May 11, 2006

Ms. Donna Wichers, General Manager
COGEMA Mining, Inc.
935 Pendell Boulevard
P.O. Box 730
Mills, WY 82644

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION, COGEMA MINING, INC, IRIGARAY MINE, RESTORATION REPORT, JOHNSON COUNTY, WYOMING (TAC LU0113)

Dear Ms. Wichers:

By letter dated November 7, 2005, COGEMA Mining, Inc. (COGEMA) submitted a report to U.S. Nuclear Regulatory Commission (NRC) staff documenting the restoration of the Irigaray *in-situ* leach mine, Production Units 1 through 9. This report has been reviewed by the Wyoming Department of Environmental Quality (WDEQ), and by letter dated November 1, 2005, the WDEQ approved the Irigaray Mine restoration. NRC staff has initiated its detailed technical review of the report and determined that additional information is necessary to complete the staff's review. The staff's request for additional information (RAI) is enclosed. Please respond to this RAI or provide NRC staff with a schedule for submitting a response within 30 days of receipt of this letter. If you have any questions regarding the RAI, please contact me at 301-415-7182 or by e-mail at sjc7@nrc.gov.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's Agencywide Documents Access and Management System (ADAMS). ADAMS is accessible from the NRC Web site at http://www.nrc.gov/NRC/reading-rm/adams.html.

Sincerely,

/RA/

Stephen J. Cohen, Hydrogeologist
Uranium Processing Section
Fuel Cycle Facilities Branch
Division of Fuel Cycle Safety
and Safeguards
Office of Nuclear Material Safety
and Safeguards

Docket No.: 40-8502
License No.: SUA-1341
Enclosure: Request for Additional Information

Donna Wichers, General Manager
COGEMA Mining, Inc.
935 Pendell Boulevard
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(Closes TAC NO. LU0113)
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REQUEST FOR ADDITIONAL INFORMATION
COGEMA MINING, INC.
IRIGARAY MINE RESTORATION REPORT

By letter dated November 7, 2005, COGEMA Mining, Inc. (COGEMA) submitted a report to U.S. Nuclear Regulatory Commission (NRC) staff documenting the restoration of the Irigaray *in-situ* leach mine, Production Units 1 through 9. This report documents water quality trends in the Production Units during restoration and through the stabilization phase. COGEMA presents data indicating that 27 of 29 constituents were restored to baseline values, and COGEMA performed ground water flow and contaminant transport modeling to demonstrate that residual contaminant concentrations would not degrade aquifer class of use beyond the monitoring well ring. By letter dated November 1, 2005, the Wyoming Department of Environmental Quality (WDEQ) approved the restoration report. NRC staff has reviewed the report and is issuing this Request for Additional Information (RAI) to address certain aspects of the restoration data and ground water flow and contaminant transport modeling. This information is necessary to complete the staff's detailed technical review of the report.

A. RESTORATION DATA

Comment No. A1. Please review the ranges of individual restoration/stabilization data to determine compliance with the primary target restoration values. COGEMA presents target restoration values in the form of ranges of baseline values in Table 4-6 of its Irigaray restoration report. These ranges are compared to average stabilization values for each constituent, as also presented in Table 4-6. A review of COGEMA's NRC license and WDEQ Permit No. 478 indicates that COGEMA should have compared ranges of individual restoration/stabilization data values to the baseline ranges (referred to as tolerance limits in the WDEQ permit and NRC license) to determine whether or not the primary goal of mine unit restoration has been achieved.

Basis: License Condition 10.16 requires that COGEMA restore ground water quality to baseline as described in Section 6.1 of the license application. The primary goal of restoration shall be to return the ground water quality, on a production-unit average, to baseline concentrations on a parameter-by-parameter basis. Both the WDEQ Permit No. 478 and the NRC license applications indicate that ranges of individual restoration values should be compared to baseline ranges.

B. GROUND WATER AND CONTAMINANT TRANSPORT MODELING

Comment No. B1. Please explain COGEMA's rationale for orienting the ground water flow model grid with the longitudinal axis of the ore body instead of the principal ground water flow direction. Aligning model grids along the principal direction of ground water flow is typical, otherwise numerical errors could occur resulting in an exaggerated dispersion.

Comment No. B2. Please explain the use of 1 vertical grid cell per model layer. Coarse grids, such as 1 vertical grid cell per layer, could induce an artificially increased numerical dispersion. Consequently, model results using such a coarse grid could result in smaller concentrations at the downstream monitoring wells than would otherwise result from a finer vertical grid.

Comment No. B3. Please provide justification for the range of dispersivity values used in transport modeling to demonstrate that offsite water quality would remain below Class I ground water standards. It appears that COGEMA used scale-dependent dispersivity values based on Gelhar et al (1993), and used 1,000 ft as the plume size for estimating dispersivity values. However, a plume length covering the distance between the monitoring well ring and the ore body (approximately 400 ft) would be more appropriate for the following reasons. The 1000-ft plume used by COGEMA was estimated through modeling, which adds an additional level of uncertainty to the dispersivity estimate. Conversely, the transport observation points coincide with the monitoring well ring, and the distance between the monitoring well ring and the ore body is a fixed distance. This 400-ft distance would be a more certain scaling factor than the 1,000-ft factor use by COGEMA and would result in lower dispersivity values.

Comment No. B4. Please justify the use of uniform ground water concentration values for the source term in the contaminant transport model. A review of the data spreadsheets attached to the report indicates that constituent concentrations in ground water vary spatially within the ore body. However, spatial variation was not considered during source-term development. Nonuniform source-term concentrations in the transport model may lead to higher downstream concentrations in certain locations than estimates using a uniform source term. Furthermore, nonuniform source terms would be more representative of actual field conditions.

Basis: According to NUREG-1569, Section 6.13(4)(c), if a constituent cannot technically or economically be restored to its secondary standard within the exploited production zone, an applicant must demonstrate that leaving the constituent at the higher concentration would not threaten public health and safety or the environment or unacceptably degrade water uses of adjacent ground water resources. Ground water flow and contaminant transport modeling are essential to understanding potential impacts of residual contamination on ground water quality.