



# Oregon

Theodore R. Kulongoski, Governor



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**EDMC**

Mathew S. McCormick  
United States Department of Energy  
Richland Operations Office  
P.O. Box 550, Mail Stop A5-11  
Richland, WA 99352

Subject: Review of Proposed Plan for Remediation of the 221 U-Facility (Canyon Disposal Initiative) Revision 0, public release; and Final Feasibility Study for the Canyon Disposal Initiative (221-U Facility) Revision 1, public release.

Dear Mr. McCormick:

Oregon appreciates the opportunity to review the plans for the 221-U Canyon. We previously submitted preliminary comments to Kevin Leary on November 1, 2004. We have incorporated many of those previous comments into this comment document. We refer you to that correspondence for specific comments on each of the waste sites in the U area and for additional comments.

We fully anticipate that many actions taken at U Plant will set precedent for disposition of the remaining canyon facilities. There are considerable differences between the canyons in terms of the condition of the facilities and the hazards they contain. We appreciate the U.S. Department of Energy (DOE) acknowledging that these differences must be considered and addressed for each individual canyon and their surrounding waste sites.

One action we would like to see from the process so far is the elimination of alternatives 3 and 4 from consideration for the remaining canyon facilities. Since the analysis indicates that alternatives 3 and 4 are inappropriate for 221-U – the least contaminated of the canyons – it seems prudent to save time and expense by not considering these options any further for more contaminated canyon facilities.

We support the preferred alternative 6 for U Canyon. It may not be appropriate for the more contaminated canyons.

### **Irreversible and Irretrievable Commitment of Resources**

We support including NEPA values in CERCLA documents to the degree it is appropriate. Under CERCLA, it is appropriate to weigh and consider the irretrievable and irreversible consumptive use of resources for an action. It is not however, in our view, acceptable to incorporate claims for harms that have already occurred. We believe it would be appropriate to include a claim for irreversibly and irretrievably committing land to use as a disposal facility under an Environmental Impact Statement, outside of a CERCLA action. We believe it is neither appropriate nor allowable to make such a claim as a part of a CERCLA action, as doing so forecloses on the Natural Resource Injury provisions of CERCLA.

### **Preference for Removal-Treatment-and-Disposal**

We previously reviewed and commented on several U area waste site remedial plans and refer you to our November 1, 2004 letter and other comments for specific waste site recommendations. In general, those previous analyses of alternatives showed that in most cases the "remove, treat and dispose" (RTD) alternative met remedial action objectives and was the least expensive alternative. We generally recommended that capped areas be kept as small as possible to minimize costs, borrow and fill materials consumed, and area permanently committed to non-use.

We recently received Fluor Hanford's proposal for capping of waste sites on the central plateau. We are struck by the immense areas that are proposed for capping, and by the immense need for fill materials to produce the caps. These actions will lead to large-scale changes to the Hanford landscape both at the waste sites and at borrow sites. Oregon is mindful that these borrow sites will also be damaged and require restoration. We believe that this injury, and necessary mitigation actions, must be assessed in this decision making process to reach the best overall decision.

### **Industrial Cleanup Standards**

The industrial cleanup standard under CERCLA is predicated on the idea that the area that is being cleaned up will be used for industrial purposes. This continued use of the land serves in part as an institutional control with continued human presence and activity. Re-industrialization of the central plateau has been proposed at Hanford to assure just such a presence.

However, in reviewing the 221-U proposal, we are struck that the cap design(s) being considered preclude precisely this use. The caps are too thin to allow industry to build on them. We wonder what industry DOE expects would use this land, and how it could be used by industry without damaging the caps. If industry cannot or will not use this land, how then is an industrial cleanup standard appropriate?

### **Groundwater**

The documents refer to groundwater use being restricted for 150 years. We do not agree this is reasonable. Groundwater restrictions are only reasonable during active onsite presence, or

for 50 years as was written in the Record of Decision for the Solid Waste Environmental Impact Statement. Thereafter, no institutional control should be presumed to be effective, and groundwater use should be unrestricted. The lost use of the groundwater, along with the other environmental injuries, should be assessed early to provide decision makers a reasonable estimate of the damages that each alternative represents to better allow for selection of the best alternative.

