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Richland, WA 99352

Dennis Faulk
U.S. Environmental Protection Agency
309 Bradley Blvd., Suite 115
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August 18, 2008

RE: *Proposed Plan for Remediation of the 200-ZP-1 Groundwater Operable Unit* (DOE/RL-2007-33, Revision 0)

Dear Mr. Faulk and Ms. Tortoso:

Please find attached my review comments associated with the above referenced plan. Due to the complexity of the Proposed Plan, I requested an extension of the public comment period on August 16. Not knowing whether the public comment period would be extended, I terminated my review prior to completing it. Therefore, please accept the attached comments which represent the review that I was able to perform prior to the end of the public comment period (August 19).

While I fully support the proposed remediation actions, as the attached comments communicate with numerous questions and concerns, characterization is inadequate and data interpretation/evaluation is not sufficiently conservative. Therefore, considering the many deficiencies, omissions, and concerns identified attached, the ROD that this Proposed Plan is intended to support should not be final.

If you have any questions about the attached comments, I may be reached at 509/627-1162.

Sincerely,

Alisa D. Huckaby

Alisa D. Huckaby
1524 Ridgeview Ct.
Richland, WA 99352

c: Susan Leckband, Hanford Advisory Board Chair

ref: 0078583

1. Page 29, Community Participation: The proposed plan does not offer to extend the public comment period (July 21 through August 19). For this reason, I requested an extension to the public comment period on August 16. Considering the significance of the proposal which will lead to a final Record of Decision (ROD), 30 days is an insufficient public comment period. Typically, similar RCRA proposals provide a 45 day comment period. From the too-short public comment period, it could appear that this remediation decision is already made and on a fast track. From the comments provided, clearly inadequate information has been provided in the proposed plan and supporting documents to defensibly support a final ROD. It is recommended that the public comment period be extended to allow the public addition time to review the technical proposal.
2. Page 2, Agency Involvement in This Proposed Plan: The text includes the statement: "Ecology has concurred with the preferred alternative." It is requested that a reference be included which directs the reader to the documentation of Ecology's concurrence.
3. Page 2, Agency Involvement in This Proposed Plan: The proposed plan identifies that the plan summarizes "the findings of the RI report (*Remedial Investigation Report for the 200-ZP-1 Groundwater Operable Unit* [DOE/RL-2006-24]), the FS report (DOE/RL-2007-28), and the baseline risk assessment contained in the FS report". This reviewer has reviewed those reports and they do not address such issues as: filtering of groundwater prior to analysis for metals, the length of groundwater monitoring well screen length, the lack of depth-discrete monitoring, etc.. Therefore, it is submitted that the ROD that this proposed plan (including the 3 above-referenced documents) is based on is insufficient to defensively support a final ROD. It is recommended that the ROD continue to be interim, rather than final.
4. Page 3, Scope of the 200-ZP-1 Groundwater Operable Unit Decision: The text states: "In addition to carbon tetrachloride, the other contaminants of concern (COCs) identified during the RI/FS process for the 200-ZP-1 groundwater are trichloroethylene (TCE), total and hexavalent chromium, nitrate, technetium-99, iodine-129, and tritium." It is requested that all RI/FS contaminants of potential concern (COPCs) be identified in this section. Considering the significant groundwater contamination in this operable unit, it is reasonable for the public to clearly understand how the COC list was developed.
5. Page 3, Scope of the 200-ZP-1 Groundwater Operable Unit Decision: The *Feasibility Study Report for the 200-ZP-1 Groundwater Operable Unit* (DOE/RL-2997-28, Revision 0) the following 15 COCPs: carbon tetrachloride, chloroform, chromium (total), hexavalent chromium, methylene chloride, nitrate, PCE, TCE, uranium, iodine-129, technetium-99, tritium, 1,2-dichloroethane, antimony, and iron. It is requested that the proposed plan identify if the following additional contaminants were evaluated as COPCs: fluoride, arsenic, manganese, methylene chloride, and radioisotopic daughter products (e.g. neptunium-237).
6. Page 3, Scope of the 200-ZP-1 Groundwater Operable Unit Decision: It is requested that the proposed plan identify if the laboratory analytical method-based approach for identifying COPCs was utilized. If not, it is requested that the proposed plan include an explanation of how the COPC list was developed.
7. Page 3, Scope of the 200-ZP-1 Groundwater Operable Unit Decision: Due to this reviewer's concern regarding the adequacy of the COPC and COC lists, it is requested that the proposed plan included an identification and description of all groundwater observations of contaminant concentrations exceeding MCLs. For example, arsenic was detected at levels above the 10-µg/L drinking water standard in well 299-W10-4 during FY 2007. Note: this reviewer's review of the referenced documents did not identify where this issue was addressed.

