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STATE OF WASHINGTON  
DEPARTMENT OF ECOLOGY

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September 18, 2017

17-NWP-128

Mr. Doug S. Shoop, Manager  
Richland Operations Office  
United States Department of Energy  
PO Box 550, MSIN: H5-20  
Richland, Washington 99352

Mr. Ty Blackford, President and CEO  
CH2M Hill Plateau Remediation Company  
PO Box 1600, MSIN: A7-01  
Richland, Washington 99352

Re: Amended Administrative Order Docket Number 15419 formerly, 14156 – Corrective Action 2  
Submittal, Actions to Ensure Safe Storage of Waste in PUREX Storage Tunnels 1 and 2

Reference: See Page 2

Dear Mr. Shoop and Mr. Blackford:

The Department of Ecology (Ecology) received Letter 17-AMRP-0222, on August 1, 2017, from the United States Department of Energy, Richland Operations Office (Reference 1). This letter submitted to Ecology the draft report for corrective actions to ensure safe storage of waste in the Plutonium Uranium Extraction (PUREX) Plant Storage Tunnels 1 and 2, as required under Corrective Action 2 of the PUREX Administrative Order Amended Docket number 15419 (Order).

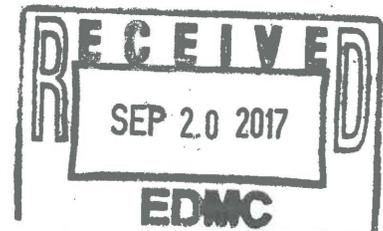
As stated in the Order, the draft report is subject to Ecology's review and approval. Our comments are enclosed in a Review Comment Record (RCR). Ecology will not approve this report until our comments have been resolved and a second public workshop is held.

Ecology looks forward to working with you on responses to our comments.

If there are any questions, please contact Stephanie Schleif, Facility Transition Project Manager, at [stephanie.schleif@ecy.wa.gov](mailto:stephanie.schleif@ecy.wa.gov) or (509) 372-7929, or Ron Skinnerland, Waste Management Section Manager, at [ron.skinnerland@ecy.wa.gov](mailto:ron.skinnerland@ecy.wa.gov) or (509) 372-7924.

Sincerely,

Alexandra K. Smith  
Program Manager  
Nuclear Waste Program



1558851

Mr. Shoop and Mr. Blackford  
September 18, 2017  
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Reference 1: Letter 17-AMRP-0222, dated August 1, 2017, "Administrative Order Number 14156 – Corrective Action 2 Submittal, Actions to Ensure Safe Storage of Waste in PUREX Storage Tunnels 1 and 2"

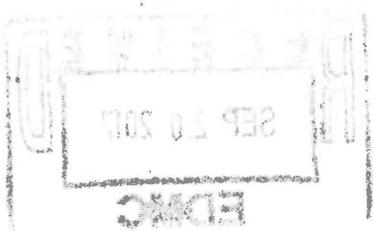
Reference 2: Letter CHPRC-03379 Draft A, dated August 2017, "Corrective Action to Ensure Safe Storage of Waste in The Plutonium Uranium Extraction Plant Storage Tunnels 1 and 2"

ss/jvs  
Enclosure

cc electronic:

Dave Bartus, EPA  
Laura Buelow, EPA  
Moses Jaraysi, CHPRC  
Jon Perry, MSA  
Rose Ferri, YN  
Ken Niles, ODOE  
Annette Carlson, Ecology  
Daniel Heuston, Ecology  
Edward Holbrook, Ecology  
Stephanie Schleif, Ecology  
Ron Skinnarland, Ecology  
Brigitte Weese, Ecology  
CHPRC Correspondence Control  
MSA Correspondence Control  
USDOE-RL Correspondence Control  
Environmental Portal  
Hanford Facility Operating Record

cc: Matt Johnson, CTUIR  
Jack Bell, NPT  
Rose Longoria, YN  
Susan Leckband, HAB  
**Administrative Record**  
NWP Central File



# Review Comment Record

## Washington State Department of Ecology Nuclear Waste Program

Date: August 1, 2017

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**Document Title(s)/Number(s)**

PUREX Order CA2: Corrective Actions to Ensure Safe Storage of the Waste in the Plutonium Uranium Extraction Plant Storage Tunnels 1 and 2 CHPRC-03379 Draft A

<b>Document Manager</b>	<b>Phone</b>	<b>Project Manager</b>	<b>Phone</b>	<b>Facility Site ID</b>	<b>Cleanup Site ID</b>
Brigitte Weese	(509) 372-7936	Stephanie Schleif	(509) 372-7929	CUG – 25, WA7890008967	

