



Department of Energy
Richland Operations Office
P.O. Box 550
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AUG 03 2012

12-HAB-0029

Ms. S. L. Leckband, Chair
Hanford Advisory Board
Enviroissues Hanford Project Office
713 Jadwin, Suite 4
Richland, Washington 99352

Dear Ms. Leckband:

HANFORD ADVISORY BOARD (HAB) JUNE 8, 2012, CONSENSUS ADVICE #257,
"300 AREA RI/FS AND PROPOSED PLAN"

Thank you for advice #257 on the 300 Area Remedial Investigation/Feasibility Study (RI/FS) and Proposed Plan (enclosure). The U.S. Department of Energy (DOE) appreciates the opportunity to discuss these draft documents with the River and Plateau committee members and hear their issues and suggestions. We recognize the time HAB members dedicated to reviewing and providing advice on these large complex documents.

Below are the responses to the points in your advice:

Advice Point #1: The Board advises the TPA agencies to modify the milestone schedule for the 300 Area RI/FS decision to proceed with poly-phosphate sequestration as an Interim Remedial Measure/ Expedited Response Action, until such time that this phosphate sequestration or some other technology can be tested and proven to be effective before proceeding to writing the final ROD and Proposed Plan.

Response: DOE committed to submitting a proposed plan supporting a record of decision for the 300 Area (M-015-72-T01, December 2011) in support of Tri-Party Agreement (TPA) Milestone M-015-00D to complete the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) RI/FS process for the 100/300 Areas by December 2012. DOE recognizes there are significant technical challenges in the development and implementation of a strategy to protect and restore the aquifer impacted by the residual uranium, primarily residing in the periodically rewetted zone (PRZ). A "phased approach" for implementation, consistent with the Office of Solid Waste and Emergency Response Guidance (EPA 540-R-98-031) is proposed to address these uncertainties and determine whether the technology is viable at a field scale application.

Advice Point #2: In the event the poly-phosphate sequestration technology testing is shown to be unsuccessful, the Board does not support monitored natural attenuation (MNA) as a solution. The Board advises the TPA agencies to consider the HAB's longstanding commitment to RTD values, especially to remove contaminants from near the river, when the next alternative selection is being made.

Response: DOE finds it difficult to support a decision to remove the residual uranium from the 300 Area that occurs in the deep vadose zone and the PRZ. The National Contingency Plan provides guidance for meeting or waiving “applicable or relevant and appropriate requirements” (300.430(f)(1)(ii)(C)(2)) in cases where compliance with requirements will result in greater risk to human health and the environment than other alternatives. In the past, the HAB also endorsed the concept of “do no harm.” Remove, Treat, and Dispose (RTD) is simply not realistic considering the harm caused from the large volume of soil that needs to be removed, the unintended consequences of additional uranium release to the river and the volume of backfill that would be required for reclamation. The feasibility study evaluation determined that sequestration of uranium in-situ with phosphates is the only potentially viable active remediation technology. Through interim actions 281,000 cubic yards of uranium-contaminated soils have been excavated from the liquid waste disposal facilities, costing approximately \$25,000,000. An additional investment of approximately \$72,000,000 will be expended to excavate and remove the pipelines that carried the uranium-bearing waste water to these facilities. Large-scale excavation-based technologies that would be utilized for removing the residual uranium from the 300 Area will have adverse unintended consequences, potentially releasing more uranium to the river than the no action alternative. To be effective, the remedial alternative must focus on uranium in the PRZ. Excavation technologies require dust control. Dust control will release uranium to the underlying groundwater as evidenced in the excavation of the 618-7 Burial Ground where a significant new uranium plume was created by excavation-based remediation. The scope of excavation is enormous and the cost prohibitive, in excess of \$1,000,000,000. In-Situ sequestration meets CERCLA goals of treating the waste and is a “green technology” compared to RTD technologies. Excavation and subsequent backfill of the uranium source in the vadose zone and PRZ is estimated to be 11,000,000 cubic yards of soil to be removed requiring approximately 53,000,000 miles of truck haulage, will burn 28,432,000 gallons of diesel fuel, and generate 367,000 tons of CO₂ and 3,000 tons of NO_x.