8. Page 3, Scope of the 200-ZP-1 Groundwater Operable Unit Decision: Due to this reviewer's concern regarding the adequacy of the COPC and COC lists, it is requested that the proposed plan identify that a large percentage of groundwater monitoring results for metals that the RI/FS used were filtered. It is also requested that the proposed plan explain how the RI/FS evaluated the conservatism associated with using filtered metals sample results in the risk assessment. Note: this reviewer's review of the referenced documents did not identify where this issue was addressed.
9. Page 3, Scope of the 200-ZP-1 Groundwater Operable Unit Decision: Due to this reviewer's concern regarding the adequacy of the COPC and COC lists, it is requested that the proposed plan identify if the accuracy of the contaminant concentrations were evaluated in consideration of the screen lengths of the groundwater monitoring wells. In particular, typically, groundwater monitoring well screen lengths are 15 feet in length. At the Hanford Site, screen lengths are typically much longer (30 feet). Considering the additional screen length and the Hanford Site's sampling methods (non-discrete-depth sampling), there is a valid concern that measured contaminant concentrations may be inaccurate (i.e., diluted). It is also requested that the proposed plan explain how the RI/FS evaluated the conservatism associated with use of long screen lengths. Note: this reviewer's review of the referenced documents did not identify where this issue was addressed.
10. Page 4, Summary of the Preferred Alternative: Alternative 2 is described as being recommended because it "uses a proven array of technologies". Although the technologies are "proven" does not mean they will achieve the stated remedial action goals. Furthermore, the proposed plan states: "The goal of the preferred alternative is to return the aquifer to its beneficial use, and the proposed cleanup levels for the 200-ZP-1 COCs have been identified accordingly." Due to the concerns regarding the COCs and the supporting document's failure to address concerns regarding the accuracy of measurement of groundwater contaminant concentrations, it is recommended that the text identify that this action will support the issuance of an interim ROD rather than a final ROD until such time that deficiencies associated with the basis are resolved.
11. Page 5, Groundwater extraction and treatment ("pump-and-treat") component": It is indicated that "following extraction, the groundwater COCs will be treated to achieve the cleanup levels (presented later in Table 4) and then returned to the aquifer through injection wells." Due to the COPC and COC concerns previously identified, it is requested that the text identify that the non-endangerment standard of WAC 173-218-080 will be met.
12. Page 5, Groundwater extraction and treatment ("pump-and-treat") component": The sentence beginning with "Except for nitrate" should be re-written to clearly indicate that nitrate concentrations re-injected back into the aquifer will satisfy the cleanup level as is described later on page 5.
13. Page 5, MNA component: Due to the insufficient characterization of the entire aquifer, the statement that the pump-and-treat remediation will capture all but 5% of the carbon tetrachloride's mass may not be accurate and is without a technical defensible basis. Therefore, until such time that adequate characterization of the entire unconfined, semi-confined, and confined aquifers beneath the operable unit is achieved, the proposed plan and supporting documents should not claim that all CCl_4 mass will be captured except 5%.
14. Page 5, MNA component: Because the vertical extent of groundwater (unconfined, semi-confined, and confined) contamination has not been characterized, the ROD should not be final. Similar to the 300-FF-5 groundwater operable unit that selected MNA as a remedy, the 200-ZP-1 operable unit ROD should not be final.

