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APPROVAL OF THE SOUTH PLUME REMOVAL ACTION GROUNDWATER MODELING REPORT

06/05/92

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
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REPLY TO THE ATTENTION OF:

HRE-8J

Mr. Jack R. Craig
United States Department of Energy
Feed Materials Production Center
P.O. Box 398705
Cincinnati, Ohio 45239-8705

RE: Approval of the South Plume Removal Action Groundwater Modeling Report

Dear Mr. Craig:

The United States Environmental Protection Agency (U.S. EPA) has completed its review of the South Plume Removal Action Groundwater Modeling Report. The modeling report provides only a summary of the modeling study. However, more detailed information was presented in the Groundwater Report prepared by the United States Department of Energy in December 1991. Overall, the modeling report provides sufficient information to support the relocation of the groundwater extraction wells as part of the South Plume Removal Action.

U.S. EPA hereby approves the Report pending incorporation of the attached comments.

Please contact me at (312/FTS) 886-0992 if you have any questions.

Sincerely,

James A. Saric
Remedial Project Manager

Enclosure

cc: Graham Mitchell, OEPA-SWDO
Pat Whitfield, U.S. DOE-HDQ
Dennis Carr, WMCO

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SOUTH PLUME REMOVAL ACTION GROUND WATER MODELING REPORT

1. The modeling report probably overstates the accuracy of particle tracking analysis. For example, page 4-4 of the modeling report states that the revised location of the ground-water extraction wells will deflect the organic contaminant plume by less than 1 foot and the inorganic plume by a maximum of 20 feet. The U.S. Department of Energy (DOE) Ground Water Report (dated December 1991) describes particle tracking as a function of the three dimensional ground-water flow model. The smallest cells used in the south plume area of interest (rows 10 through 19 and columns 5 through 10) are 250 feet by 500 feet. Unless the model code is capable of tracking particles within individual cells the accuracy is overstated. In addition, it is also unclear if the model code accounts for other factors which reduce the accuracy of particle tracking, such as dispersion and diffusion. Additional information could be provided to support the conclusions of the particle tracking analysis.

2. The Ground Water Report generally lacks sufficient documentation concerning calibration of the ground-water flow model. The three dimensional ground-water flow model was calibrated to 1986 ground-water elevation data. The ground-water flow model was not calibration to 1988 data as was the two dimensional ground-water flow model. Both models should be calibrated to 1988 data to confirm that the ground-water model accurately represents drought conditions.

   Additional calibration checks should be conducted with the most complete data set available such as 1991 or 1992 ground-water elevation data. Additional calibration of the three dimensional ground-water flow model is required because layer 1 of the model has only one observation point and layer 2 has no observation points in the area of interest in the south plume (rows 10 through 19 and columns 5 through 10). In addition, layer 2 of the ground-water flow model has only two observation points south of Fernald Environmental Management Project (FEMP) property. Because further remedial actions will be required in the south plume (as well as other areas of FEMP), an additional postcalibration verification audit should be completed.

   It is not possible to make a point-by-point check on the model's calibration because the Ground Water Report presents only the residuals between modeled and observed measurements. DOE should provide a table which presents both the observed (water level elevation and uranium concentration) and the modeled measurements.

3. A review of the calibration of the contaminant transport model was not conducted; however, as with the ground-water flow model, the most complete data set should be used to calibrate the model or at least perform a postcalibration verification audit.

4. To provide a check on the accuracy of the model to predict future remedial actions, the ground-water flow model should be run to simulate the effect that pumping from the south plume extraction wells will have on the water table. Ground-water elevation data for specific monitoring points should be modeled so that the model predictions can be verified by future field observations.