

**U.S. Department of Energy  
Hanford Site**

JAN 27 2011

11-HAB-0034

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

Dear Ms. Leckband:

**HANFORD ADVISORY BOARD (HAB) FEBRUARY 5, 2010, CONSENSUS ADVICE #227,  
"DOE'S USE OF MODELING VERSUS MORE CHARACTERIZATION"**

Dear Ms. Leckband:

Thank you for your advice #227 letter (enclosed) regarding the U.S. Department of Energy's (DOE) use of modeling versus more characterization at the Hanford Site. We would like to respond to each of your advice points individually.

**Advice point #1:** To support reasonable and protective cleanup decisions, the Board urges DOE to employ, and the regulators to insist upon, waste site characterization that is truly adequate to understand the contaminant volume and location. The Board suggests that having enough characterization data prior to decisions is more appropriate than reliance on post-record of decision characterization.

**Response:** Cleanup decisions must address the protectiveness of human health, ecological exposure pathways, and groundwater while meeting applicable or relevant and appropriate requirements (ARARs).

Each cleanup objective can have its own discrete set of cleanup values. For example, Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) requires consideration of future land use where near surface contamination or consumption of groundwater is a primary exposure pathway. Where soil contamination is affecting groundwater, more stringent soil cleanup levels may be required based on reasonably anticipated future land use.

Evaluation of the nature and extent of contamination at any Hanford waste site is based on conservative assumptions to ensure that the risks being evaluated are upper bounded to adequately characterize the waste site. Since some level of uncertainty will always remain with any natural system, the use of characterization data along with bounding assumptions is key to a well-informed decision-making process. Confirmatory sampling and/or monitoring can be used following the decision to ensure that the employed assumptions are valid.

Response to HAB advice #227

HAB Consensus Advice: DOE's Use of Modeling Versus More Characterization  
Letter from Matt McCormick & Jonathon McDowell dated 1/27/11

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**Advice point #2:** The Board urges DOE and the Regulators to exercise extreme care in the use of modeling to guide cleanup at Hanford. Rather than relying on simulations to support the selection of cleanup remedies, Board advice consistently emphasizes a preference for doing good characterization, the Tri-Party Agencies should make sure that the model simulations being used reflect reality, and are not creating a virtual reality that may mislead decision-makers.

**Response:** The DOE follows CERCLA guidance in the selection of cleanup remedies, including characterization and analysis of data that can include modeling to assess effectiveness of proposed alternative actions. We have found that the use of models provides a well-informed decision-making process since they integrate various data sources within a single conceptual site model, highlighting any discrepancies and showing where additional data might be needed. We agree that model simulations should reflect reality to the extent possible and should use bounding assumptions whenever uncertainty exists.

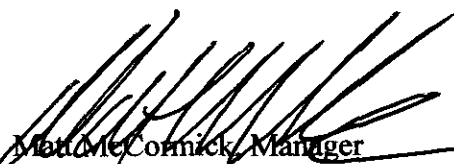
**Advice point #3:** The Board recommends that great care be taken to select the right model for the right application. Correct chemical, ground and water flux assumptions should be used and parameters carefully selected. Additionally, sensitivity analyses should be employed to ensure that the parameters are appropriate such that the results of modeling can be relied upon.

**Response:** We concur with both recommendations in this advice. Model selection is conditional on the nature and scale of the decision. We have conducted extensive work to evaluate assumptions and parameters used in modeling and the uncertainty associated with the assumptions and parameters.

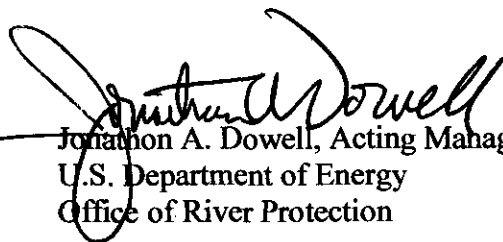
**Advice point #4:** The Board encourages DOE to recognize the synergistic and relative roles of modeling and characterization. Modeling should be used to guide the optimum characterization and to help define the boundary limits.

**Response:** We concur and believe the use of models complements data collection efforts. A standard practice is to bound the assumptions along with the use of confirmatory sampling to verify any key assumptions. This ensures that remedial actions have achieved their goals.

If you have any questions, please contact Paula Call, DOE Richland Operations Office at (509) 376-2048 or Pamela McCann, DOE Office of River Protection, at (509) 376-7663.



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Enclosure

cc: See Page 3

cc w/encl :

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