15. Page 5, Proposed Plan Organization: It is recommended that additional sections be added which address: 6) identification of all impacts to the hydrogeologic settings of RCRA groundwater monitoring networks, 7) description of RCRA and/or MTCA administrative actions made necessary as a result of the proposed CERCLA action (i.e., RCRA regulated unit groundwater monitoring network revisions, RCRA unit permit modifications to address changing groundwater conditions, RCRA/MTCA corrective action due to applicable standards not being addressed by the proposed CERCLA action, etc.), 8) status of the 5 year ROD review actions, and 9) identification of all "applicable" ARARs.
16. Page 6, Site Background: The text states: "Collectively, the four OUs and their RODs will define the necessary groundwater cleanup actions across the Central Plateau." It is recommended that the statement either insert "CERCLA" between the words "necessary" and "groundwater" or identify that because this proposed plan does not address RCRA/MTCA groundwater protection standards specifically applicable to RCRA TSD regulated units and certain solid waste management units, that RCRA permit conditions will be necessary to augment the CERCLA action to define and remediate the necessary groundwater cleanup actions associated with specific TSD and corrective action solid waste management units.
17. Page 6, Site Background: The text is silent about the role of waste management in contributing to groundwater contamination. Specifically, the tanks farms and cribs, ponds, lagoons, ditches, etc. were very likely more responsible for contaminating the 200-ZP-1 OU groundwater than the waste production facilities. If this proposed plan and eventual ROD (which should be interim) will not address contamination, remediation, and applicable requirements associated with land-based units (both TSDs and solid waste management units), the text should clearly identify that those units (which are more important to contributing to groundwater contamination than the waste production facilities) and the contamination from those units that contributed to the groundwater contamination are not being addressed by this proposed plan or eventual ROD (which should be interim) and will be addressed by RCRA/MTCA corrective actions via the RCRA Hanford Site permit.
18. Page 6, Site Background: It is recommended that this section identify RCRA TSD units within the source operable unit. Specifically, this section should describe the following TSD units: T Tank Farm, TX-TY Tank Farm, Low Level Waste Management Area (LLWMA) 3, and LLWMA 4.
19. Page 6, Site Background: It is recommended that this section describe the State Approved Land Disposal unit's association with this operable unit.
20. Page 6, Site Background: It is recommended that this section identify RCRA past practice and CERCLA past practice units which may have contributed to or are considered potential "contributors" to the groundwater contamination addressed by this proposed plan.
21. Page 6, Site Background: The text describes the administrative decision-making process which led to this proposed plan and which will eventually lead to the ROD. Due to the numerous deficiencies associated with the interim action(s) (pump-and-treat system that only addressed the surface of the unconfined aquifer and only the most concentrated portion of the plume), remedial investigation (inadequate characterization of: potential carbon tetrachloride contamination sources, potential carbon tetrachloride contamination occurring in the vadose zone, and unconfined aquifer, semi-confined aquifer, and confined aquifer within the operable unit), and feasibility study (data evaluation that did not address deficiencies associated with data [i.e., data evaluation is not adequately conservative]), it is recommended that the eventual ROD that will be issued remain an "interim" ROD.

