ROCA HONDA RESOURCES, LLC
RECLAMATION PLAN
FOR
ROCA HONDA MINE

OCTOBER 2009

Submitted To:

New Mexico Mining and Minerals Division
&
U.S. Forest Service (Cibola National Forest)

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Acronyms

BDR	Baseline Data Report
BLM	Bureau of Land Management
BMP	Best Management Practice
CFR	Code of Federal Regulations
cy	cubic yard(s)
H	horizontal
NM MMD	New Mexico Mining and Minerals Division
NMAC	New Mexico Administrative Code
NMDGF	New Mexico Department of Game and Fish
NMMA	New Mexico Mining Act
NMSA	New Mexico Statutes Annotated
NRCS	Natural Resource Conservation Service
OSE	Office of State Engineer
POO	Plan of Operations
RHR	Roca Honda Resources, LLC
SLO	State Land Office
SW	southwest
SWPPP	Storm Water Pollution Prevention Plan
USFS	United States Forest Service
V	vertical

Reclamation Plan NMAC 19.10.6.602 D.(15)

This Reclamation Plan, prepared in accordance with the New Mexico Administrative Code (NMAC) 19.10.6.602 D.(15) regulations for new non-coal mining operations, provides a description of the reclamation plan for Roca Honda Resources, LLC (RHR) proposed uranium mine in McKinley County, New Mexico. This plan is organized in conformance with the regulatory requirements outlined in NMAC Section 19.10.6.602 D.(15) and 19.10.6.603 as appropriate to achieve reclamation of the mine to the post-mining land use of grazing. This plan is also organized to meet the United States Forest Service (USFS) requirements for submittal of a Plan of Operations (POO) and a Reclamation Plan for operation of a mine on Forest Service lands.

This Reclamation Plan describes how the disturbed area will be reclaimed to achieve grazing post-mine land use and how it will be reclaimed to meet Section 69-36-7(H)4 of the New Mexico Mining Act and the performance and reclamation standards of NMAC 19.10.6.603. The Plan contains the required maps and an approximate schedule of reclamation activities and other information required by NMAC Section 19.10.6.602 D.(15)(f) through (k) that will be utilized at the Roca Honda mine site to meet the performance and reclamation standards and requirements of NMAC. It also contains the maps and describes the approximate time table and general sequence to be followed in reclaiming the disturbed areas.

1.0 Introduction

This Reclamation Plan is submitted as part of RHR's application for a new mine permit to the New Mexico Mining and Minerals Division (NM MMD) for its proposed Roca Honda uranium mine. The proposed mine site is located approximately 3 miles northwest of the community of San Mateo, New Mexico, at the southern boundary of McKinley county just north of the Cibola county line. Accessible from New Mexico State Highway 605, it is approximately 22 road miles northeast of Grants, New Mexico. Figure 1-1 is a map showing the location of the site and access from Grants.

The Roca Honda mine permit area boundary encompasses all of Sections 9, 10, and 16, Township 13 North, Range 8 West, in McKinley County, New Mexico (see Figure 1-1). It consists of 63 unpatented, contiguous mining claims on Sections 9 and 10 located on 1,280 acres of land administered by the USFS and a general mining lease (New Mexico General Mining Lease number HG-0036-002) on Section 16 (640 acres), owned by the state of New Mexico.

In an effort to minimize duplication while fulfilling State and Federal requirements, this Reclamation Plan has been prepared to meet New Mexico NMAC requirements and 36 Code of Federal Regulations (CFR) 228A requirements.

The proposed permit area for the Roca Honda mine is 1,920 acres in size which is based on 640 acres for each of Sections 16, 9, and 10. The total disturbed acreage within the permit area is significantly smaller, approximately 12 acres in Section 9, 71 acres in Section 10, and 100 acres in Section 16. Although Section 11 is not part of the permit area, an existing forest road will be upgraded to accommodate haul truck traffic and general access to the section facilities. The major surface facilities and some of the underground workings for the proposed Roca Honda mine are planned to be located in Section 16. The remaining facilities, surface features, and associated permit area are located in Sections 9 and 10. Figure 1-2 shows the various facility footprints and associated disturbances of the proposed mine project.

The plan assumes removal of all surface facilities, recontouring, and reclamation to a post-mining land use of grazing. However, there may be good reasons for and occasions to reconsider the final disposition of some of the surface improvements made by RHR to the property. As such, RHR will reserve alternative disposition of some improvements such as roads, ponds, buildings, etc., based on the wishes of the land owner and/or lessee.

The plan for reclamation of the site addresses the NMAC requirements of 19.10.6.602 D.(15)(f) through (k) and 19.10.6.603 A through H. Each section of the Plan has a reference to the NMAC requirement for ease of review. The Plan will also address USFS requirements presented in 36 CFR 228.4, Plan of Operations, and the Forest Service Manual 2840, Reclamation Policy. These sections will follow the NMAC requirements. A detailed Reclamation Plan will address NMAC 19.10.6.605 F, a financial assurance proposal and 19.10.12 requirements for financial assurance. This detailed plan will be developed as the design of the site facilities progresses and will include the cost estimate for final reclamation.

