Residential Risk Assessment	The residual risk assessment refers qualitatively to the baseline risk assessment for many of the proposed remedies. This is appropriate when a remedy removes contamination completely or includes a uniform engineering control such as a cap. For site areas where only a portion of the unacceptable chemical concentrations are removed (i.e. the Terrace), the residual risk assessment needs to document the quantitative reduced risk (relative to baseline conditions) that would occur if the proposed treatment (the carbon amendment) is ineffective. In the example of the Terrace and the preferred remedy, this would include quantifying the risk remaining after the hot spots are removed assuming the remaining soil carbon amendment is ineffective. Further, monitoring and maintenance of carbon amendment should be described in more detail.	Table F-1 was added to provide quantitative residual risk for a scenario where carbon amendment is ineffective. Additional detail on monitoring was provided.
54b – Specific Comments	Appendix F Residential Risk Assessment	NAPL and residual risk needs to be more explicitly described quantitatively in this section.	Appendix F updated to include quantitative estimates.