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COPY FOR YOUR INFORMATION

Katherine A. Arnold, P. E.
Vice President, Environmental and Regulatory Affairs
Rosemont Copper Company
P. O. Box 35130
Tucson, AZ 85740-5130

Dear Ms. Arnold:

The Coronado National Forest has reviewed the Montgomery and Tetra Tech groundwater flow models commissioned by Rosemont in light of public comments, and in light of further technical review recently conducted by SRK on behalf of the Forest. The Forest has determined that some additional documentation is needed in order to either better describe model results in the EIS, or to ensure that the Forest fully understands the limitations of the models.

Additional Existing Sensitivity Analysis Hydrographs

The Forest is considering revising the presentation of model results in the EIS in order to better describe the uncertainty associated with the groundwater flow models. Specifically, the Forest is considering presenting the upper and lower bounds of the sensitivity analyses as part of the model results.

For instance, instead of stating "Drawdown at Empire Gulch is modeled to be 3.2 feet after 1,000 years, with drawdown beginning approximately 90 years after start of mining," the Forest is considering stating the following: "Drawdown at Empire Gulch is modeled to be 3.2 feet after 1,000 years; sensitivity analysis show this drawdown could range from non-existent to XX feet. Drawdown is modeled to begin approximately 90 years after start of mining; sensitivity analysis shows that drawdown could begin from 60 to 120 years after start of mining."

In a data request to Rosemont on December 20, 2012, the Forest had requested hydrographs for 15 selected monitoring locations. These hydrographs were subsequently provided by Rosemont. In order to better describe the model uncertainty, the Forest requests that additional hydrographs be provided for these same 15 locations, representing the upper and lower bounds of the sensitivity analyses.

Additional Documentation of Western Model Boundary

In the most recent review conducted for the Forest, SRK found that "the use of general head (Montgomery) and constant head (Tetra Tech) boundary conditions along the western model boundary do not invalidate the model and reasonably predict the impacts..." However, SRK also indicated that "the defensibility of the models would be advanced by evaluating in more detail the boundary flux through the western boundary..."

The Forest requests that Rosemont provide for each of the models the following documentation:

- An explanation as to why the distance of ½ mile was used to assign general head boundaries along the western boundary of the model;
- A map or table that shows simulated outflow from the western boundary of the model (i.e., potentiometric surface and flow vectors);
- The predicted passive inflow to the pit to demonstrate that all inflow would come from groundwater storage; and,
- The groundwater budget at the end of the mine life and long-term post-mining conditions (1,000 years after mine closure) and changes compared to pre-mining steady state condition.

Additional Sensitivity Analysis of Western Model Boundary

The Forest also requires an additional sensitivity analysis for the western model boundary, with the intent to ensure that this boundary is not unduly influencing model results. The Forest requests that the following test be conducted:

Step 1. Run a steady state simulation. Then add a well to the steady state simulation, simulating the maximum rate of pit dewatering and run it again. After the second run compare the two simulations and measure how much of the change to the water balance to accommodate the added stress comes from the artificial boundaries. If results are less than 10 percent, no further testing is needed.

Step 2. If the solution to Step 1 indicates that more than 10 percent of the added stress comes from the artificial boundaries, then conduct a transient simulation with the boundaries "fixed" or "isolated" with the steady state flow rates. In other words, change every constant head and general head boundary cell to a specified flux boundary, with the flux rate identical to the boundary fluxes in the original steady state scenario, so that no additional water can be introduced through the external boundaries. A cone of depression not influenced by an artificial influx of water may be produced in this manner.

Please provide the Forest with the following documentation:

- The water balances from the two steady state simulations conducted under Step 1.
- If the transient simulation is conducted under Step 2, provide 1) contour maps similar to those produced for the previous modeling reports for various time steps (end of mining, 20, 50, 150, 1,000 years), and 2) hydrographs for the 15 monitoring locations previously requested.

Thank you for your continued assistance in providing information needed for the analysis of your proposal. I would like to ask that you keep me apprised of the anticipated timeframes for completion of these tasks. If you have questions, contact Mindee Roth, who will coordinate with specialists from the Forest and/or SWCA to provide any clarification that may be required. Ms. Roth can be reached at (520) 388-8319 or mroth@fs.fed.us.

Sincerely,

for JIM UPCHURCH
Forest Supervisor