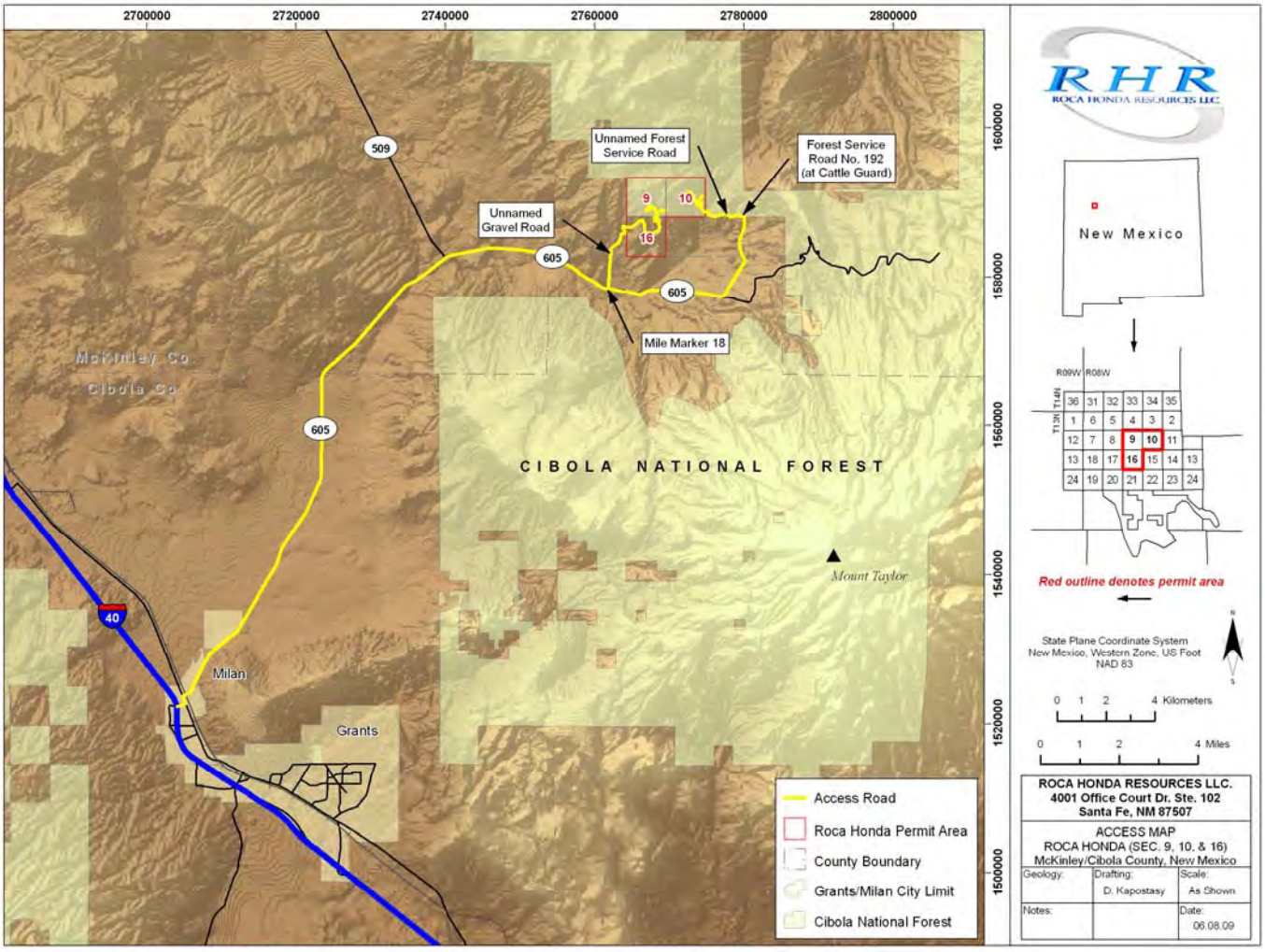

Figure 1-1. Location Map of the Roca Honda Permit Area

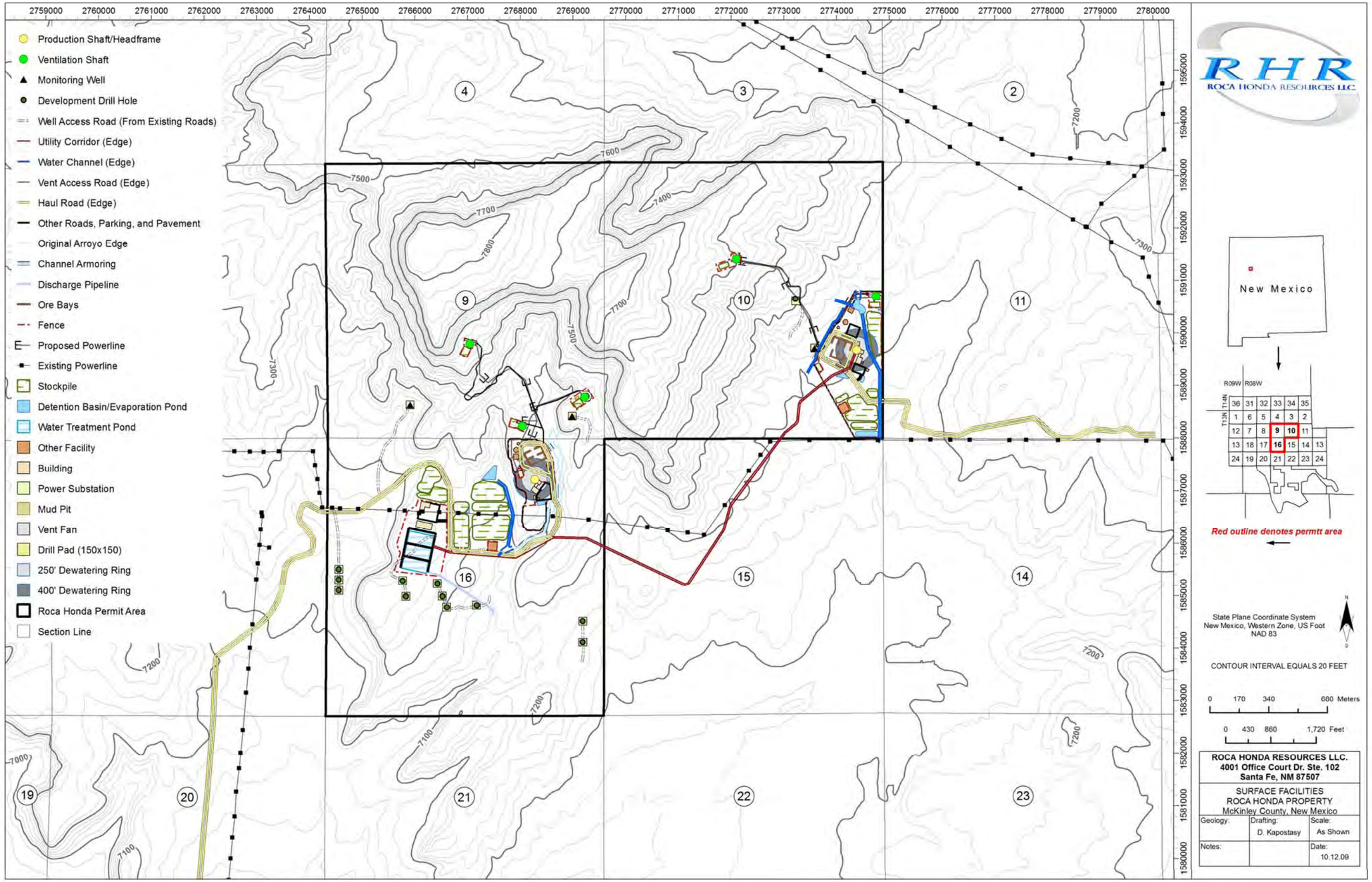

Figure 1-2. Roca Honda Permit Area Facility Footprints

2.0 Post-Mining Land Use (NMAC 19.10.6.602 D.(15)(f))

Roca Honda Resources, LLC proposes to reclaim the disturbed areas of the mine permit area discussed in the Mine Operations Plan to a post-mining land use of grazing. Sections 9 and 10 of the permit area are owned by the federal government and administered by the USFS; RHR owns all of the mining claims in these two sections. The Cibola National Forest Land and Resource Management Plan (1985) provides for multiple land uses of the forest, including grazing. Appendix A of this Reclamation Plan contains a letter from Ms. Nancy Rose, Forest Supervisor of the Cibola National Forest and National Grasslands, approving RHR's proposed grazing post-mining land use for these sections.

Section 16 is owned by the state of New Mexico and administered by the State Land Office (SLO). As stated above, RHR holds the general mining lease for the section. The Fernandez Company holds the grazing lease. Appendix A of this Reclamation Plan contains a letter from the New Mexico SLO approving RHR's grazing proposed post-mining land use for Section 16.

2.1 Description of Proposed Reclamation Plan (NMAC 19.10.6.602 D.(15)(g))

This proposed Reclamation Plan describes how the disturbed land of the permit area identified in the Mine Operations Plan (included in the permit application submittal) will be reclaimed to meet the requirements of New Mexico Statutes Annotated (NMSA) Section 69-36-7(H)4 and the performance and reclamation standards of Section 19.10.6.603 of the NM MMD regulations. A detailed reclamation plan suitable for cost estimating and establishing the financial surety will be prepared after receipt of comments and their subsequent resolution. A detailed design of the facility reclamation will then be provided to establish the basis for the required financial surety. The following sections summarize the major reclamation activities planned for the Roca Honda permit area following completion of mining activities. These activities are listed generally in the order they will occur, and include, but are not limited to:

1. Return non-ore material that remains on the surface back into the mine.

The excavation of non-ore material is explained in Section 4.0 of the Mine Operations Plan. The material will be stockpiled on the surface until there is room below ground to return the material. This material will be returned to mined-out areas before the mine is closed, to the extent possible. However, if any of this material exists on the surface at the time of closure, it will be transported from the stockpile and sent back down the mine for placement in the mine workings. The material will be unloaded and transferred to its final destination in a mined out area by hydraulic or mechanical equipment. Some of the material may be sent off site to a processing facility if it is found to contain ore grade mineralization.