22. Page 6, Site Background: The text describes the administrative decision-making process which led to this proposed plan and which will eventually lead to the ROD. Due to the numerous deficiencies associated with the interim action(s) (pump-and-treat system that only addressed the surface of the unconfined aquifer), remedial investigation (inadequate characterization of unconfined aquifer, semi-confined aquifer, and confined aquifer within the operable unit), and feasibility study (data evaluation that did not address deficiencies associated with data [i.e., data evaluation is not adequately conservative]), it is recommended that the text clearly identify criteria upon which a final ROD will be based. It is this reviewer's opinion that the defensibility of a final ROD based on this proposed is indefensible.
23. Page 6, Interim Actions: The text states: "This remediation system extracts groundwater downgradient from the former disposal sites where carbon tetrachloride contamination impacted the groundwater." Because all sources of carbon tetrachloride groundwater contamination may not have been identified (i.e., characterization associated with the 200-SW-1/2 operable unit and the 200-IS-1 operable unit are only in the initial phases), it is recommended that the word "identified" be inserted between the words "the" and "former" to read: "...downgradient from the identified former disposal sites where..."
24. Page 6, Interim Actions: It is requested that the description of the interim actions include an identification of the most recent estimates of carbon tetrachloride inventories (DOE/RL-2006-58) as between 570,000 and 920,000 kilograms of carbon tetrachloride discharged to 3 waste sites (216-Z-9, 216-Z-1A, and 216-Z-18).
25. Page 6, Interim Actions: It is requested that the description of the interim actions include an identification of source term carbon tetrachloride inventories (DOE/RL-2007-22) which estimate carbon tetrachloride in the unconfined aquifer. Specifically, dissolved carbon tetrachloride is estimated to be 55,900 to 64,500 kilograms with 44,500 to 51,400 kilograms sorbed to the aquifer sediments.
26. It is requested that the description of the interim actions include an identification of source term carbon tetrachloride inventories (DOE/RL-2007-22) which estimate 13,700 to 15,800 kilograms of carbon tetrachloride has degraded to chloroform below the water table.
27. Page 7, Interim Actions: The text states: "The interim 200-ZP-1 groundwater extraction and treatment system will therefore continue to operate until the final remedy is in place and is operational as a result of the decisions under this Proposed Plan." It is recommended that the text be re-written to indicate that the extraction and treatment system will continue to operate after the modification of the interim action (as described in this proposed plan) is in place and portions will be evaluated for shut-down if it is concluded that the soil extraction treatment system should not be expanded and/or would no longer be effective with expansion to augment the expanded groundwater pump-and-treat remediation. In the "Integration of Cleanup for Soil and Groundwater" section of this Proposed Plan, it is indicated that the 2 OUs are integrated. With statements of shutting down the existing pump-and-treat remedy without evaluating the effects associated with the soil remediation, it does not appear the two remediations are as integrated as suggested. In addition, there is concern that with the operation of the massive pump-and-treat system, additional unsaturated zone will be made available for treatment for which "focused" pump-and-treat (which currently is being performed) may be effective or may effectively augment the soil remediation. It is requested that the option to continue and/or expand the current pump-and-treat system be included in this proposed plan. From the description of the current pump-and-treat system included in the proposed plan, it can be concluded that the remediation has proven to be effective in removing 12 tons of carbon tetrachloride. Therefore, after the expanded groundwater pump-and-treat system is operational, at the very most, the "focused" pump-and-treat

system should be shut down only to perform a rebound study with the option to re-start and/or expand the "focused" system if determined necessary for or effective at removing carbon tetrachloride.

28. Page 7, after Interim Actions: After the Interim Actions section, it is recommended that an additional section be added which describes the most recent 5-year ROD review that have been performed. It is recommended that an excellent status of the 5-year review action items is provided in the annual groundwater monitoring report (DOE/RL-2008-01, Rev. 0).
29. Page 7, after Interim Actions: After the Interim Actions section, it is recommended that an additional section be added which describes the most recent 5-year ROD reviews that have been performed. It is recommended that the text clearly identify that a protectiveness determination for the pump-and-treat interim remedy was deferred until a "final remedy" was selected through this process. It is requested that the text clearly identify that insufficient information existed at the time to make the protectiveness determination for the pump-and-treat interim remedy and as such, the determination should have clearly been that there was insufficient information to make the protectiveness determination. Clearly, the purpose of the 5-year ROD reviews is to make such determinations, not to defer the determination. Such lack of determination can be concluded to represent a significant deficiency associated with the characterization information that would have allowed the determination of which the 5-year ROD review intended.
30. Page 7, after Interim Actions: After the Interim Actions section, it is recommended that an additional section be added which describes the most recent 5-year ROD reviews that have been performed. It is requested that the issue of there being less than adequate deep groundwater monitoring data downgradient of T Tank Farm to define the nature and extent of technetium-99 (tc-99) groundwater plume near T Tank Farm be clearly identified. It is also requested that the proposed plan identify that a data quality objective process and sampling plan was generated but that the nature and extend of the tc-99 has not been adequately characterized to support a final ROD.
31. Page 7, after Interim Actions: After the Interim Actions section, it is recommended that an additional section be added which describes the most recent 5-year ROD reviews that have been performed. It is requested that the issue of the recent expansion of the 200-ZP-1 extraction well network near the TX-TY Tank Farm may result in tc-99 contamination being pulled into the 200-ZP-1 treatment system. It is requested that the proposed plan clearly identify how the proposal addressed this issue.
32. Page 7, after Interim Actions: After the Interim Actions section, it is recommended that an additional section be added which describes the most recent 5-year ROD reviews that have been performed. It is requested that the issue of increased efficiency and effectiveness of the 200-ZP-1 extraction well 299-W15-47 be addressed in the interim prior to the proposed expansion of the pump-and-treat system.
33. Page 7, after Interim Actions: After the Interim Actions section, it is recommended that an additional section be added which describes the most recent 5-year ROD reviews that have been performed. It is requested that the issue of increasing the efficiency of the carbon tetrachloride remediation by increasing the use of the vapor extraction system. As the soil-vapor extraction system is in limited operation, expansion of the system would increase efficiency of the carbon tetrachloride remediation. It is understood that an evaluation of soil vapor extraction operations was conducted and it was agreed that the system could be expanded. It is also understood that additional wells will be added to the soil vapor extraction system.
34. Page 7, after Interim Actions: After the Interim Actions section, it is recommended that an additional section be added which describes the most recent 5-year ROD reviews that