### **Cap Design**

Implementation of the CDI will leave long-lived radionuclides entombed in the shallow subsurface. We recommend that additional analysis for cap or cover failure phenomena be conducted and included in the Remedial Design document(s). We are concerned about wind erosion removing cap material from the leading edge of the cap and depositing it on the lee side of the cap. Material removal from the leading edge may accelerate leaching of contaminants into the environment and render the cap ineffective. Deposition of cap or other material on the lee edge of the cover may create a moisture trap that provides storage for moisture that will compromise cap performance, or provide an environment conducive to deeply rooted vegetation that could remobilize contaminants. Monitoring for these conditions should be incorporated into the design and operations plans to be developed.

We are also concerned about lateral movement of water and moisture beneath the cap. Work at the Vadose Zone Observatory, as well as studies and reports from numerous historical documents make it clear that water and waste move laterally in the Hanford soils until there is either sufficient addition of water to overcome the soil features causing lateral movement, or until vertical features like clastic dikes are reached. This phenomenon is clearly associated with how Hanford soils were deposited.

We encourage DOE to incorporate vertical cutoff barriers keyed to the cap(s) in the subsurface to prevent lateral intrusion. The costs of these lateral barriers is small in comparison to the project costs and in comparison to the potential impacts of failing to include them.

The cap/barrier design needs to carefully assess runoff/discharge control from the cap/barrier during both expected conditions and extreme storm conditions – especially for caps that would be adjacent to other caps.

Additionally, the cap/barrier design should be such that it allows for redevelopment of native shrub steppe habitat, including sagebrush. If this is not possible, feasible, or cost effective, offsetting habitat restoration and development actions will be required to replace the lost habitat areas.

### **Modeling**

We recommend additional efforts be made to determine how uncertainty may be propagating through the various conceptual and numerical models employed in the decision making process. We are concerned that small changes in design features could dramatically

change cap performance over the thousands of years of protectiveness required. We remain concerned that there is a fundamental gap in the technical understanding of the subsurface fate and transport of both water and contaminants. Therefore, we request analysis be conducted that verifies minimum performance standards that must be met to meet risk profiles based on the multiple contaminants that will be entombed within the final structure for thousands of years.

### **Monitoring**

The proposed caps and barriers – though similar to other barriers used elsewhere – are new and unproven. Monitoring will be necessary to validate the cap and barrier performance.

We recommend that monitoring of subsurface moisture conditions, such as humidity, may provide early information about contaminant mobilization and transport. Accordingly, we recommend inclusion of development and use of performance monitoring and triggering actions in the remedial design document. These triggers should specify the actions that will be required if the trigger levels are exceeded.

Additionally, the history of caps and barriers is quite short. Historically, barriers have been observed to fail in the near term. The proposed barriers should not be presumed to be effective for much more than 50 years without extensive performance monitoring, and without contingency plans in place for what to do if and when the barriers are seen to fail.

### **Technical Issues**

Table 1 in the proposed plan details the representative risks from facility contaminants. It appears that a number of contaminants that should have been included are missing, including: carbon-14, tritium, nitrite, nitrate, sulfate, total petroleum hydrocarbons, hexavalent chromium (separate from total chromium), polycyclic aromatic hydrocarbons, phthalates, polychlorinated biphenyls and possibly others.

Table 2 in the proposed plan (as compared to Table 3.3 in the Feasibility Study) appears to be missing preliminary remediation goals for thorium 228, 230 and 232, plutonium 238, 239/240, strontium 90, technetium 99 and uranium isotopes.

The Feasibility Study relies heavily on the RESRAD model to establish the preliminary remediation goals. The RESRAD model in turn relies on gross assumptions about the behavior of water and waste in the subsurface, and upon model parameters to assess the relative mobility of various contaminants.

The modeling concerns raise substantial uncertainty in the protectiveness assigned to the alternatives that leave waste in place. Additional work and analysis in the field is needed to resolve the vadose zone transport and other issues before deciding on any alternative that leaves waste in place.

The alternative(s) selected should ensure the complete removal, treatment and proper disposal of the canyon exhaust filters and the sizeable inventory of radioactive cesium and strontium they contain.

If you have any questions, please contact Dirk Dunning at (503) 378-3187 or myself at (503) 378-4906.

Sincerely,

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

Ken Niles  
Assistant Director

Cc: Nick Ceto, U.S. Environmental Protection Agency, Region 10  
Mike Wilson, Washington Department of Ecology  
Stuart Harris, Confederated Tribes of the Umatilla Indian Reservation  
Gabriel Bohnee, Nez Perce Tribe  
Russell Jim, Yakama Indian Nation