2. Disturbed area/haul road surveys

Prior to completely plugging the shafts, the disturbed area will be surveyed for the presence of residual uranium-bearing materials, above background, deposited on the surface during operations. Such material identified will be removed and deposited back into the mine through the shafts and vents. Should such materials be identified after the shafts and vents have been closed, the material will be removed and disposed of in accordance with an approved plan. The details of such a plan will be developed and implemented in conjunction with the NM MMD and USFS regulatory authorities.

Similar surveys will be performed along the haul road corridors leading out of the permit area, through the Lee Ranch private property leading out of Section 16 and the forest road in Section 11 leading out of Section 10. The shoulders of the public paved road will also be surveyed to a yet unspecified distance (as agreed to by the regulatory authorities). Materials identified that require removal will be disposed of in accordance with the approved plan.

3. Remove salvageable equipment and materials from underground.

An assessment of equipment and materials will be made to determine whether or not it is salvageable. Unsalvageable equipment and materials will be left in the mine. No hazardous materials or toxic substances will be left underground. Salvageable equipment in the mine will be dismantled and transferred to the surface via the production shaft hoisting system. Salvageable equipment and materials will be removed offsite for disposition.

4. Return shaft excavation material into the shafts and vents and plug shafts and wells.

The stockpiled shaft excavation material will be returned to the shafts and vents after mining operations are completed. The stockpiled shaft excavation material will be stripped of any topsoil and vegetation, and the shaft material will be loaded back into the open shaft from the top using earth moving/loading equipment. Water wells will be plugged or abandoned in accordance with the Office of the State Engineer (OSE) requirements.

If additional material is needed to fill the shaft to ground surface, a neat cement, bentonite-based plugging material or other sealing material will be poured or tremied into the shaft from the top of the replaced shaft material to near-ground surface. An engineered concrete plug will be installed approximately 2-5 ft below ground surface. Fill and topsoil will be placed on top of the concrete plug and finished at grade. The area will be graded and revegetated.

The drill holes and wells will be abandoned per NMAC 19.27.4.31. The drill hole or well will be grouted with neat Type I/II Portland cement. The grout will be placed through tremie pipe, and progress from bottom to top in one continuous pour. The surface completion will be deconstructed, leaving only a small marker in the top of the grout to identify the abandoned drill hole or well.

5. Dry evaporation ponds; dredge bottom material, as necessary, and analyze for disposal; remove pond liners and dispose as appropriate.