Item No.	Pg. # Sec. # Para./Sent.	Comment or Question	Modification Needed	Basis/Justification	USDOE Response	Ecology Response	Open/ Close	Reviewer Initials
1	General	The report recognizes that timeliness is an important factor in evaluating each of the options for assessing corrective actions for Tunnel 2; however, timeliness/schedule was not clearly evaluated as part of each Option.	Provide an evaluation of timeliness or a schedule for selection/installation of each of the options.					Team SS PG DH EH
2	Page iv Executive Summary Lines 3-9	Letter reference numbers missing.	Include the letter reference numbers for the Department of Energy (DOE) notification (May 31, 2017 / 17-AMRP-0180) and Ecology response (June 8, 2017 / 17-AMRP-0180) either initially or throughout the document.	Referencing the letters will identify what was actually said, rather than relying on DOE's summary of the notification and response.				EH
3	Page iv Lines 19-20 & throughout document	DOE identifies corrective actions needed to ensure safe waste storage in Tunnel 2 as response actions. Actions taken to structurally stabilize tunnel 2 will not be response actions but interim closure actions which will be detailed in the permit modification submitted to Ecology as part of Corrective Action 3. Response actions under the permit are actions taken in response to an emergency. PUREX Tunnel 2 has not had an emergency or implemented their contingency plan.	Revise the text "response action" for tunnel 2 to "interim closure actions."					SS

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4	Page iv Lines 20-26	DOE proposes a phased approach for evaluating corrective actions for Tunnel 2, starting with enhanced surveillance, followed up by convening a panel of the "Best and Brightest" to write a detailed alternative analysis for Tunnel 2. However, DOE does not provide corrective action(s) and associated timeline that ensures the safe storage of the waste in Tunnel 2. This is especially important due to the conclusions drawn in the engineering report which states there is a high probability of collapse for Tunnel 2.  Corrective Action 2 of the Order requires DOE to develop corrective actions needed to ensure safe storage of the waste. The proposed actions of surveillance and monitoring and the convening of a panel do not ensure the safe storage of the waste and do not meet Corrective Action 2 of the Order.  This comment is also in conjunction with Ecology letter 17-NWP-098 and DOE letter 17-AMRP-0240.	Provide to Ecology, corrective action(s) (to include the recommendation from the Best and Brightest Panel) and the associated timeline to ensure safe storage of waste in Tunnel 2 for comment and approval.	Permit Condition I.O, Corrective Action 2, Administrative Order				Team SS EH PG DH
5	Page iv Executive Summary Lines 29-31  Page 19 Table 11 Section Description  Page 21 Section 6.1 Lines 38-40  Page 22 Section 6.2 Lines 34-36	The tunnels should continue to be inspected daily. This interim closure (surveillance monitoring) needs to be included as part of the draft permit modification submitted to Ecology under corrective action 3.	Include enhanced surveillance frequency for Ecology's review in Table 11 to be consistent with Sections 6.1 and 6.2.	Permit Condition I.O				EH

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6	Page 1 Lines 24-26	The document states that "A 'Best and Brightest' panel will be convened to consider the tunnel design, operating history, and waste inventory to conduct an initial analysis of options and identify data needs".  Ecology would like to get clarification regarding what documents will be analyzed for waste inventory.	Provide waste inventory documents that will be used by the "Best and Brightest" panel.					BW
7	Page 4 Lines 1-2	The document states that "A mineral-surface roofing material was used to cover the exterior surface of the timbers before placement of approximately 2.4 m (8 ft) of soil overburden for protection of the structure and shielding for radioactivity from future waste inventory".  The engineering reports for Corrective Action 1 states that the average soil overburden was higher than the original design specifications of 8 feet. The Corrective Action #2 document should be updated to show this range of soil overburden depth.	Update the document to describe the current range of soil overburden on the tunnels.					BW
8	Page 7, Line 10	This sentence states Corrective Action 3 is due to Ecology on October 1. CA3 is due to Ecology on December 8.	Revise the due date to for corrective action 3 (December 8, 2017) to be consistent with the amended order.					SS
9	Page 9, Table 1-11	The tables evaluating the options for Tunnel 2 did not include a cost analysis/estimate for each option. This was a comment made from the public at the July public workshop for PUREX.	Provide a cost estimate for each option as committed to at the July PUREX Tunnel workshop.					SS

