GROUND WATER QUALITY BUREAU
SUPERFUND OVERSIGHT

Harold Runnels Building, Suite N2300
1190 St. Francis Drive
Santa Fe, New Mexico 87502
(505) 827-2911
Fax: (505) 827-2965

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TO: Bill von Till

TELEPHONE NO:

FAX NO:

SENDER: David J. Mayerson

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Comments:

Docket: 40-8903

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State of New Mexico
ENVIRONMENT DEPARTMENT
Ground Water Quality Bureau
Harold Runnels Building
1190 St. Francis Drive, P.O. Box 26110
Santa Fe, New Mexico 87502
(505) 827-2918 phone
(505) 827-2965 fax

BILL RICHARDSON
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Mr. Mark Purcell
U.S Environmental Protection Agency, Region 6
Remedial Project Manager
1445 Ross Avenue
Suite 1200
Dallas, TX 75202

Re: New Mexico Environment Department Comments on the Homestake Mining Company's Background Water Quality Evaluation of the Chinle Aquifers
Homestake Mining Company (HMC) Superfund Site, McKinley County, New Mexico;
CERCLIS ID. NMD007860935 40-8903

Dear Mr. Purcell:

The New Mexico Environment Department (NMED) has completed a review of Homestake Mining Company's (HMC) October 2003 submittal of the *Grants Reclamation Project – Background Water Quality Evaluation of the Chinle Aquifers.* This letter is a follow-up to a February 25, 2004 meeting between NMED, the Nuclear Regulatory Commission (NRC) and the U.S. Environmental Protection Agency (EPA), held in Santa Fe New Mexico. The comments that follow reflect NMED concerns with the document and are essentially the same as those, which were discussed in the meeting.

Specific Comments

Section 4.2, Paragraph 5 and Section 4.3 Paragraph 2
The assertion that "...Upper Chinle water discharges to the alluvium..." in southern Felice Acres and "Ground water flow in the Middle Chinle aquifer on the west side of the West Fault....eventually discharging to the alluvial aquifer in the subcrop area" would imply the existence of other categories of mixing zones. Is it possible to identify different types of ground water mixing zones (e.g, where alluvial ground water discharges into a Chinle aquifer, or where Chinle aquifer ground water discharges into alluvial aquifer water)?

Section 5.3, Paragraph 3 and Figures 5-3 and 5-4
The Stiff diagram for CW-52 appears to be very similar to that of non mixing zone well CW3, as well as to those presented for the east side wells CW13 and CW18 (except for HCO_3 concentrations). HMC should explain what "other characteristics" of this Stiff diagram have led to the conclusion that it is within the mixing zone, and therefore not usable for background determination.

Section 5.3, Paragraph 5
HMC should note that well 934 shows elevated bicarbonate, similar to that of well CW18, which is probably attributable to the injection of San Andreas water into CW13.

Section 5.3, Paragraph 9
HMC should provide data that supports the assertion that "[C]alcium concentrations in the Upper Chinle water near CE2, CW4R, CW5 and CW25 were believed to be elevated prior to the tailings deposition due to historical flow of alluvial water through this mixing zone portion of the Upper Chinle aquifer" such that these wells are interpreted to be within the mixing zone.

Section 5.4, Paragraph 1
The Middle Chinle Stiff diagrams are most similar to the Stiff diagrams of Upper Chinle wells CW52 and CW3. HMC should evaluate the potential reasons for the similarity.

Figure 5-8
The Stiff diagrams for CW1 and CW2 are dissimilar to Stiff diagrams of the other wells presented here; which are themselves similar to the Stiff diagrams for the alluvial wells. HMC should evaluate this difference.

Figure 5-9
The Stiff diagram for CW41 is unlike the Stiff diagrams for other wells in this figure, all of which are similar. CW41 is shown to be just outside of the mixing zone. Stiff diagrams for the other wells are similar to the Stiff diagrams for alluvial wells, except for calcium concentrations. Therefore, well CW41 may be the only well representative of Lower Chinle background geochemistry. HMC should evaluate these observations.

Section 6.3.1, Paragraph 3 and Figure 5-4
HMC should evaluate the chemistry of wells CW13, CW18, and CW3 as they are probably most representative of original Upper Chinle water quality.

Table 6-1
The detection limit for vanadium is higher than the NRC water quality standard for this constituent. In general, HMC must ensure that the method detection limit for all analytes is at least as low as the proposed background value for a given constituent.

Table 6-4
The proposed mixing zone background concentrations for uranium, molybdenum, vanadium and

thorium-230 are actually higher than the proposed alluvial and Chinle background concentrations. How can the mixing zone background concentrations be higher than water that contributes to this mixing zone? NMED would accept these calculated mixing zone concentrations if HMC can provide verification that a geochemical reaction has caused the background values in the mixing zone to be higher than the waters that contribute to this zone. Otherwise, NMED would accept the concentrations from the alluvial or Chinle waters (whichever is higher) to be used as the background value for these four constituents.

Figure 6-3
The mixing zone boundary seems unusually "straight". HMC should determine the mixing zone boundary using data from all wells and not just those included in the statistical analysis, based on calcium concentrations.

General Comments

There are many statements included in the report regarding the naturally occurring water quality of the Chinle Formation (e.g. Section 2-1, Paragraph 4: "[T]he Chinle rock units also contain naturally elevated uranium and selenium concentrations."). This sort of information is not referenced at the appropriate places in the text as they correspond to the list included in Section 7.0. HMC should reference these documents appropriately whenever statements regarding background quality are presented. A regional evaluation of published Chinle water quality data should be included for comparison purposes.

NMED requests that the NRC and EPA consider these comments when responding to HMC regarding this document. If you have any questions or comments, please contact Jeff Sanders at (505) 827-2906 or David Mayerson at (505) 827-0184.

Sincerely,

Jeff Sanders
Mining Environmental Compliance Section

David L. Mayerson
Superfund Oversight Section

cc: DP-200 File
DP-725 File