If water exists in the evaporation ponds when the ponds are scheduled for closure, the water will be transported via pipeline or truck to the water treatment plant for treatment and release. Pond sediment will be removed and disposed of in an approved landfill. The liner will be removed and disposed in the same manner as the pond sediment. Pond berms will be collapsed into the ponds, and if necessary, fill material from the sub-base rock and subsoil stockpiles and other fill material such as the road base removed during reclamation will be added in lifts to fill the ponds. The lifts will be compacted for stability and contoured to control drainage and match the surrounding terrain. The topsoil layer will be added and vegetated.

6. Decommission the water treatment plant; test the settling ponds sludges; dispose of sludges, as appropriate.

The water treatment plant will not be needed after the mine dewatering has ended and the evaporation ponds are dry. After the last water has been treated and released, the bottom sediments will be analyzed to determine the method of disposal. The sediments will be disposed of at an appropriate landfill or if the analysis is found acceptable, used as fill. The liners will be removed and disposed of in an appropriate landfill.

The treatment units (filtration, ion exchange, reverse osmosis, etc.) will be salvaged. If the units are not reusable, they will be dismantled and disposed of in accordance with the regulations at that time. Treatment chemicals and storage tanks will be recycled or disposed of at an approved landfill. The empty building will be decontaminated if necessary and demolished with heavy equipment, cut or smashed into pieces small enough to be loaded and hauled to a landfill. The concrete slab will be broken and used as riprap or buried as fill in the ponds.

If uncontaminated, the water in the storage basin will be used for dust control and compaction water during reclamation. Any remaining water will be discharged to the arroyo. The three treatment plant ponds will be filled and compacted with stockpiled soil. The surface will be contoured to match the surrounding terrain, topsoil added and the total water treatment plant area seeded at the same time.

7. Remove detention basins, arroyo armoring, and structures.

The detention basins were constructed on the existing arroyos at an entrance point to the operational areas to control the flow of storm water near the surface facilities. The detained water has not been altered by the mining operation, therefore, the basin bottom soil and the embankments will be left in place. This Reclamation Plan assumes that the basins and arroyo improvements will be removed after mine operation. The final reclamation could be altered if the land owners and regulatory agencies decide to retain all or portions of the drainage control features. The first step in reclamation will be the removal of the basin overflow structures. The concrete will be crushed for disposal as fill or hauled with the metal pipes to an approved landfill. The embankment material will be used as fill wherever needed on the site. The area around the basins will be graded to match existing terrain.

During site construction, some arroyos will be diverted and others will be improved by constructing channels or armoring existing channels to prevent further erosion. Some arroyos will have structures built for energy dissipation at pipeline entry points or culverts added at road crossings. Sections 5.3.4 and 5.3.5 of the Mine Operations Plan discuss the location of the diversions. During reclamation, the constructed channels will be filled and compacted with the stockpiled soil and the topsoil layer will be seeded. Energy dissipaters such as fiber rolls will be added at the point where the arroyos originally flowed across the surface. The reclaimed contours of the area will restore the gentle slope and allow the surface flow to soak into the ground or find its way to the reestablished channel of the arroyo. The armorment, concrete structures and culverts will be removed, crushed and used as fill or hauled to a landfill. The channel side slopes and inverts will be restored as close as possible to the original. The surface edges of arroyos will be graded if necessary and seeded.

8. Remove salvageable material offsite and dispose of demolition debris, as necessary.

All salvageable materials will be segregated for recycling. Demolition debris will be staged for transportation and disposal at appropriate facilities.

Buildings and structures will be decommissioned, including de-energizing electrical power and shutting off all other utilities and removing all products such as process reagents, oils, lubricants and batteries to be recycled or disposed of at appropriate facilities. Salvageable materials such as metal and copper piping and wiring, corrugated metal siding and roofing, metal beams, windows, doors, interior cabinetry and shelving, lighting, etc. will be staged for re-use and/or recycling.

9. Remove all buildings and structures.

Prior to demolition and/or removal, all facility buildings and structures, including utility lines, poles and pipelines, will be decommissioned. Decommissioning includes de-energizing electrical power, shutting off all other utilities, and removing all products such as process reagents, oils, lubricants and batteries for recycling or appropriate disposal. Following decommissioning, building materials and components will be segregated for disposal or re-use/recycling purposes.

Buildings and structures will be demolished by mechanical means; no blasting will be performed. Salvageable materials such as metal and copper piping and wiring, corrugated metal siding and roofing, metal beams, windows, doors, interior cabinetry and shelving, lighting, etc. will be staged for re-use and/or recycling. All structures will be removed to ground surface, including foundations. Any foundations remaining onsite will be removed below the surrounding grade. All demolition debris will be sized such that it can be lifted, loaded and carried by heavy equipment to disposal or recycle staging locations to await offsite transport. No demolition debris will remain onsite following completion of final site reclamation.

10. Regrade site to promote positive drainage and slope stability.

After the reclamation steps discussed above have been completed, the disturbed areas of the surface facilities will be contoured and graded to provide controlled drainage and to prepare those areas for revegetation. The approximate final surface contours are shown in Figures 2-1 through 2-6. Constructed areas that required cut-and-fill to level the surface and control storm water run-on will require the return of fill to a cut area. Recontouring will consist mostly of removing constructed drainages and berms and shaping the surface to match the pre-existing contours to direct runoff to the permanent drainage arroyos. Slope gradients will be constructed to 5 horizontal (H):1 vertical (V) or less where feasible to maintain stability. The areas to be recontoured will be protected by erosion control Best Management Practices (BMPs) such as fiber rolls to reduce the loss of soil from storm water. The area will be watered during reclamation to reduce the loss of soil by wind.

Prior to reclamation, the cut slopes in rock will be evaluated to determine their potential for long-term stability. The evaluation will include a review of observed movements from initial construction through the mining period of operation. Obvious rock debris, visible displacements of rock blocks, and other physical evidence will be considered. Any potentially unstable slopes will be backfilled to a final slope no greater than 3H:1V.