have been performed. Clearly, if the proposed plan were to acknowledge the most recent 5-year ROD review's deferral of a protectiveness determination associated with the carbon tetrachloride remediation, it would be concluded that insufficient contamination characterization information has been collected, modifications to existing effective remediations (i.e., soil vapor extraction) to increase efficiency have not been adequately evaluated and/or implemented, and existing characterization information has not been adequately evaluated to allow a protectiveness determination. Until a protectiveness determination is made as prescribed by the 5-year ROD review, it is respectfully submitted that the proposed actions should not precede a final ROD.

35. Page 8, Integration of Cleanup for Soil and Groundwater. The text indicates a separate Proposed Plan will present the remediation alternatives for waste sites and soil in the 200-PW-1 OU. Until such time that all carbon tetrachloride sources occurring in concentrations requiring remediation are identified and characterized, it is recommended that the 200-ZP-1 OU action(s) be required through an interim ROD.
36. Page 8, Current Extent of Contamination: It is recommended that the title of the section be changed to: "Current Extent of Characterized Contamination". Due to the lack of adequate vertical groundwater contamination characterization through the unconfined, semi-confined, and confined aquifers, the title and text should not imply that carbon tetrachloride and other contaminants have been characterized.
37. Page 8, Current Extent of Characterized Contamination: The text states: "The 107 wells were selected because their well depths were the most representative of those depths to which groundwater supply wells might be drilled..." RCRA and MTCA cleanup levels do not focus on "portions" of the aquifer to be remediated. The text should identify how this satisfies applicable RCRA and MTCA corrective action requirements. It is this reviewer's opinion that such statements only support why the eventual ROD should be interim and not final.
38. Page 8, Current Extent of Characterized Contamination: The text states: "The 107 wells were selected because their well depths were the most representative of those depths to which groundwater supply wells might be drilled..." Considering concerns associated with contaminant dilution due to long-length screens, it is requested that the text explain how this approach may not be conservative. It is this reviewer's opinion that such statements only support why the eventual ROD should be interim and not final.
39. Page 8, Current Extent of Characterized Contamination: The text states: "To establish the 25th, 50th, and 90th percentile concentration values, 5 years (2001-2005) of groundwater data from 107 wells within the 200-ZP-1 OU were used." The proposed plan should identify if contaminant concentrations in those 107 chosen wells were higher than concentrations measured in 2001-2005. In other words, there is a concern of inadequate characterization and inadequate conservatism. For example, information attached to DOE/RL-2007-28, Rev. 0 indicates that tc-99 data from 10-20 meters, 30-40 meters, 40-50 meters, and >50 meters below the water table were used. It is requested that the proposed plan identify if this data set represents the highest concentrations of tc-99 measured to date (not just from 2001 – 2005). In addition, it is requested that the proposed plan identify if this data set represents "the most representative of those depths to which groundwater supply wells might be drilled". Again, due to the concern that characterization is inadequate and data interpretation/evaluation is not sufficiently conservative support why the eventual ROD should be interim and not final.
40. Page 8, Current Extent of Characterized Contamination: The text states: "To establish the 25th, 50th, and 90th percentile concentration values, 5 years (2001-2005) of groundwater data from 107 wells within the 200-ZP-1 OU were used." Information attached to DOE/RL-2007-28, Rev. 0 indicates that carbon tetrachloride data from 10-20 meters, 30-40 meters, 40-50 meters, and >50 meters below the water table were used. It

is requested that the proposed plan identify if this data set represents the highest concentrations of carbon tetrachloride measured to date (not just from 2001 – 2005). In addition, it is requested that the proposed plan identify if this data set represents "the most representative of those depths to which groundwater supply wells might be drilled". Again, due to the concern that characterization is inadequate and data interpretation/evaluation is not sufficiently conservative support why the eventual ROD should be interim and not final.

