

# HANFORD ADVISORY BOARD

A Site Specific Advisory Board, Chartered under the Federal Advisory Committee Act

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US Dept of Energy  
US Environmental  
Protection Agency  
Washington State  
Dept of Ecology

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## EnviroIssues

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June 5, 2014

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Jane Hedges, Manager  
Washington State Department of Ecology  
3100 Port of Benton Blvd.  
Richland, WA 99354

Re: 100 D/H RI/FS, Draft A

Dear Messrs. Shoop, Faulk and Ms. Hedges,

## **Background**

A Remedial Investigation/Feasibility Study (RI/FS) has been completed for the 100-DR-1, 100-DR-2, 100-HR-1, 100-HR-2, and 100-HR-3 Operable Units (DOE/RL-2010-95; 100-D/H RI/FS) and a Proposed Plan was prepared which highlights key information about the cleanup alternatives considered and the preferred alternative proposed for remediation.

As of December 2012, 343 sites or locations where waste was potentially disposed during past operations were identified in the 100-D/H Area. The U.S. Department of Energy (DOE) -Richland Operations Office (RL) reviewed the relevant operational histories and conducted field investigations as necessary to determine the status of each site. These reviews and investigations revealed that 52 of the 343 locations did not have contamination requiring further evaluation under the Comprehensive Environmental Response, Compensation, and Liability Act, which leaves a total of 291 waste sites for evaluation. The waste sites include storage tanks, ponds, trenches, cribs, French drains, solid waste burial grounds, retention basins, pipelines, and spills/leaks. The RI/FS Report concluded that without remedial action, contaminants in waste sites and groundwater would present an unacceptable level of risk to human health and the environment.

The Hanford Advisory Board (Board) supports a decision to proceed with remediation of the 100-D/H River Corridor areas, and is generally supportive of DOE's alternative analysis for the 100-D/H Areas. The Board agrees with the choice of Alternative 3 which includes removal, treatment and

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disposal (RTD) of chromium contamination in 11 waste sites, grout filling of five water pipes, and enhancing the pump-and-treatment remediation of groundwater with 82 new wells. While noting that Alternatives 2, 3, and 4 do not meet the 2020 Tri-Party Agreement cleanup milestones (M16-110-T02, 100-D/H), Alternative 3 represents a decreased time frame for cleanup of chromium groundwater contamination (12 years), and of the nitrate plume (6 years).

The parts of the groundwater problem missing from the alternatives analysis are the co-extracted contaminants of concern and contaminants of potential concern (COPC). A number of metals and other elements are COPCs that have been detected above the 90th percentile Hanford Site background level, risk-based maximum levels, or maximum contaminant levels (MCLs). However, the pump-and-treat alternatives all appear to be solely aimed at chromium reduction.

The Proposed Plan pump-and-treat alternatives should clearly identify consideration for removal and treatment of the co-extracted non-chromium contaminants before reinjection.

The Board restates its position to use treatment of the co-extracted non-chromium contaminants instead of dilution. The Board has always believed that retrieval, treatment, and disposal methods are the preferred remediation approach (Board Advice #197).

Perhaps the most important deficiency in this alternative is the decision not to remediate the Strontium-90 plume. Given that strontium was reported to be above the Drinking Water Standard in 38 percent of detected unfiltered groundwater samples in the 100-H Area, the Board urges the Tri-Party agencies to consider a more aggressive approach for strontium. Using 44 years of recirculating pump-and-treat groundwater and monitored natural attenuation (MNA) does not seem a prudent approach. Also, there is no provisional fall-back remediation plan for strontium if MNA is found not to work.

Because the 100-H strontium-90 ground water plume occurs immediately adjacent to the river, it should be addressed. The Tri-Party agencies should work with affected tribes to resolve concerns over restoring access to treaty and culturally significant areas due to installation of barrier. The Board recommends that Permeable Reactive Barrier (PRB) technology already proven effective at 100-N Area be employed to capture the strontium and protect the Columbia River. A PRB established at the down-gradient end of the 100-H strontium plume to capture strontium would prevent it from entering the river.

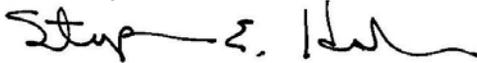
There are at least seven waste sites listed in deep decision units (in the vadose zone fifteen feet below ground surface) with isotope concentrations that exceed risk levels requiring remediation if the materials are brought to the surface. The isotopes within these waste sites are predicted to take more than 100 years to decay to activity levels that are less than residential Screening Levels (spans of time that range from 112-190 years).

### **Advice**

- Of the alternatives provided in the Proposed Plan, the Board supports Alternative 3, if the following remedial actions are added:

- Include analysis, removal and treatment of all contaminants of concern, including chromium, that exceed drinking water standards before re-injection.
- Install a PRB at the down-gradient end of the 100-H strontium plume that is appropriately sized to capture Strontium-90 contamination from the groundwater and prevent it from entering the river.
- The Board continues to advise RTD as the preferred approach. The Board believes that Institutional Control periods that equal or exceed 100 years defy the reasonable ability to maintain the surveillance that will be necessary to keep intruders and other people from harm. The Board advises the Tri-Party agencies to remove, treat and dispose contaminants at the seven deep decision unit waste sites.
- The Board advises the Tri-Party agencies to request a full review of the 100-D/H RI/FS and Proposed Plan by the National Remedy Review Board rather than seeking an exemption.

Sincerely,



Steve Hudson, Chair  
Hanford Advisory Board

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*This advice represents Board consensus for this specific topic. It should not be taken out of context to extrapolate Board agreement on other subject matters.*

cc: Kevin Smith, Manager, U.S. Department of Energy, Office of River Protection  
Jeff Frey, Deputy Designated Official, U.S. Department of Energy Richland  
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