



# Oregon

Kate Brown, Governor



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ENERGY

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October 31, 2016

Mike Cline  
U.S. Department of Energy  
Richland Operations Office  
PO Box 550, MSIN A5-11  
Richland, WA 99352

Dear Mr. Cline:

Oregon appreciates the opportunity to review and provide comments on the Hanford Site Fourth CERCLA Five-Year Review Report (DOE/RL-2016-01, Draft A, Rev.1). As you are aware based on previous correspondence we have shared with you, along with our meeting on September 14, 2016, Oregon has had strong concerns about how previous CERCLA Five-Year Reviews were conducted at Hanford.

Being downriver from Hanford, and potentially impacted from waste left in place, the CERCLA Five-Year Review is one of our best opportunities to assess whether cleanup and remedial actions, as well as decisions that rely on monitored natural attenuation, are indeed protective. That critical analysis has been lacking in previous Hanford Five-Year Reviews.

We are pleased to find that our review of this document demonstrates that many of our previous concerns have been addressed. In addition, we found the report format to be quite readable and informative and believe this document will become an important reference tool for those involved with the Hanford cleanup.

We disagree with five of the 25 protectiveness statements included in this review. These five are related to groundwater operable units. The comments below explain our reasons for our disagreement and provide other feedback as well. We hope you will consider these comments as you finalize this document.

If you have any questions or comments about our recommendations, please contact me at 503-378-4906 (or [ken.niles@oregon.gov](mailto:ken.niles@oregon.gov)).

Sincerely,

A handwritten signature in black ink, appearing to read "Ken Niles". The signature is fluid and cursive, with the first name "Ken" and last name "Niles" clearly distinguishable.

Ken Niles  
Assistant Director for Nuclear Safety

cc: Alex Smith, Washington Department of Ecology  
Dennis Faulk, U.S. Environmental Protection Agency  
Rod Skeen, Confederated Tribes of the Umatilla Indian Reservation  
Russell Jim, Yakama Indian Nation  
Gabriel Bohnee, Nez Perce Tribe  
Oregon Hanford Cleanup Board

## State of Oregon, Specific Comments on the Hanford Site Fourth CERCLA Five-Year Review Report (DOE/RL-2016-01, Draft A, Rev.1)

- It would be useful to include a brief Glossary that explains each of the five different categories of Protectiveness Statements available to use in a CERCLA Five-Year Review, and the rationale that is used to determine which is most appropriate. Page 1-11 lists the three questions that help determine the protectiveness statement, but more information would be useful for readers who are not aware of the different options available in terms of a protectiveness statement.
- On Page 1-4, under the heading “Public Notification,” DOE indicates they received no comments from a newspaper notice about plans to begin the current five-year review. Oregon did not see this notice and did not provide specific comments at that time. However, we had provided written comments on previous versions of the document and we had indicated to your predecessor on this project that we had strong opinions as to how previous versions were lacking. While accurate in terms of there being no response to the newspaper ad, the existing wording gives the impression that there was no external interest in this process and that is not the case. In addition, limiting public notice to a single newspaper ad has been repeatedly demonstrated to be ineffective.
- Pages 1-5, 1-7, 1-9 and 1-11 are marked “Official Use Only” (and “official” is misspelled). We can’t imagine that any part of this document should be Official Use Only and encourage that not to be the case.
- It would be appropriate to acknowledge someplace within this document that where waste is being left in place, these decisions result in prolonged natural resource injury and service losses at these locations.
- We agree with the “Protectiveness Deferred” statements for the 100-BC-1 and 100-BC-2 Source Operable Units, as a final Record of Decision is still needed for these units, though we believe that the interim remedies have been effective.
- While there has not yet been final action related to groundwater in the BC Area, we do note that DOE’s decision to have its cleanup contractor chase chromium in two locations near the C Reactor all the way to groundwater, had a significant positive impact.
- While generally in agreement with the “Protective” statements for the 100-FR-1, 100-FR-2, 100-IU-2 and 100-IU-6 Source Operable Units (OUs), we do note that in a letter to the U.S. Department of Energy on July 3, 2014, Oregon expressed concern with the choice of monitored natural attenuation and institutional controls for the 100-F Fuel Basin, 118-F-8:3. That waste site is estimated to take 264 years to reach cleanup levels. We do not believe that DOE can necessarily ensure protectiveness for that long of a

period of time. We had previously supported remove-treat-dispose for this waste site and believe that would allow for the remedial actions to be protective.

- We **disagree** with the protectiveness statement for the 100-FR-3 Groundwater OU – “Will Be Protective.” We believe a “Protectiveness Deferred” statement is more accurate at this time. In letters to the U.S. Department of Energy on March 20, 2013 and on July 3, 2014, we expressed our concern with DOE’s reliance solely on monitored natural attenuation (MNA) and institutional controls (ICs). We had instead favored a groundwater cleanup alternative which included active remediation through a pump-and-treat system. We also advocated for a relatively short section (300 meters) of Apatite Permeable Reactive Barrier to deal with the strontium plume, as monitoring data in at least one aquifer tube indicated some strontium was already reaching the Columbia River. Aside from these concerns, we believe it is premature to state the planned MNA and ICs “will be protective,” when performance monitoring for groundwater MNA had barely begun by the end of 2015. In addition, mobile long-lived contaminants in the deep vadose zone may eventually re-contaminate the groundwater and require additional protectiveness remedies
- We agree with the “Protectiveness Deferred” statements for the 100-DR-1, 100-DR-2, 100-HR-1 and 100-HR-2 Source OUs. In a letter to the U.S. Department of Energy on August 23, 2016, we expressed concerns about one waste site in the D Area, burial ground 118-D-3:1, which received operations waste from the DR Reactor and has the potential to contain spent nuclear fuel elements, as well as concentrations of nickel-63. We agree that further information is needed, including a risk evaluation, for these Operable Units.
- We agree with the “Protectiveness Deferred” statement for the 100-HR-3 Groundwater OU. We are pleased with DOE’s plans to increase pump-and-treat capacity in the area to include up to 80 new wells. Clearly additional information is necessary to determine if the planned remedial actions will be sufficient to be fully protective. We again note that DOE’s decision to have its cleanup contractor chase chromium in several locations in the D-DR Area all the way to groundwater, had a significant positive impact. However, mobile long-lived contaminants in the deep vadose zone may eventually re-contaminate the groundwater and require additional protectiveness remedies
- We agree with the “Protectiveness Deferred” statements for the 100-KR-1 and 100-KR-2 Source OUs. Clearly, extensive additional cleanup is necessary in the K Area.
- We **disagree** with the “Protectiveness Deferred” statement for the 100-KR-4 groundwater OU. We believe a “Not Protective” statement is more accurate at this time. This document notes mobile contaminants in the deep vadose zone in the K Area may require additional protectiveness remedies. The document notes (in the 100-KR-2 Source OU section):