41. Page 8, Current Extent of Characterized Contamination: The text states: "To establish the 25th, 50th, and 90th percentile concentration values, 5 years (2001-2005) of groundwater data from 107 wells within the 200-ZP-1 OU were used." Information attached to DOE/RL-2007-28, Rev. 0 indicates that trichloroethylene data from 10-20 meters, 30-40 meters, 40-50 meters, and >50 meters below the water table were used. It is requested that the proposed plan identify if this data set represents the highest concentrations of trichloroethylene measured to date (not just from 2001 – 2005). In addition, it is requested that the proposed plan identify if this data set represents "the most representative of those depths to which groundwater supply wells might be drilled". Again, due to the concern that characterization is inadequate and data interpretation/evaluation is not sufficiently conservative support why the eventual ROD should be interim and not final.
42. Page 8, Current Extent of Characterized Contamination: The text states: "To establish the 25th, 50th, and 90th percentile concentration values, 5 years (2001-2005) of groundwater data from 107 wells within the 200-ZP-1 OU were used." Information attached to DOE/RL-2007-28, Rev. 0 indicates that data from the shallowest portion of the aquifer for iodine-129, methylene chloride, nitrate, tetrachloroethylene, tritium, uranium was used. It is requested that the proposed plan identify if this data set represents the highest concentrations of trichloroethylene measured to date (not just from 2001 – 2005). It is also requested that the proposed plan identify if vertical characterization for these contaminants exists. Lastly, it is requested that the proposed plan identify which depth is believed to be the most representative in which groundwater supply wells might be drilled. Again, due to the concern that characterization is inadequate and data interpretation/evaluation is not sufficiently conservative support why the eventual ROD should be interim and not final.
43. Page 8, Current Extent of Characterized Contamination: The text states: "To establish the 25th, 50th, and 90th percentile concentration values, 5 years (2001-2005) of groundwater data from 107 wells within the 200-ZP-1 OU were used." The text explains the 90th percentile value by: "The 90th percentile value is useful for aquifer settings where multiple groundwater contaminants are present in overlapping plumes and the highest concentrations have different locations within the plumes (such as occurs in the 200-ZP-1 OU)." It is respectfully submitted that the contamination plumes emanating from the T Tank Farm are not co-mingled with those emanating from the 216-A-8, 216-Z-1A, 216-Z-8, 216-Z-9, and 216-Z-10 units as implied. It is requested that the contaminants emanating from the T Tank Farm (which are different from those emanating from the 216-A-8, 216-Z-1A, 216-Z-8, 216-Z-9, and 216-Z-10 units), be evaluated at the 90th, 95th, and 99th percentile concentration values for a comparison of conservatism to the 200-ZP-1 "OU-wide" 90th percentile concentration values. Likewise, it is requested that the contaminants emanating from the TX-TY Tank Farm (which are different from those emanating from the 216-A-8, 216-Z-1A, 216-Z-8, 216-Z-9, and 216-Z-10 units), be evaluated at the 90th, 95th, and 99th percentile concentration values for a comparison of conservatism to the 200-ZP-1 "OU-wide" 90th percentile concentration values.