Recontouring will be performed by dozers, scrapers, loaders, and graders, with the grader used to blend the recontoured surface into adjacent undisturbed areas. The disturbed area will be staked by a survey crew to establish the final contour. The equipment will be used to move material from cut areas or from stockpiles to the areas to be filled and to spread the material to match the lift depth indicated on the stake (approximately one foot per lift). As a lift is completed, it will be compacted to the predetermined density (approximately 90% standard proctor). Compacted lifts versus non-compacted fill will provide slope stability. Water will be added to the material as required to enhance compaction and to control dust. Compaction and moisture levels will be checked on a regular basis and the results recorded. The placement and compaction of lifts will continue until the final lift has been placed before the topsoil layer. A smooth transition to the surrounding surface will be bladed to maintain the proper slope gradient, and eliminate depressions. The final layer of sub-soil will not be compacted except with the normal movement of the equipment. This technique will enhance root penetration from the topsoil layer to be added later.

Control of surface water runoff onto and from the reclaimed areas will be accomplished as part of the recontouring and final grading. Existing natural drainage arroyos will be preserved and improved as necessary as discussed in item 7 above. The pre-mining storm water runoff in the areas of construction was via surface flow to an arroyo. The reclaimed contours will allow the same type of drainage to continue into the same arroyos. The pre-existing drainages that were diverted away from the mine operation will be recreated at locations shown on Figures 2-1 through 2-6. These drainages will follow natural surface gradients so that control structures and energy dissipaters will not be required.

11. Remove road base material for fill; regrade roads not to be kept; cover with topsoil and revegetate.

Proposed disposition of haul roads and access roads will be reviewed by the land owners. Prior to final reclamation, the State and USFS will determine which roads will be left intact, which will be left but returned to pre-mining condition, and which will be removed and the area reclaimed. If the roads retained include constructed crossings such as culverts, these structures will also remain and become a part of the owners' responsibility.

If the roads are to be reclaimed, the first step will be to pick up and remove the gravel on the surface and use it as fill in other places on the site. The roadbed will be disked or ripped and any segments that were lowered will be filled to match the surrounding grade. Drainage crossings will be removed, and the natural drainages will be graded to match the upstream and downstream inverts. After the grade nearly matches the natural terrain, topsoil will be applied to the surface and revegetated with the approved permanent seed mix.

Access roads to the ventilation/escape shafts that are not to be retained will be graded to match the original topography. If road surfaces were improved with crushed rock or concrete, they will be removed.

12. Spread topsoil, implement erosion control measures, and revegetate.

Topsoil will be salvaged from disturbed areas prior to construction of the mining operation facilities and stockpiled and protected from erosion, as described in the Mine Operations Plan.

The soil will be amended with mulched vegetation initially, vegetated while stockpiled, and tested for acceptable growth media before use.

Topsoil placement will be the final layer over the reclaimed areas. If the subsoil layer has compacted since its placement, it will be disked to approximately 18 inches to enhance root establishment. The BMPs will be checked for effectiveness and replaced if necessary. The topsoil will be placed in piles over the subsoil layer and spread or graded. The topsoil will be lightly compacted with the spreading equipment only.

The revegetation of the disturbed area will be designed to create a stable, self-sustaining plant community and will be in conformance with the post-mining land use of grazing. Greater detail on revegetation is presented in Section 3.7 of this Plan. The first step will be the analysis of the topsoil to check organic content. Amendments will be added to the top 4 to 6 inches of the placed topsoil if necessary. The entire area will be seeded; the method of seeding will be determined according to the area's topography. Most topography will be gentle slopes conducive to hydromulch and drill seeding. If mulching is not performed with the seeding, it will be considered after seeding to provide erosion protection. Irrigation is not proposed but watering with a truck could be used while the reclamation is in progress.

The erosion control BMPs will be replaced if necessary and remain until vegetation has been achieved and approved. Monitoring of the areas will be conducted on a periodic basis by a qualified botanist or vegetation specialist. The progress of the reclaimed areas will be compared to the reference plot as discussed in Section 3.7.

13. Remove perimeter fences when the reclaimed areas are released without restrictions.

During operation, the various activity areas will be fenced to control access, as described in the Mine Operations Plan. These fences will remain during reclamation until the recontouring and grading begins. The 8 foot fences will be removed and sent to disposal to allow access and ease of movement for the heavy equipment to create the proper contours. After the areas have been seeded, they will be fenced with T-posts and barbed wire until vegetation is established. This fencing will be removed after reclamation approval.

2.2 Disturbed Area and Reclamation Schedule (NMAC 19.10.6.602 D.(15)(h))

Figure 1-2 indicates the surface facilities to be constructed for the proposed mine operation. It is currently estimated that approximately 183 acres will be disturbed by surface facilities and will require reclamation. Contemporaneous reclamation is reclamation that is performed during, or in parallel with, mining operations; it will be an integral part of the mining activities (see Section 5.2 of the Mine Operations Plan). The majority of the surface reclamation, however, will begin at the completion of mining rather than being performed contemporaneously during mining because the facilities will be used for the total mining permit area and will be needed during the life of the mine. The mine operation is estimated to last 17 years, and the schedule is presented in Section 3.1 of the Mine Operations Plan. Reclamation will begin after the mining ceases in Section 16 and continue for approximately two years after mining in Section 10 ceases.

2.3 Final Site Contours (NMAC 19.10.6.602 D.(15)(i))

Figures 2-1 through 2-6 are the final grading plans of the reclaimed surface mentioned in the previous section. The reclamation final contours are highlighted in Figures 2-1, 2-2 and 2-3 over the screened topography of the constructed surface facilities for the mining operation within the permit area. These figures compare the disturbances with the recontoured sites after reclamation is completed. The final reclamation contours are highlighted in Figures 2-4, 2-5 and 2-6 over the screened original topography of the permit area before mining. These figures demonstrate how closely the recontouring matches the undisturbed surrounding area.

