



# Oregon

John A. Kitzhaber, M.D., Governor



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July 3, 2014

Kim Ballinger  
U.S. Department of Energy  
Richland Operations Office  
P.O. Box 550, A7-75  
Richland, Washington 99352

Dear Ms. Ballinger:

Thank you for the opportunity to provide comments on the *Remedial Investigation/Feasibility Study and Proposed Plan for the 100-FR-1, 100-FR-2, 100-FR-3, 100-IU-2 and 100-IU-6 Operable Units*, (DOE/RL-2012-41, Rev. 0). While Oregon supports the decision to proceed with remediation of the 100-F/IU River Corridor area, we reiterate that we disagree, as we did in commenting on the Draft A version of the Proposed Plan, with the choice of Groundwater Alternative GW-2 which relies solely on monitored natural attenuation (MNA) and institutional controls (ICs). Oregon prefers Groundwater Alternative GW-4, which, according to the Balancing Criteria discussion in the Proposed Plan “provides the highest reduction of toxicity, mobility or volume through treatment.” More importantly, the GW-4 alternative was deemed better in the Balancing Criteria due to the fact that “Groundwater extraction and injection wells are also used to contain the plumes, preventing their migration into other uncontaminated areas.” Clearly, since the GW-4 alternative addresses both the northern and southern parts of the plume, it provides the most protectiveness of any of the alternatives. The faster, more complete remedy achieved by implementation of Alternative 4 would minimize DOE’s potential liabilities under the Natural Resource Damage Assessment provisions of CERCLA.

One deficiency in all of the considered alternatives is the choice to take no active measures to remediate the strontium 90 plume. Instead, the preferred alternative is 150 years of MNA. While modeling has shown that the strontium will decay before reaching the river, monitoring data in at least one aquifer tube contradicts that conclusion. Rising strontium levels in aquifer tube C6306 indicates that the plume is moving toward the river. The 100-F strontium 90 groundwater plume immediately adjacent to the river should be addressed with a relatively short section (300 meters) of Apatite Permeable Reactive Barrier, which was tested and proven effective at 100-N Area.

We also reiterate that MNA should not be considered effective short-term treatment for groundwater, as was done in the Balancing Criteria Analysis, and that MNA should certainly not be ranked equal to the pump-and-treat alternatives (GW-3 and GW-4) that actually remove

contaminants from the groundwater. The pump-and-treat alternatives clearly demonstrate a greatly improved short-term treatment by the reduction in time needed to reach cleanup levels for chromium<sup>6</sup> (10 years for GW-4, versus 35 years for MNA) and nitrate (25 years for GW-4, versus 80 for MNA).

There are 16 waste sites with deep vadose zone contamination (Table 2, Proposed Plan) containing levels of cesium, cobalt, europium-152 and -154, nickel 63 and strontium-90 contamination considered dangerous to human health. While MNA and ICs are likely protective for the 20 to 108 years for 15 of the waste sites to reach cleanup levels, that is not the case with contaminated soil beneath the 100-F Fuel Basin, 118-F-8:3. For that waste site, it is estimated to take 264 years to reach cleanup levels. We recommend remove-treat-dispose for this waste site to reduce the overall projected time needed for protective ICs.

We believe incorporating these recommendations in the 100-F/IU Areas would result in a clean-up approach that would be most reasonably protective of human health and the Columbia River.

If you have any questions or comments about our recommendations, please contact Dale Engstrom of my staff at 503-378-5584 (or [dale.engstrom@odoe.state.or.us](mailto:dale.engstrom@odoe.state.or.us)).

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  
Administrator, Nuclear Safety Division

cc: Dennis Faulk, U.S. Environmental Protection Agency  
Jane Hedges, Washington Department of Ecology  
Stuart Harris, Confederated Tribes of the Umatilla Indian Reservation  
Russell Jim, Yakama Indian Nation  
Gabriel Bohnee, Nez Perce Tribe