44. Page 8, Current Extent of Characterized Contamination: The text states: "To establish the 25th, 50th, and 90th percentile concentration values, 5 years (2001-2005) of groundwater data from 107 wells within the 200-ZP-1 OU were used." It is requested that all unit-specific (i.e., 216-A-8, 216-Z-1A, 216-Z-8, 216-Z-9, and 216-Z-10, T Tank Farm, TX-TY Tank Farm, etc.) data from 2001-2007 be evaluated to establish the 90th, 95th, and 99th percentile concentration values for the following contaminants: carbon tetrachloride, chloroform, chromium (total), hexavalent chromium, methylene chloride, nitrate, PCE, TCE, uranium, iodine-129, technetium-99, tritium, 1,2-dichloroethane, antimony, iron, fluoride, arsenic, manganese, methylene chloride, and radioisotopic daughter products (e.g. neptunium-237). Again, due to the concern that characterization is inadequate and data interpretation/evaluation is not sufficiently conservative support why the eventual ROD should be interim and not final.
45. Page 8, Current Extent of Characterized Contamination: The text states: "Based on EPA's use of the 90th percentile value in its regulatory compliance programs for drinking water, this value represents a reasonable approach for presenting the contamination levels in the aquifer and for purposes of evaluating the risks associated with exposure to the contamination." Considering concerns regarding well screen lengths, filtering of water for metals analysis, inadequate vertical aquifer characterization, etc. the use of the 90th percentile value may not represent a "reasonable approach for....evaluating the risks associated with exposure to the contamination." Until all such concerns are addressed the eventual ROD should be interim and not final.
46. Page 8, Current Extent of Characterized Contamination: The DOE/RL-2007, Rev. 0 document states: "The soil sites evaluated in this assessment include 216-A-8, 216-Z-1A, 216-Z-8, 216-Z-9, and 216-Z-10. These soil sites were identified in the *Remedial Investigation Report for the Plutonium/Organic-Rich Process Condensate/Process Waste Group Operable Unit: Includes the 200-PW-1, 200-PW-3, and 200-PW-6 Operable Units* (DOE/RL-2006-51) as representative or unique of the 17 individual waste sites in these three OUs. This risk assessment will be used to evaluate the need for remedial action in soil in these OUs and to evaluate the protectiveness of certain remedies for soil and groundwater based on current and potential future uses of the land. All the evaluated waste sites are located in the 200 West Area, with the exception of 216-A-8, which is located in the 200 East Area." It is respectfully submitted that the contaminants and contaminant concentrations emanating from the T and TX-TY Tank Farms are not the same as those emanating from the 216-A-8, 216-Z-1A, 216-Z-8, 216-Z-9, and 216-Z-10 units. Therefore, the risk assessment on which this proposed plan is based is inadequate and should not be used to support a final ROD.
47. Page 8, Current Extent of Characterized Contamination: The DOE/RL-2007, Rev. 0 document indicates the exposure and risk assessment results are based on evaluation of the following soil sites: 216-A-8, 216-Z-1A, 216-Z-8, 216-Z-9, and 216-Z-10. Such an evaluation does not address other units located above the groundwater operable unit. Exposure and risk assessment results from T and TX-TY Tank Farms could be significantly different from those obtained from evaluating the identified soil units. Therefore, until such time that exposure and risk assessment results are available from T and TX-TY Tank Farms, a final ROD should not be issued.
48. Page 9, Land Use and CERCLA Expectations for Groundwater Cleanup: The proposed plan identifies the requirement to "meet ARARs (or satisfy criteria for an ARAR to be waived)". Because "applicable" requirements are different from "relevant" or "appropriate" requirements, it is requested that all applicable requirements that will be met (i.e., not waived) during this action be clearly identified in this proposed plan. In addition, it is requested that the standard that will be met also be identified. The public deserves to know which regulations will be followed and which standards will be met.

For example, and because the nonendangerment injection standard is so important, the following applicable Underground Injection Control (UIC) regulations should be identified as being applicable with a nonendangerment injection standard to be met: WAC 173-218-040, -060, -070, -080, -090, and -120. The proposed plan should clearly identify all applicable regulations and all standards that will be met.