2.4 Acid and Other Toxic Drainage (NMAC 19.10.6.602 D.(15)(j))

There is little or no potential for geochemical alteration of overburden, the ore body or other material. As discussed in the Baseline Data Report (BDR), historically, acid mine drainage has not been a problem in the Grants Mineral Belt. The material excavated during shaft construction and operations will primarily be overburden from rocks overlying the Westwater Formation and material from the Westwater Formation, i.e., the ore zone. The only materials overlying the Westwater Formation in the permit area that have a potential to contribute to acid drainage are the thin coal beds in the Dilco Coal and the Gibson Coal Members of the Crevasse Canyon Formation. The Dilco Coal Member is in the subsurface in the formation during construction of the production and/or ventilation shafts.

In the Westwater Canyon Member, clay minerals are the primary iron-bearing phase (Riese, 1980). The Westwater Sandstone contains areas where the dominant iron mineral is hematite, and areas where the dominant iron mineral is limonite (Saucier, 1980). However, since both limonite and hematite chemically alter pyrite (a potential acid-producing constituent), the new compound no longer has the potential to generate acid solutions.

The material excavated during construction of the mine shafts and vent holes will be stored in designed stockpiles to prevent mass movement and protected from storm water run-on during operation. Runoff from these stockpiles will be collected in storm water evaporation ponds. If this water does not evaporate, it will be treated in the on-site treatment plant before it is discharged. This stockpiled material will be returned to the shafts and vents during reclamation. The bottom sediment from the ponds will be analyzed for contaminants and disposed of appropriately. Consequently, material with the potential to release acid and other toxic drainage will not be on the surface after reclamation.

2.5 Waste Handling to Facilitate Contemporaneous Reclamation (NMAC 19.10.6.602 D.(15)(k))

Section 5.2 of the Roca Honda Mine Operations Plan describes how materials will be handled to facilitate maximal contemporaneous reclamation. The Roca Honda mine operation will not use waste management units, pits, or heaps. The ore from the mine will be brought to the surface via the two production shafts and placed on concrete ore bays or pads. These bays have been sited close to the production shafts to limit transportation distance and have been designed to retain several days' quantity of ore. The bays will remain operational for the duration of mining and will not be part of contemporaneous reclamation.