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10	Page 6 Lines 4-5 & 21-23  Table 9	Table 9 states that Option 9 (Grout Void Fill) will not preclude future remedial actions or closure decisions. Chapter 2.4 goes on to state that the equipment stored in the tunnels include "large vessels such as concentrators, dissolvers, heating and cooling coils, and ventilation system equipment..."  It is unclear from the report how the equipment will be partitioned and separated for final disposal at a predetermined facility. Is it feasible to make a cut in the grouted tunnel that contains a "whole" concentrator? Or would the concentrator need to be cut into pieces for final disposal? If it will be cut into pieces, how does the contractor plan to deal with cutting through hazardous/dangerous waste constituents like mercury, cadmium, silver, barium, and lead?	Revise Corrective Action 2 to provide detail on removal of waste/equipment after grout void fill operations for both tunnel 1 and 2.					BW
11	Page 6 Section 2.3 Lines 11-15	Ecology agrees that PUREX storage tunnels 1 and 2 are part of 200-CP-1; however the tunnels are not clearly identified as waste sites in Appendix C of the Hanford Federal Facility Agreement and Consent Order (Tri-Party Agreement).	Provide the reference to the location of the tunnels as part of 200-CP-1 or submit a draft change package to Ecology for inclusion of the tunnels to this soil operable unit.	Tri-Party Agreement Action Plan, Appendix C				EH SS
12	Page 7 Section 3 Lines 5-6	The 15-day report received with DOE letter, 17-AMRP-0174 on May 23, 2017, stated:  "(iv) Name and quantity of material(s) involved: There was no known release during the incident. The contingency plan was implemented as a precaution early in the event before the incident could be evaluated."  DOE-RL and CHPRC have not provided the name and quantity of materials involved. DOE-RL and CHPRC should identify the mixed waste stored in PUREX Tunnel 1, which was involved in the partial tunnel collapse.	While the Waste Analysis Plant Tables 3.1 and 3.1 continued identify the waste/equipment/rail cars in each of the tunnels, it does not provide the name (e.g., cadmium, chromium, etc.) and quantity of material involved in the collapse. Provide this information in the report.	Part III PUREX Storage Tunnels (Operating Unit Group 2), Addenda J WAC 173-303-360(2)(k)(iv)				EH
13	Page 10 Table 2	Table 2 states that an HDPE cover thickness can range from 40 to 120 mil and that a temporary protective cover was installed on Tunnel 1. What was the thickness of the cover on Tunnel 1?	Provide clarification on the thickness of the cover selected for tunnel 1.					BW

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14	Page 12 Table 4 Section Disadvantages	Why is there no mention of the manufacturing / construction time for this option, versus Option 3?  Is Option 4 construction schedule an advantage or a disadvantage?	Revise Table 4 to include the construction schedule as an advantage or disadvantage, including the schedule for manufacturing / construction. See also comment 1.					EH
15	Page 14 Table 6 Section Disadvantages	Will cured foam exceed thresholds for combustibles under the international fire code?	Provide clarification to this comment in Table 6 of the document.					EH
16	Page 14 Table 6 Section Disadvantages	Characterization of the mixed waste stored in the PUREX Storage Tunnels was completed for the waste in the tunnels and is included in Table 3.1 of the Waste Analysis Plan.	Clarify if there are any chemical compatibility issues between the foam material and the waste in tunnel to include flammable and/or toxic off-gas generation. Results should indicate whether this option is an advantage or disadvantage.	Permit Condition II.D				EH
17	Page 17 Table 9	Under Advantages, Table 9 states that Option 9 (grout void fill) does not preclude future remedial actions or closure decisions. What is the estimated time frame of the future remedial action, for example cutting up the grouted tunnel for final disposition?	Provide an estimated time frame for final disposition.					BW
18	Page 17 Table 9	How will the grouting of the tunnel be monitored? Will there be use of cameras, ground penetrating radar, or other techniques to ensure that the grout is flowing and laying in lifts as it is planned?	Provide additional detail on grouting of both tunnels, including electronic and manual monitoring.					BW
19	Page 17 Table 9	It is not clear whether the equipment/waste is tied down to its' corresponding railcar. If the waste is not tied down, will this create a challenge for ensuring that the equipment/waste will stay in place while the grout is poured in lifts?	Provide additional detail on buoyancy of rail cars during grouting.					BW

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20	Page 22 Lines 26-29  Page 23 Line 7	The document states that "Selection and installation of digital imaging systems such as Light Detection and Ranging (LiDAR), global positioning system (GPS), or high-definition surveying (HDS) laser technologies will provide highly accurate digital imaging that can detect minor changes in the tunnel surface over time". Will all three of the digital imaging systems be used? When will the decision and implementation of the digital imaging systems occur? What will be the response if a minor change in the tunnel is found?	Provide additional detail on selection of digital imaging systems.					BW