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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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August 13, 1998

Richard A. Holten, Director
Restoration Projects
U.S. Department of Energy
P.O. Box 550 H0-12
Richland, WA 99352

SUBJECT: EPA Comments on "Preliminary Draft: Recommendations for Consolidation of Site-Wide Groundwater Modeling at the Hanford Site", DOE/RL-98-xxx, June 22, 1998 Draft.

Dear Mr. Holten:

The subject document was sent to the U.S. Environmental Protection Agency (EPA) for review and comment. Enclosed are our comments on this document. Most of the comments that EPA submitted to DOE on May 13, 1998 on an earlier draft of this document still apply. If you have any questions on these comments, please contact me at (509) 376-9884.

Sincerely,

Laurence E. Gadbois

Laurence E. Gadbois
Environmental Scientist

Enclosure: As stated

Cc: Marcel Bergeron, PNNL
Charlie Cole, PNNL
Dirk Dunning, Oregon DOE
Dib Goswami, Ecology
Michael Graham, ERC
Stuart Harris, CTUIR
Doug Hildebrand, DOE

Wade Riggsbee, YIN
Stan Sobczyk, NPT
Wayne Soper, Ecology
K. Mike Thompson, DOE
Paul Thorne, PNNL
Administrative Record, Site-wide



"Preliminary Draft: Recommendations for Consolidation of Site-Wide
Groundwater Modeling at the Hanford Site", DOE/RL-98-xxx, June 22, 1998 Draft.

1. Page 25
It is not sufficient for the model to use different dispersivities in longitudinal and transverse directions. Dispersivity in vertical transverse direction should be different than in horizontal transverse direction. (Note: this comment was in the May 13, 1998 list of comments, but was not mentioned in the document currently being reviewed.)
2. Page 25 and 59
Simulation of reactions only by 1st-order (half-life) decay is probably insufficient. Consideration should be given to the simulation of other processes such as the creation of daughter products that result from the radioactive decay of some radionuclides, and degradation processes whose rates are functions of concentrations of some other constituent.
3. Page 30
Portability -- Give additional examples of platforms. Mention PC's, specifically, and perhaps Windows 95, Windows NT, and MAC OS.
4. Page 30
Limiting the models under consideration to VAM3D-CG and CFEST96 almost makes the remainder of the requirements superfluous.
5. Page 43
If head is specified at the Columbia River model boundary, the head should be specified only at the upper boundary of the aquifer, not over its entire thickness.
6. Page 43
The model developers should consider using head-dependent-flux instead of a specified-head boundaries at the Columbia and Yakima Rivers. Because the flow pattern and lithology at these boundaries probably are more complex than at most other locations in the model, and the complexity probably is at a scale smaller than the size of a model element, the values of horizontal and vertical hydraulic conductivities that are assigned to the nodes or elements at these boundaries probably must artificially differ from the actual values in order to compensate for the complexities. It probably would be better if the complexities were absorbed into the empirical head-dependent-flux coefficient rather than a hydraulic conductivity.
7. Page 62
Justification for not including the basalts in the model is weak. It should not matter if the source of the water in the basalts is far from the Hanford Site, or if the flow in the basalts is part of a larger regional system; if there is flow between the sediments and the basalts, the model should have the capability of simulating this flow. It probably makes more sense to include this capability now and not use it, than to not include it and need it later.

8. Page 108-109

"Mean head difference" is not a good measure of model accuracy, it is a measure of model bias. "Mean absolute head difference" or "root-mean-square" difference would be better.

9. The May 13 comment letter contained the following comment about specific yield. Although specific yield is not mentioned in the current document, this comment was not listed in the section beginning on page 58 as a technical issue or concern.

"I question the use of a specific yield of 0.1 for sediments in the Ringold Formation. I don't doubt that this may be the typical value obtained from aquifer tests, and could be the appropriate value to use for simulating seasonal changes in water levels; however, when the water-table at Hanford falls permanently, and the sediments have many years to drain, the appropriate specific yield to use for simulating this process could be considerably higher. The investigators may also consider increasing the specific yield of the Hanford Formation."