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Theodore R. Kulongoski, Governor

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November 13, 2007

Mr. Matthew S. McCormick
Assistant Manager for the Central Plateau
U.S. DOE, Richland operations Office
Richland, WA 99352

Re: Feasibility Study report for the 200-ZP-1 Groundwater Operable Unit, DOE/Rl-2007-28, Draft A; Proposed Plan for the Remediation of the 200-ZP-1 Groundwater Operable Unit, DOE/RL-2007-33, Draft A

Dear Mr. McCormick:

Oregon appreciates the opportunity for early review of the draft Feasibility Study for the 200-ZP-1 Operable Unit (OU) and the draft Proposed Plan for remediation of the 200-ZP-1 Groundwater OU at Hanford. We recognize the importance of these documents in evaluating alternatives and proposing a path forward for cleanup of some of the most serious groundwater contaminant plumes on the Hanford Site. We are gratified that DOE is proposing a cleanup for this groundwater OU that will remove contaminants and permanently reduce contaminant levels below maximum contaminant levels (MCLs) allowed for drinking water.

In general, Oregon supports the path forward as described in alternative 2 of the proposed plan. We believe that the extensive pump and treat system, with secondary source treatment, affords a good opportunity to permanently clean up the carbon tetrachloride and technetium plumes in this OU. We do have some concerns and a few recommendations for enhancing the proposed plan, as discussed below.

In Oregon's comments on the draft remedial investigation (RI) report for this OU (DOE/RL-2006/24, Draft A), we noted that risk estimates were improperly calculated, with the result that risk was substantially underestimated and the list of contaminants of concern may have been incomplete (letter from me to you, dated August 4, 2006). Dennis Faulk of EPA indicated to us in a recent discussion that risk calculations have been reworked and corrected, but because this document cites the 2006 draft RI as the source of risk data, there is nothing to indicate that risk estimates have been corrected. This oversight should be corrected.

Consistent with our comments on other recent risk assessments, Oregon continues to be concerned that DOE is not properly doing baseline risk assessments. We believe this assessment is not consistent with EPA guidance in several respects: 1) The assessment does not present a true baseline case (i.e., no action), as the primary analyses are based on an industrial land use scenario. 2) A rural resident scenario was done, but starts 150 years from present, so it does not involve current levels of contaminants. 3) There is no tribal scenario; the report acknowledges

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that risks under a tribal scenario would be about an order of magnitude above those determined in the rural resident scenario (pg 3-12).

As a result, cleanup goals are not risk-based, and may not be protective of future exposures under reasonable alternative future land uses in or especially adjacent to the 200 Areas. Because DOE plans cleanup to meet water MCLs, the adequacy of risk assessment may not be as important as in some instances at Hanford, but we believe it is important to do a thorough risk-based assessment to insure the protection of human health as soon as achievable, under all potential future land uses.

As the document notes, technetium 99 sources and plumes are not yet defined, so the proposed plan must be viewed as a work in progress, and the design must be flexible to accommodate unexpected sources or plumes of technetium 99 that might be identified in the future. Similarly, DOE must be prepared to modify cleanup plans and approaches if carbon tetrachloride sources are identified in the vadose zone and/or if carbon tetrachloride is found to be occurring as a dense non-aquaous phase liquid (DNAPL). Data recently presented by Bratton (DOE/RL-2007-22 Rev 0) suggests that much of the missing inventory of carbon tetrachloride from the 216-ZP-1 trench has been released to the atmosphere, but the report estimates that 21-40 percent of inventory (i.e., ca 150-300 tonnes) remains unaccounted for. As the report concludes, "...the conclusion that there is no DNAPL deep in the aquifer under 216-Z9 Trench is not supported." So long as there remains uncertainty regarding the fate of this large amount of missing carbon tetrachloride, approaches for cleanup of both the source areas and the plume in the 200-ZP-1 OU must remain flexible.