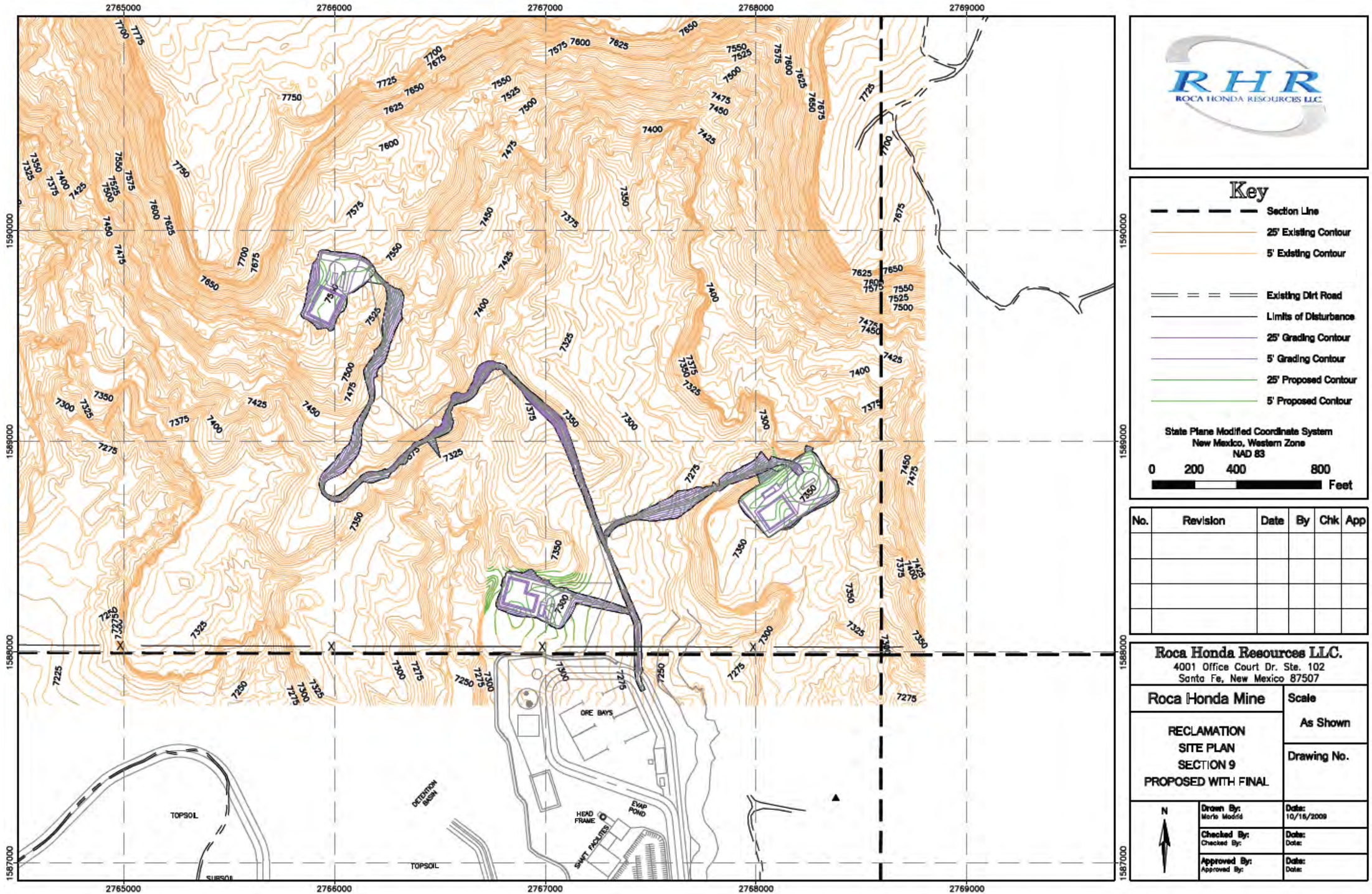

Figure 2-1. Section 9 Reclamation Contours Overlaying Proposed Contours

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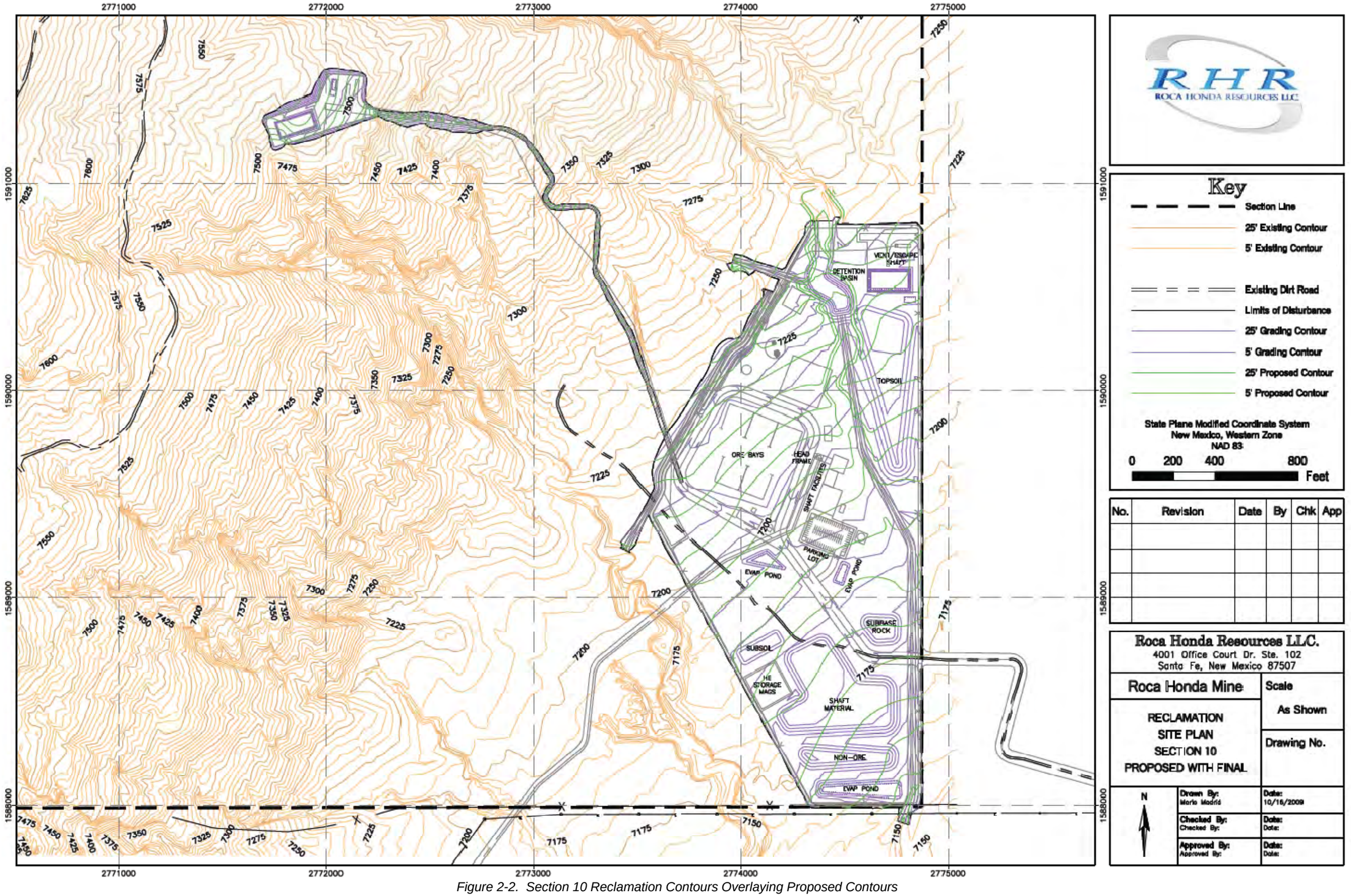


