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James Hollen, Permit Lead, MARP
Mining and Minerals Division
1220 South St. Francis Drive
Santa Fe, NM 87505

RE: NM OSE Comments for Roca Honda Resources, LLC's, New Mine Permit Application for the Roca Honda Mine, MMD Permit No. MK025RN.

Mr. Hollen:

The New Mexico Office of the State Engineer (NM OSE) has reviewed the Roca Honda Resources (RHR), LLC's, New Mine Permit Application for the Roca Honda Mine, Permit No. MK025RN. The Permit Application documents include: Permit Application Mine Operations Plan (MOP), Basic Data Report (BDR), Reclamation Plan. The Mining and Minerals Division (MMD) requested agency reviews within 60 days of receiving a cover letter, which NM OSE received on December 17, 2009.

Given the large size and scope of the proposed new mine permit, multiple branches of NM OSE participated in the review process. The following comments consolidate all NM OSE comments into a single document. Each group of comments pertains to a particular bureau.

Dam Safety Bureau

The mine surface facilities proposed two detention basins, several evaporation ponds and a treated water reservoir with associated settling ponds. In summary, the information submitted is incomplete for the Detention Basins, Ponds and Treatment Reservoir. Additional information is needed to verify that Permits to Construct and Operate a Dam from the OSE Dam Safety Bureau are not needed.

The following shortcomings are noted in the Mine Operations Plan (MOP):

1. MOP. The MOP acknowledges that ponds or basins may be constructed from embankment fill but provides no information on the height of the fill and storage potential. A link to the OSE Dam Safety document "Evaluation of Non-jurisdictional Dams" is provided. www.ose.state.nm.us/doing-business/DamSafety/EvaluationOfNonJurisdictionalDams.pdf.
2. Section 4, MOP. Contour maps in Section 4 fail to label the contours for the ponds, detention basins and water treatment reservoir and settling basins.
3. Section 4 and 5, MOP. Section 4 directs the reader to Section 5 for more detailed design information on the detention basins and evaporation ponds; however, Section 5 fails to provide design details regarding height and storage capacity.
4. Section 4, MOP. Section 4 acknowledges a detailed design for the water treatment plant will be sent to NMED but fails to recognize the OSE may have jurisdiction over the treated water reservoir and settling ponds.
5. Section 4, Figure 4-5, MOP. Figure 4-5 shows the Detention Basin Dam tying into a stockpile. It is unacceptable for a water storage embankment to rely on a dumped stockpile for part of the embankment.
6. Section 4.2, MOP. Section 4.2 recognizes the Evaporation Ponds could approach overflow conditions, which is unacceptable. No discussion of freeboard considerations are mentioned except for the Treatment Plant ponds.
7. Section 4.2, MOP. Section 4.2 discusses the design storm event that will be used for roadside swales but fails to discuss the design rainfall event to size the ponds and detention basins. This is an unacceptable oversight in the MOP and leads to the conclusion that more thought was placed on designing the roadside swales than the ponds and detention basins.

Hydrology Bureau

8. Pages 16-17, Section 3.3, MOP; and Page 9, Section D.11, Permit Application. As described, some dewatering of Gallup and Dakota may be necessary during construction of mine dewatering shafts. If necessary, these two sets of 14 shallower wells around two shafts (Sections 10 and 16) would be pumped for a shorter term (during initial shaft construction) compared to the mine dewatering activities. In addition to the mine dewater permit and the permit to appropriate water for mine facilities, RHR may need a temporary permit from NM OSE Water Rights Division to appropriate water during construction.
9. Page 66, Section 5.3.10, MOP. NM OSE concurs that the proposed construction of dewatering wells require RHR to follow 19.27.4 NMAC regulations with emphasis on 19.27.4.31 NMAC because of the artesian conditions present at the site. Note that amongst the requirements of this section for artesian conditions, the regulations require plans of operation for both new well construction (for wells in artesian aquifers) and for plugging. The plans of operation must be submitted to NM OSE for review and approval prior to drilling the wells. A link to the form is provided:
   http://www.ose.state.nm.us/PDF/WellDrillers/WD-09.pdf
   http://www.ose.state.nm.us/PDF/WellDrillers/WD-08.pdf