- Elevated concentrations of cesium-137, strontium-90 and transuranic elements in late 2015 found near the KE reactor fuel storage basin;
  - Persistent contamination of strontium-90 beneath the fuel basin storage site and downgradient;
  - Persistent areas of elevated hexavalent chromium in groundwater, which DOE notes may indicate contributions from deep vadose zone contamination;
  - Persistent plumes of elevated carbon-14, tritium, and nitrate, which DOE notes may indicate deep vadose zone contamination as a continuing source of groundwater contamination.
- We agree with the “Protectiveness Deferred” statement for the 100-NR-1 Source OU as a final Record of Decision is still needed for this unit, though we believe that the interim remedies have been effective.
  - We **disagree** with the “Protectiveness Deferred” statement for the 100-NR-2 Groundwater OU. We believe a “Not Protective” statement would be more accurate at this time. The fact that the permeable reactive barrier has not been expanded as was planned, and consequently the plume has grown larger and its intersection with the shoreline has expanded, indicates that the remedies in place are not yet protective. In addition, mobile long-lived contaminants in the deep vadose zone may eventually re-contaminate the groundwater and require additional protectiveness remedies
  - We agree with the “Will Be Protective” statement for the 300-FF-1 and 300-FF-2 Source OUs.
  - We **disagree** with the “Will Be Protective” statement for the 300-FF-5 Groundwater OU. We believe a “Protectiveness Deferred” statement would be more accurate at this time. We have previously expressed concerns in writing about whether the polyphosphate solution will effectively capture uranium from the periodically rewetted zone. In a July 20, 2015 letter to DOE, we expressed support for a test to determine whether the technique will prove successful – but also noted that the ever-changing groundwater found under the 300 Area poses far stronger challenges than laboratory testing. Until this process can be proven to be effective over a wide area, we believe it is premature to claim “Will Be Protective.” In addition, mobile long-lived contaminants in the deep vadose zone may eventually re-contaminate the groundwater and require additional protectiveness remedies.
  - We agree with the “Protectiveness Deferred” statement for the 200-UP-1 Groundwater OU. DOE has just begun to make progress with groundwater treatment within this area, but additional work is necessary throughout the Central Plateau to more effectively tackle the groundwater contamination and vadose zone problems. The 200-UP-1 Groundwater OU will also require continued monitoring and significant well location adjustments to optimize extraction and address new plumes. In addition, mobile long-

lived contaminants in the deep vadose zone may eventually re-contaminate the groundwater and require additional protectiveness remedies

- We **disagree** with the “Protective” statement for the 200-ZP-1 Groundwater OU. Instead, we believe a “Protectiveness Deferred” statement is more accurate at this time. While remedial actions are in place and generally showing good results, mobile long-lived contaminants in the deep vadose zone may eventually re-contaminate the groundwater and require additional protectiveness remedies.
- We agree with the “Will Be Protective” statement for the 200-CU-1 Source OU.
- We agree with the “Protectiveness Deferred” statement for the 200-CW-3 OU.
- We agree with the “Will Be Protective” statement for the 200-DF-1 Source OU.
- We also agree that an evaluation of protectiveness is not possible for the 200-PW-1, 200-PW-3, 200-PW-6 and 200-CW-5 Source OU. Important decisions in terms of excavation are still to be decided in some cases, and additional characterization and sampling is necessary throughout these OUs.
- We did note some minor numbering errors and omissions:
  - In Table 2-27, the first entry for Sulfate references footnote “4” and there is no footnote “4” – they are all alphabetical
  - “D and D” should be added to the “terms” on page v
  - For the 100-FR Area and 600 Area Operable Units, page 2-11, there is no “background” section
  - For the 100-HR-3 Operable Unit, pages 2-42 through page 2-56, there is no section 6, “Issues/Corrective Actions During this Review Period”
  - There are numbering errors for several sub-sections:
    - on page 2-41, “Technical Assessments” is labeled 2.3.3.2.1 – which was used previously in this section. It should be 2.3.3.2.5, with subsequent sections on this page numbered ...6 and ...7.
    - on page 2-61, “Technical Assessments” is labeled 2.3.4.1.1 – which was used previously in this section. It should be 2.3.4.1.5, with subsequent sections on this and the next page numbered ...6 and ...7.
    - on page 2-87, “Technical Assessments” is labeled 2.3.5.1.1 – which was used previously in this section. It should be 2.3.5.1.5, with subsequent sections on this page numbered ...6 and ...7.