Advice Point #3: The Board advises the TPA agencies to develop future RI/FS documents that adequately reflect a comprehensive risk assessment (following the CERCLA process) and that address cleanup levels based on Model Toxics Control Act (MTCA) Method B, or Safe Drinking Water Act maximum contaminant levels. The Board advises the TPA agencies that cleanup plans should be developed assuming reasonably foreseeable future scenario exposures for people other than industrial workers and on contaminants of concern to which people, flora, and fauna are or may be exposed because of contact with Hanford groundwater and riparian habitat.

Response: DOE completed risk assessments in accordance with CERCLA. The Model Toxics Control Act is appropriately considered in the CERCLA Applicable or Relevant and Appropriate Requirements selection process. Only a small portion of the 300 Area, the currently heavily industrialized core zone and 618-11, are proposed to have cleanup levels protective of industrial uses. The majority of the 300 Area will reflect cleanup levels consistent with the 100 Area.

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Advice Point #4: The Board advises the TPA agencies to finalize RI/FS documents, including all supporting documents, prior to the development of any Proposed Plan.

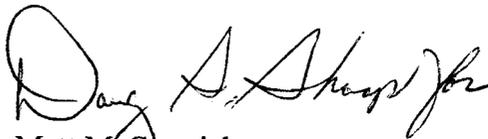
Response: Relative to the 300 Area documents, the supporting documents for the 300 Area proposed plan and RI/FS report are final except for the Columbia River Component Human Health Risk Assessment, which should be final prior to signing the 300 Area Proposed Plan. The documents are completed in accordance with approval procedures under the TPA.

Advice Point #5: The Board advises the TPA agencies to work to present RI/FS and supporting document information, including the data and details which support decisions, in a manner that is easy to read, concise, transparent, and readily accessible within the decision document.

Response: The proposed plan and supporting RI/FS report are written in compliance with applicable guidance. The size and complexity of the documents are commensurate with the size and complexity of the scope to be addressed and available pertinent information.

Thank you for your continued interest and involvement in Hanford cleanup work. If you have any questions, please contact me or Tiffany Nguyen at (509) 376-3361.

Sincerely,



Matt McCormick
Manager

HAB:TLN

Enclosure

cc w/encl: See page 4

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cc w/encl:

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June 8, 2012

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Re: 300 Area RI/FS and Proposed Plan

Dear Messrs. McCormick and Faulk,

Background

Final decisions about cleanup at Hanford's 300 Area are important because of their potential impacts to the Columbia River. The 300 Area Remedial Investigation and Feasibility Study (RI/FS) and Proposed Plan, along with the 100-K RI/FS, will provide a template for subsequent River Corridor and similar decisions to follow. It is important to the Hanford Advisory Board (HAB or Board) that these first River Corridor decision documents are dependable, protective, defensible, and well supported. After a review of the 300 Area RI/FS and Proposed Plan, the Board finds that these goals are not met.

The Board finds the 300 Area RI/FS and Proposed Plan documents to be difficult to digest because they contain excess and unnecessary information, yet concurrently lack the detail and data that would help the reader understand the approach and the solution proposed. For example, there is a lack of any detail on institutional controls. Given the importance of this process as the platform for development of many future decisions, there is a need for greater conciseness, transparency, and rigor in documenting the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) process through the RI/FS to the Proposed Plan.

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HAB Consensus Advice # 257
Subject: 300 Area RI/FS & Proposed Plan
Adopted: June 8, 2012
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The Board believes that the basis for the decision to select a preferred alternative in the 300 Area RI/FS is flawed. Specifically, it is the Board's position that in order to inform and complete the Proposed Plan and record of decision (ROD), it is first necessary to finish the risk assessment documents supporting the 300 Area CERCLA process.