10. Page 26, Section 3.3.2; and Page 29, Section 3.3.6, Reclamation Plan. These sections mention construction of stock ponds to be consistent with a post mining land use of grazing. These livestock water impoundments may require approval from NM OSE. A link to a form is provided: http://www.ose.state.nm.us/doing-business/forms-inst/stocktank/LivestockWaterImpoundmentForm.pdf
11. Page 7-5, Figure 7-3, BDR: It would be helpful to have additional information describing the orientation of the geologic units (i.e. strikes and dips).
12. Page 7-7, Section 7.2.1, BDR: The cited reference (OSE, 2008) was the source of well logs to describe the thickness of alluvium in the area. If the intent of the report is to refer to well logs filed with the OSE, it is recommended that a phrase be included in that sentence that makes reference to the source of the data. Also, the list of references (Page 7-22) is unclear whether the source is an OSE database, paper file or report.
13. Page 7-10, Section 7.2.8, BDR: The second-to-last sentence reads *" The Westwater Canyon Member consists of gray, light yellow-brown, and reddish-gray claystone (Fitch, 2006) and is as much as 250 ft thick in the permit area."* As a clarification, should the sentence include reference to sandstone in the Westwater Canyon Member?
14. Page 8-2, Figure 8-1, BDR: The figure shows a drainage map of the Rio Puerco. Additional tributaries to the Rio San Jose to the east of Mount Taylor should be included. Also, it would be helpful to have a figure included which shows the locations of all areas referenced in this section (e.g., where is San Miguel Creek?)
15. Page 8-4, Section 8.2, BDR. Contact the City of Grants to determine where they currently discharge their treated wastewater. Also, provide additional explanation of the influence of spring flow in Rio San Jose west of the Acoma Pueblo.
16. Page 8-5, Section 8.2, BDR; and Page 9-43, Section 9.6, Potential Impact No. 3, BDR: There is mention of the possibility of discharge from the dewatering of Roca Honda mine reaching the Rio San Jose. Provide further explanation how this increased stream flow and ground water recharge would impact currently contaminated sites such as at Homestake, which maintains systems to capture and treat ground water.
17. Page 8-5, Section 8.2, BDR; and Page 37, Section 4.0 MOP. RHR states that dewatering of the proposed Roca Honda Mine may result in a discharge of up to 8.9 cfs (approximately 4,000gpm). No citation or documentation is provided for this estimated flow rate until five pages later (Section 8.3, page 8-10). Also, Section 4.0 of the MOP indicates a water treatment facility capable of processing 8,000 gpm. For future submittals, NM OSE strongly recommends that RHR provide a basis for such estimates, such that reviewers can easily find and evaluate the rationale.
18. Page 8-8, Figure 8-5, BDR: Correct the title of this figure so it reads *"Daily Stream Flow from Rio San Jose at Grants..."* instead of *"Daily Streamflow from Rio San Jose at Gallup..."* If available, compare the stream flow data with records of discharge from mines contributing to flow in San Mateo Creek.

19. Page 8-9, Table 8-1, BDR: The last line in the table lists the constituent as "total solids." Provide clarification whether this should be total suspended solids. This comment applies to subsequent tables with this constituent name.
20. Page 8-15, Section 8.4, BDR. Provide a map that shows spring locations.
21. Page 8-15, Section 8.4, BDR; Page 8-17, Section 8.5, BDR; and Page 8-18, Section 6.0, BDR. Section 8.4 states *"No water rights claims are on file with the OSE for any springs in the vicinity of the permit area, although Lee Ranch has compiled an inventory of springs used by the ranch."* As in comment number 18, NM OSE recommends that RHR document what district offices, publications and databases were consulted to form the basis of the statement about water rights for springs. Define the areal extent of the "permit area" that was evaluated when considering impacts on springs.
22. Pages 8-17 to 8-18, Section 8.5, BDR; Page 8-18, Section 8.6, BDR; Page 9-43, Section 9.6, BDR; and Page 65, Section 5.3.10, MOP. While identifying the need to obtain a mine dewatering permit and a permit to appropriate underground water , RHR makes several statements such as in Section 8.5, *"Discharge of mine water or dewatering operations will not have any impact on the availability of water to these water rights."* These statements are preliminary assessments by RHR. NM OSE Water Rights Division and Hydrology Bureau will evaluate potential impacts to surface water and ground water based upon the submittal and review of permit applications, not these preliminary statements.
23. Page 8-18, Section 8.6, BDR. In references to the multi-year perennial flows in San Mateo Creek due to mine discharge water, RHR states *"Local ranchers and irrigators may seek to divert a portion of this flow under existing or new water rights, in which case the stream flow will be reduced."* Note that the NM OSE Water Rights Division determines the validity to any claims (existing or new) for appropriating these temporary flows of mine discharge waters.
24. Page 9-3, Section 9.2, BDR: Provide information about whether any of the discharge in Kernodle's (1996) model goes to other streams mentioned in the BDR besides the San Juan River and Rio Puerco.
25. Page 9-10, Figure 9-6, BDR: The potentiometric surface contours for the Westwater Canyon Member of the Morrison Formation do not appear to be correctly labeled based on a change in contour interval that is not uniform 6400-6600-6500 feet above mean sea level. Consider expanding the area for this map because the local area covered in this map appears too small to evaluate potential effects in the central and western part of the Ambrosia Lake region.
26. Page 9-10, Figure 9-6, BDR; Page 9-11, Figure 9-7, BDR; and Page 9-12, Figure 9-8, BDR. RHR should specify the year that water level data were collected for the potentiometric map and cross sections. In addition to ongoing work through the implementation of the SAP, RHR should evaluate other sources of data for more

recent water level measurements such as the USGS GWSI database to obtain present day water levels.

