



NEW MEXICO
ENVIRONMENT DEPARTMENT



Ground Water Quality Bureau

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MEMORANDUM

DATE: May 29, 2009

TO: Holland Shepherd, Program Manager, Mining Act Reclamation Program

FROM: Kurt Vollbrecht, Mining Act Team Leader, Ground Water Quality Bureau
Neal Schaeffer, NMED Surface Water Quality Bureau

RE: **Comments on Roca Honda resources, LLC, Sampling and Analysis Plan,
Permit no. MK025RN**

The New Mexico Environment Department (NMED) received correspondence from the Mining and Minerals Division (MMD) on April 23, 2009 requesting NMED review and provide comments on the Sampling and Analysis Plan (SAP) referenced above. MMD requested comments be submitted no later than May 29, 2009, reflective of granting an extension of time beyond the Mining Act requirement to provide comments within 30 days of receipt. The NMED Surface Water Quality Bureau (SWQB) and Ground Water Quality Bureau (GWQB) have submitted comments in this memorandum jointly.

NMED SWQB Comments:

Field Quality Assurance Plan 040809.pdf

- SWQB was unable to locate the SOPs described in Section 2.1 and Appendix A.
- From Section 2.5: "The samples will be shipped via the most expedient means available." A definition of "expedient" is "a means to an end; not necessarily a principled or ethical one". Please substitute "expeditious".

Section 1 Intro 040809.pdf

- Section 1.2 does not indicate whether, where, or how much water would be discharged to surface watercourses. This is addressed elsewhere, but it should be clarified here (such as by indicating the arroyo to receive these waters).

Section 3 Topography 040809.pdf

- According to Section 3.4, "Stream-bed contours will be prepared using aerial photographs for the area immediately adjacent to the permit area and ground level surveys for areas further downgradient (as described in Section 8 of this SAP)." The pre-mining stream channel morphology should be better defined, including channel plan, profile, and cross-section. These conventional surveys should be sufficient in number and location to characterize pre-mining channel morphology. These pre-mining data should be used to design reclamation channels that are naturally stable. (this appears to be at least partially addressed in Section 8.5.1.8.)

Section 4 Vegetation 040809.pdf

- Section 4.3 makes reference to "potential impacts of high water volume discharge in an unnamed arroyo draining to San Mateo Creek". Associated data should support reclamation that includes the use of native woody riparian and/or wetland species in areas that support such vegetation -- whether or not those areas supported such vegetation before the discharge.

Section 8 Surface Water 040809.pdf

- Contrary to Section 8.1, San Mateo Creek, the Rio San Jose, and the Rio Puerco may be, at least in reaches, intermittent streams. This is indicated by the presence of woody riparian vegetation that commonly requires water flows beyond mere direct response to storms. Likewise, SWQB disputes that "the drainage and the portions of San Mateo Creek that will be affected directly by discharged water are ephemeral." This comment is supported by the existence of local springs described in Section 8.1.4.
- Section 8.1 says that "the Roca Honda permit area is drained by ephemeral arroyos...." This text should make clear that the proposed discharge would change at least one of those ephemeral streams to a perennial flow regime.
- Regarding Section 8.1.2, the SWQB asserts that at least some of the ephemeral surface waters will become intermittent or perennial during and after the discharge of pumped ground water.
- The analysis described in Section 8.5.1.1 should include mapping of woody riparian vegetation, as this can indicate hydrologic conditions such as springs or a non-ephemeral flow regime.
- According to Section 8.5.1.2, "Once the aerial photographic analysis is completed, a ground survey will be conducted to confirm the location of perennial water bodies and the location and use of structures." Intermittent reaches should also be ground-surveyed and mapped, rather than lumped with ephemeral reaches.
- Section 8.5.1.2 says that "The presence or absence of water in the alluvium at the base of the stream bed will be used to determine if the unnamed arroyo and San Mateo Creek are ephemeral or intermittent." This should not be the only criterion -- woody riparian vegetation (i.e., vegetation that is distinct from the uplands) can also indicate flow regimes beyond ephemeral.
- Section 8.5.1.7 describes Stream Bed Armoring. This section should acknowledge that vegetation, particularly in response to perennial flow, could also affect channel morphology.

- Section 8.5.1.9 describes stream rating tables. The SWQB is concerned that insufficient flow measurements (such as during times of non-wadeable flows) may preclude development of a reliable rating table. The section should address modeling a rating table to fill such data gaps. The SWQB appreciates efforts to relate discharge "break points" with morphological features.
- Section 8.8 addresses sampling of flowing water. This section should discuss methods to ensure collection of representative samples, specifically integration through the water column.
- Section 8.9 should acknowledge that these data will also help establish "baseline" channel morphology.

NMED GWQB Comments:

Pursuant to the New Mexico Water Quality Control Commission Regulations (WQCC), Roca Honda Resources has submitted a Ground Water Discharge Permit Application for a proposed mine (DP-1717). The above referenced SAP is included as an attachment to this application and detailed review and comment will be an integral part of the technical review of the Discharge Permit Application. As NMED moves forward with the permitting process detailed comments on the SAP will be provided to the applicant and MMD will be copied on all correspondence related to this effort.

Establishment of existing ground water quality within the permit area, and within areas down gradient of the proposed mine site and discharge locations is outlined within the SAP. The New Mexico Mining Act regulations require the collection of baseline data related to ground water. Detailed characterization of ground water relevant to establishment of baseline conditions will be required as part of the discharge permitting process. Pursuant to the WQCC Regulations, the numerical standards as set forth in Section 20.6.2.3103 are applicable unless the applicant makes a statistically valid demonstration that existing water quality exceeds one or more of those standards. Although this is not discussed within the SAP, this will also be addressed through the Discharge Permit process.

The SAP mentions collection of additional data not provided within the SAP including, sampling and analysis of existing wells within the general permit area (much of which has been conducted) and installation of additional ground water monitoring wells to collect data from overlying water bearing formations from the target zone. No schedule is provided for installation and sampling of additional monitoring wells, nor are explicit monitoring well locations proposed. NMED will require a number of additional wells, to both characterize ground water quality within and down gradient of the proposed mine and discharge location(s), as well as for ongoing ground water monitoring during operations. This will also be addressed through the Discharge Permit process.

As mentioned above, technical review of the Discharge Permit Application is ongoing, and MMD will be copied on detailed correspondence relative to the SAP and MMD Permit No. MK025RN.

If you have any questions, please contact Kurt Vollbrecht at 827-0195.

cc: William C. Olson, Chief, GWQB
Glenn Saums, Acting Chief, SWQB
Mary Ann Menetrey, NMED MECS
Charles Thomas, Chief, Mine Reclamation Bureau