We are also concerned about the potential for new contaminant plumes to develop in the 200-ZP-1 OU, resulting from migration of contaminants from the 200-PW-1, PW-3 and PW-6 OUs, particularly material derived from the 216-Z-9 trench. The executive summary of the feasibility study notes that "Less mobile contaminants...remain in the vadose zone and are being addressed in vadose zone OU remedies (e.g., 200-PW-1) (pg ES-2)." As discussed in our comments on the 200-PW documents (draft remedial investigation, feasibility study, and proposed plan), we have no confidence in the adequacy of proposed remedies in those OUs for protecting groundwater or managing risk. We believe those documents do not adequately characterize waste in those areas, especially in the deep vadose zone, and that the proposed remedial strategy is inadequate for preventing movement of contaminants through the vadose zone and into groundwater in the 200-ZP-1 OU. We believe the assumption that the proposed remedial strategy for the 200-PW-1/3/6 OUs will be protective of water quality in the 200-ZP-1 OU, from overlying contaminants in the vadose zone, is ill-advised.

Turning to the proposed plan for cleanup of 200-ZP-1 groundwater, we in general concur with the approach described in your selected alternative (#2, which proposes an extensive pump-and-treat system, including secondary source treatment), and believe it can provide a sound approach to cleanup. We encourage you to install a set of wells that would aggressively remove and treat contaminants, i.e., the 27 well, 1,650 gallon per minute system, as it would provide hydraulic control and treatment of groundwater. We believe alternative #1 (institutional controls and monitored natural attenuation) is not an acceptable approach for reasons listed below, and are relieved that it is not recommended as a path forward.

- Alternative #1would protect the public from exposure to 200-ZP-1 contaminants only for the relatively short period of time (compared to the long life of contaminants in groundwater) in which institutional controls would be maintained on the site.
- This alternative would do nothing to reduce the mass of contaminants and would not restore water quality to its highest beneficial use.
- This alternative would lock DOE into a perpetual, expensive cycle of monitoring and CERCLA 5-yr reviews.

In describing alternative #2, the proposed plan describes two contingency technologies that could be applied for treatment of secondary sources of carbon tetrachloride – electrical resistance heating and anaerobic bioremediation. We strongly encourage DOE to implement these technologies from the start of cleanup, concurrent with emplacement of wells for the pump-and-treat system. By adding these technologies on at least a pilot scale when the pump-and-treat process is initiated, we believe the cleanup time can be significantly shortened by increasing mobility of carbon tetrachloride. Moreover, if there is a continuing source of carbon tetrachloride in soils in the form of a DNAPL, anaerobic treatment, followed by heating, could be essential for mobilizing this contaminant and for final cleanup in a reasonable time frame.

Finally, for preferred alternative #2, we have one reservation regarding placement of wells. The design shown in several figures (e.g., ES-3) would allow the escape of a significant parcel of groundwater near the northeast corner of the 200 West area. This water would be "treated" by monitored natural attenuation. We believe the proposed plan needs to describe the design for natural attenuation of this plume in adequate detail to address questions such as – what is the anticipated rate of natural degradation; how much will the plume be allowed to spread; what are the triggers for implementing contingency measures if degradation is unreasonably slow or if the plume grows? Alternatively, we recommend the well design be reconfigured to enclose this area and obviate the need to rely on natural processes.

We look forward to working with you in finalizing the feasibility study and adopting a preferred plan for cleanup of the 200-ZP-1 OU. If you have any questions or would like to discuss our comments, please contact Paul Shaffer of my staff at 503-378-4456.

Sincerely,

Ken Niles
Assistant Director

cc: Dennis Faulk, U.S. EPA
John Price, Washington Department of Ecology
Sandra Lilligren, Nez Perce Tribe
Wade Rigsbee, Yakima Nation
Ted Repasky, Confederated Tribes of the Umatilla Indian Reservation
Hanford Natural Resource Trustees