27. Pages 9-15 to 9-16, Section 9.4, BDR. RHR statement that the Westwater Canyon Member (WCM) of the Morrision Formation is too deep to be targeted by local wells does not account for future uses. For example, this aquifer has already been under consideration by the Mount Taylor Mine to pipe deep water to cities at some distance from the San Mateo Creek area. Water supplies are scarce in New Mexico. Deeper wells and pipelines are being considered in several parts of the state.
28. Page 9-16, Section 9.4, BDR: Provide a basis for a 5-mile area around the Roca Honda permit area. Provide an explanation that addresses the 5-mile area's size relative to the potential impacts of mine dewatering.
29. Page 9-34, Section 9.4.8, BDR: Add the units for the hydraulic conductivity values of the Morrison Formation.
30. Page 9-35, Section 9.4.8, BDR. RHR mentions historically poorer quality water (>3,000 mg/L TDS instead of 500 mg/L) observed in some wells screen across the Westwater Canyon Member (WCM) of the Morrison Formation along San Mateo Creek near its confluence with Arroyo del Puerto. The "historical" data may be influenced by poorly sealed wells, de-pressurization of aquifers, mixing of poorer quality Dakota Sandstone aquifer into the WCM (from both natural and anthropogenic made hydraulic connections), and infiltration of untreated surface mine water flows. When data are available prior to mining activities, the WCM aquifer generally has low total dissolved solids in the vicinity of Ambrosia Lake. NM OSE Hydrology notes the importance of following 19.27.4.31 NMAC in order to seal and prevent further inter aquifer hydraulic connections under artesian conditions such as the WCM of the Morrison Formation.
31. Page 9-43, Section 9.6, Potential Impact No. 1, BDR: Provide more data to support the claim that shallower and deeper aquifers will not be impacted by the proposed mine dewatering.
32. Page 9-44, Section 9.6.1, BDR. RHR provides some text about ground water flow modeling. As presented, the text discusses results and calculations without providing the information that would allow reviewers to evaluate the results. Specifically, reviewers require more information regarding the aquifer properties and boundary conditions simulated and the results of the steady state and transient calibration. Additionally, more detailed information is requested about the Roca Honda mine dewatering simulation, including: pumping rates simulated; time period of simulations; predicted impacts to streams and springs; distribution of predicted drawdown in each aquifer. NM OSE Hydrology recommends future submittals provide input files and other model documentation as may be necessary to evaluate the model simulations.
33. Appendices 9-A through 9-H, BDR and other water quality data tables in Section 9, BDR. RHR presented only tabular data for water quality. NM OSE Hydrology

recommends that future reports add a few graphs of selected water quality concentrations versus time.

District I – Water Rights

34. Page 9, Table D-2, Permit Application. After a preliminary review, the Water Rights Division (WRD) found no existing permits, declarations or licenses by which they could pump water for operations. Therefore, RHR shall file an Application for Permit to Appropriate the Underground Waters of the State of NM within the Bluewater Basin. In short, the application needs to be detailed in content and must contain the specific requirements listed on the application. The Application will be reviewed for completeness. If complete, WRD District 1 will draft the notice for publication and send it to the applicant(s) with instructions for publication. WRD will select the newspaper(s) the applicant is to publish legal notice. After publication is complete, all affidavits are filed, if no protests are filed, WRD will review the application and make recommendation based on all applicable statutes, rules, regulations, policies and procedures. If the application is protested the WRD will collect the names of all Protestants and forward our standard packet to the administrative litigation unit (ALU) for hearing. The application shall not impair existing water rights, be detrimental to public welfare or contrary to conservation of water within New Mexico. The application may be approved in full or approved in part followed by our Conditions of Approval that the permittee must comply with. It may also be denied, and the applicant may aggrieve our decision.
35. Page 9, Table D-2, Permit Application. In addition to a Permit to Appropriate the Underground Waters of the State of NM, RHR must apply for a Mine Dewatering Permit (72-12A NMSA) and a Permit to Appropriate Waters during the construction of shafts. Forms may be found at the following site: http://www.ose.state.nm.us/water_info_rights_apps_forms.html

If you have any questions, please contact Kevin Myers at 505-827-3521 of the Hydrology Bureau. Specific questions may also be directed to Wayne Canon at 505-383-4007 of the Water Rights District 1 Office in Albuquerque and to Elaine Pacheco (Bureau Chief) at 505-827-6111 of the Dam Safety Bureau.

Sincerely,

John T. Romero, PE, Director
Water Resource Allocation Program

cc: Holland Shepherd, Program Manager, MARP
Jim Sizemore, PE, Water Rights Director
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