The Board believes there is an over-reliance on sequestration for soil uranium remediation in the 300 Area Proposed Plan. Treatment demonstrations have shown that this technology was not entirely successful¹ in the near river environment. The flux of varying river stage water complicates the emplacement of poly-phosphates, and impedes the process of forming autunite minerals. Infiltrating the poly-phosphate solution from the surface or injecting the solution into the aquifer has had only limited success¹. Tests performed to date in groundwater and the Vadose Zone have not provided sufficient information to guarantee a successful implementation of this technology on a large-scale basis.

Rather than move to a final ROD with poly-phosphate sequestration as the preferred alternative and monitored natural attenuation as the fall back, the Board supports delaying the ROD in order to first conduct a treatability test to further explore the viability of this technology.

A treatability test will help determine the optimum approach to apply phosphate, using some combination of surface infiltration and Periodically Rewetted Zone (PRZ) injection techniques to the uranium contaminated areas. Injection into the PRZ could be designed to also deliver treatment to the upper portion of the groundwater. The treatability test would collect Vadose Zone and groundwater monitoring information that could then be used to assess future remedy performance. The resulting information would be brought forward to design and implement a full-scale system in the proposed plan and eventual ROD.

In previous advice, the Board has consistently advocated for the maximum use of remove, treat, and dispose (RTD) whenever possible, and especially near the river. Because of the concern for re-mobilizing uranium through the application of dust suppression water during RTD operations, the Board believes the Tri-Party Agreement (TPA) agencies should opt for an alternative that uses a phased approach for evaluating the efficacy of uranium sequestration in an Interim Action, before implementing a Proposed Plan and final ROD. If this sequestration evaluation demonstrates that the technology is not successful at

¹ PNNL-16571 (2007); PNNL-16761 (2007); PNNL-17480 (2008); PNNL-18529 (2008); PNNL-19461 (2010)

sequestering a majority of the mobilized uranium, the Board supports focused RTD on residual contamination hot spots as the best alternative.

The Board recognizes that the TPA agencies have major negotiated milestones that require final RODs along the River Corridor. However, the Board can only support the proposed remediation technology (Alternative 3) as an Interim Action, with the attendant need to modify the milestone schedule.

Advice

- The Board advises the TPA agencies to modify the milestone schedule for the 300 Area RI/FS decision to proceed with poly-phosphate sequestration as an Interim Remedial Measure/ Expedited Response Action, until such time that this phosphate sequestration or some other technology can be tested and proven to be effective before proceeding to writing the final ROD and Proposed Plan.
- In the event the poly-phosphate sequestration technology testing is shown to be unsuccessful, the Board does not support monitored natural attenuation (MNA) as a solution. The Board advises the TPA agencies to consider the HAB's longstanding commitment to RTD values, especially to remove contaminants from near the river, when the next alternative selection is being made.
- The Board advises the TPA agencies to develop future RI/FS documents that adequately reflect a comprehensive risk assessment (following the CERCLA process) and that address cleanup levels based on Model Toxics Control Act (MTCA) Method B, or Safe Drinking Water Act maximum contaminant levels. The Board advises the TPA agencies that cleanup plans should be developed assuming reasonably foreseeable future scenario exposures for people other than industrial workers and on contaminants of concern to which people, flora, and fauna are or may be exposed because of contact with Hanford groundwater and riparian habitat.
- The Board advises the TPA agencies to finalize RI/FS documents, including all supporting documents, prior to the development of any Proposed Plan.
- The Board advises the TPA agencies to work to present RI/FS and supporting document information, including the data and details which support decisions, in a manner that is easy to read, concise, transparent, and readily accessible within the decision document.

Sincerely,



Susan Leckband, Chair
Hanford Advisory Board

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: Scott Samuelson, Manager, U.S. Department of Energy, Office of River Protection
Dana Bryson, Deputy Designated Official, U.S. Department of Energy, Richland
Operations Office
Jane Hedges, Washington State Department of Ecology
Catherine Brennan, U.S. Department of Energy, Headquarters
The Oregon and Washington Delegations