49. Figures 5 and 6 (page 11), Figure 8 (page 12), and Figure 9 (page 13): It is requested that all figures identify the depth below the water table that the contamination plume is being depicted.
50. Page 10, Figure 4: The depiction of the trichloroethylene groundwater contamination could easily indicate 2 different trichloroethylene plumes. It is requested that the basis for performing a risk assessment using 107 groundwater monitoring wells (some at different depths yielding different contaminant concentrations) within a "dispersed" plume (that may be the result of inadequate treatment and re-injection) and evaluating the 90th percentile concentration values be provided. Some of the contaminants being addressed by this action are very likely from different sources. It is requested that the proposed plan identify if this approach is consistent with MTCA cleanup requirements and the MTCA requirement to establish a point of compliance. In other words, it would appear that the outer perimeter depicted as < 5 µg/L concentration of trichloroethylene also would represent the point of compliance for this contaminant. As such, the inclusion of wells where the contaminant is not observed dilutes the average and allows the risk to be lower. In other words, by moving the point of compliance well beyond the plume's leading edge, the statistics dilute the risk. It is requested that the proposed plan explain the basis for what appears to be a far-field point of compliance that allows risk to be diluted.
51. Page 11, Figure 5: The depiction of the total chromium groundwater contamination could easily indicate 4-6 different plumes. It is requested that the basis for performing a risk assessment using 107 groundwater monitoring wells (some at different depths yielding different contaminant concentrations and some concentrations resulting from filtration prior to analysis) within a "dispersed" plume (that may be the result of inadequate treatment and re-injection or multiple unidentified and uncharacterized sources) and evaluating the 90th percentile concentration values be provided. Some of the contaminants being addressed by this action are very clearly from different sources (some of those sources which have not been evaluated by the supporting risk assessment [i.e., T and TX-TY Tank Farms]). It is requested that the proposed plan identify if this approach is consistent with MTCA cleanup requirements and the MTCA requirement to establish a point of compliance. In other words, it would appear that the outer perimeter depicted as 6-39 µg/L concentration of total chromium also would represent the point of compliance for this contaminant. As such, the inclusion of wells where the contaminant is not observed dilutes the average and allows the risk to be lower. In other words, by moving the point of compliance well beyond the plume's leading edge, the statistics dilute the risk. It is requested that the proposed plan explain the basis for what appears to be a far-field point of compliance that allows risk to be diluted.
52. Pages 10-13, Figures 3-9: It is requested that the MTCA point of compliance be shown on each figure. If the point of compliance is the outer boundary of the operable unit, it is also requested that an identification of the MTCA decision-making process for that point of compliance be included in the proposed plan. If the point of compliance is the outer boundary of the operable unit, it is also requested that an identification of the lack of conservatism associated with the risk assessment be included in the proposed plan.
53. Page 13, New Section: It is recommended that a new section be added to the proposed plan that describes how the RCRA TSD regulated units (located above this groundwater operable unit) will be affected by the proposed actions. In particular, each RCRA TSD

regulated unit groundwater monitoring network has a point of compliance (defined by WAC 173-303-645) and it is anticipated that the proposed pump-and-treat action will affect the owner/operator's ability to comply with RCRA groundwater protection standards. Specifically, it is requested that the proposed plan clearly identify the RCRA regulated units located above this groundwater operable unit (T Tank Farm, TX-TY Tank Farm, Low Level Waste Management Area (LLWMA) 3, and LLWMA 4) and clearly identify how the groundwater monitoring networks and programs will be affected. For example, if the proposed actions will actually change the direction of groundwater flow beneath a RCRA TSD regulated unit, the proposed plan should clearly identify this. Another example, if the proposed actions are anticipated to cause RCRA TSD regulated units to be non-compliant (i.e., groundwater direction change, dry wells, etc.) the proposed plan should clearly identify this. Another example, if the proposed actions are anticipated to cause RCRA TSD regulated units to be non-compliant, the proposed plan should clearly identify the administrative mechanism for these affected units to become compliant. Another example, if the proposed actions are anticipated to cause RCRA TSD regulated units to be non-compliant, the proposed plan should identify the responsible agency's approval with the anticipated state of non-compliance. Another example, if the proposed actions are anticipated to affect RCRA TSD regulated unit corrective action decisions (i.e., T Farm and TX-TY Farm), the proposed plan should clearly identify how groundwater protection standards of WAC 173-303-645 will be satisfied at the point of compliance for those RCRA units. Clearly, there are many unanswered questions as to how the proposed actions will affect RCRA regulated units and how the applicable groundwater protection standards of WAC 173-303-645 will be satisfied at the point of compliance for these regulated TSD units.

54. General Comment: Due to the provision of a too-short public review and comment period (30 days), this reviewer was unable to complete the review of this complex and technical proposed plan. While this reviewer fully supports the proposed remediation actions, as the above comments communicate in various ways, characterization is inadequate and data interpretation/evaluation is not sufficiently conservative. Therefore, considering the many deficiencies, omissions, and concerns identified above, the ROD that this proposed plan is intended to support should not be final.