Figure 2-2. Section 10 Reclamation Contours Overlaying Proposed Contours

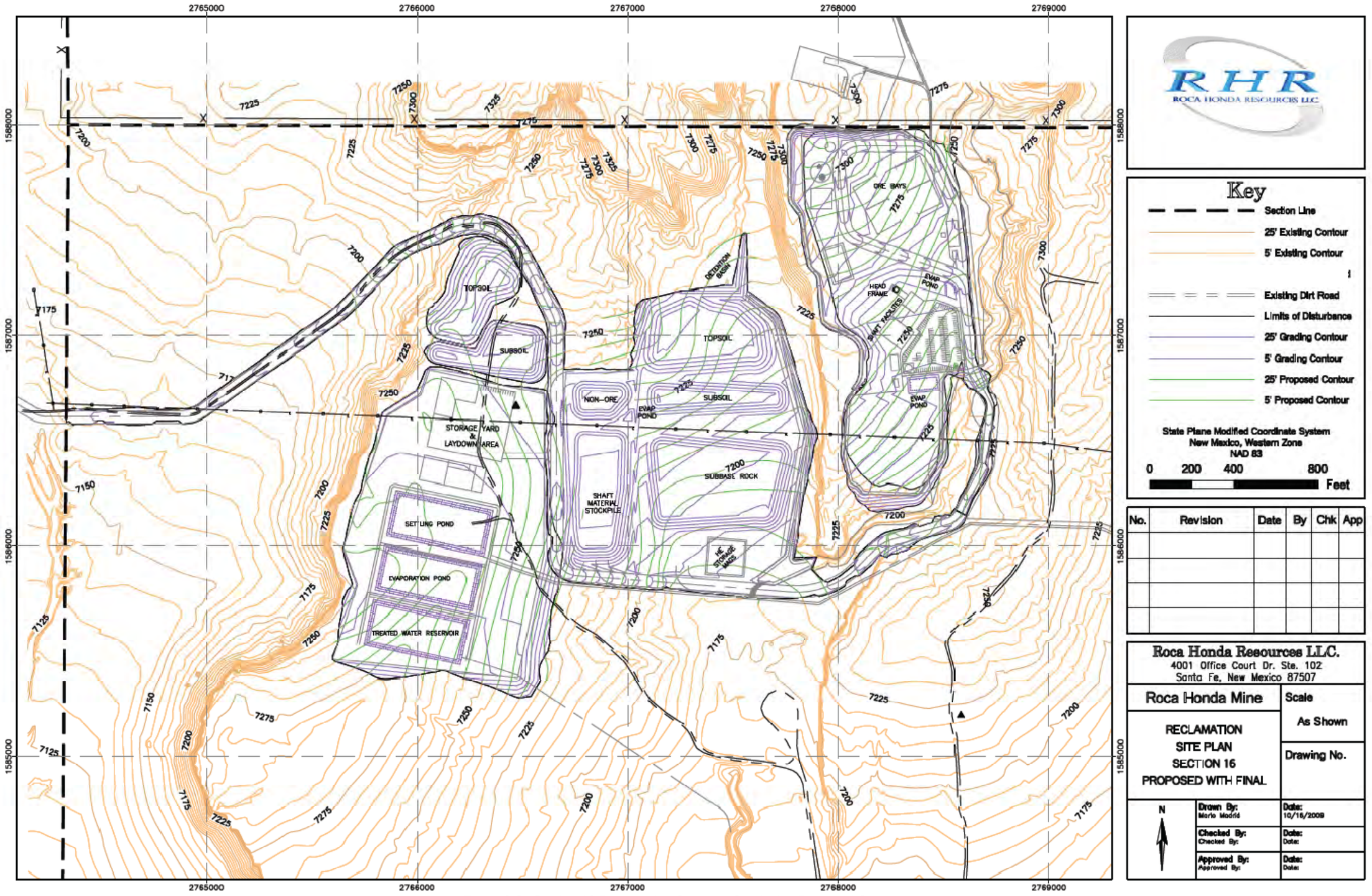


Figure 2-3. Section 16 Reclamation Contours Overlaying Proposed Contours

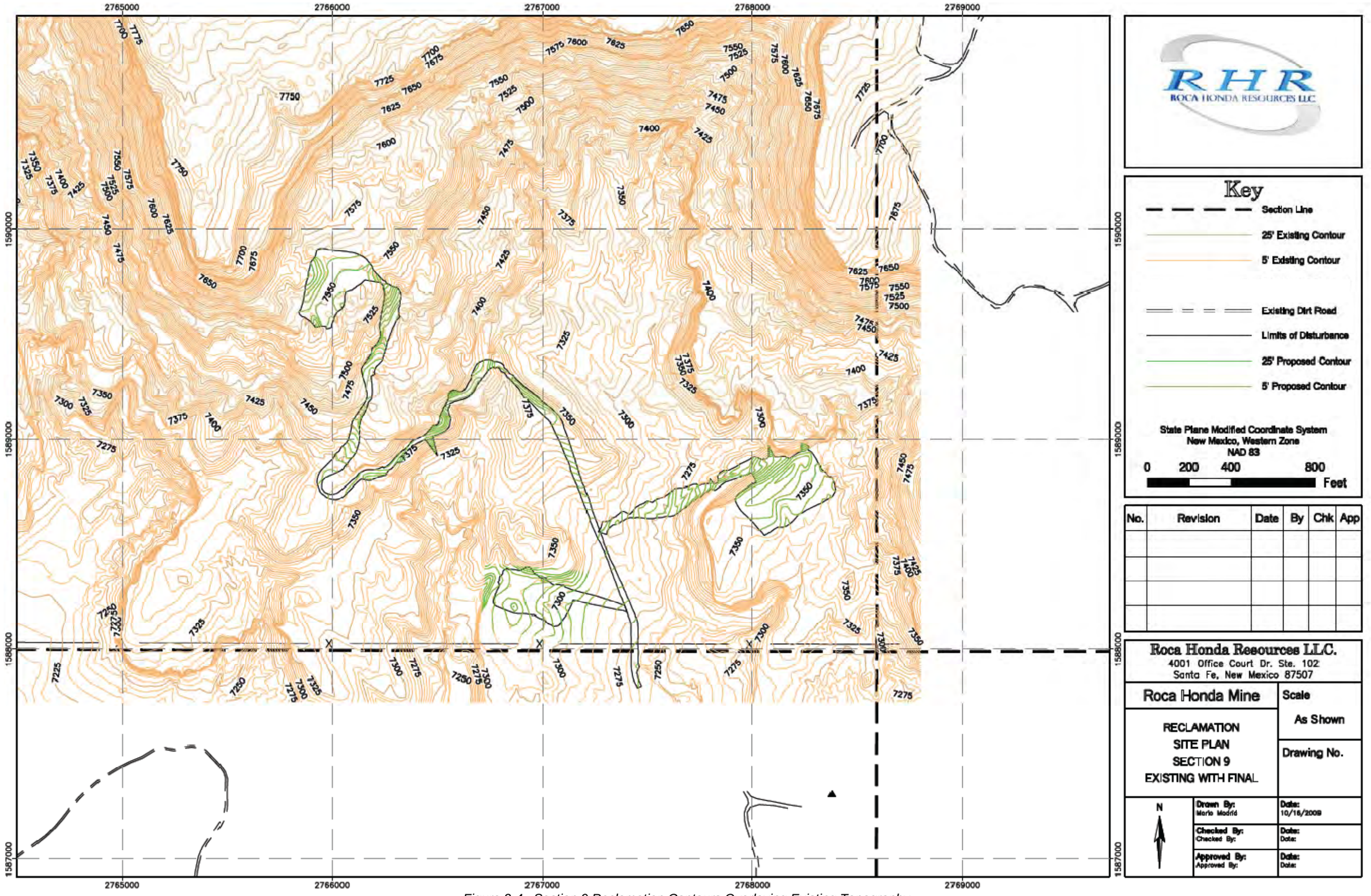


Figure 2-4. Section 9 Reclamation Contours Overlaying Existing Topography

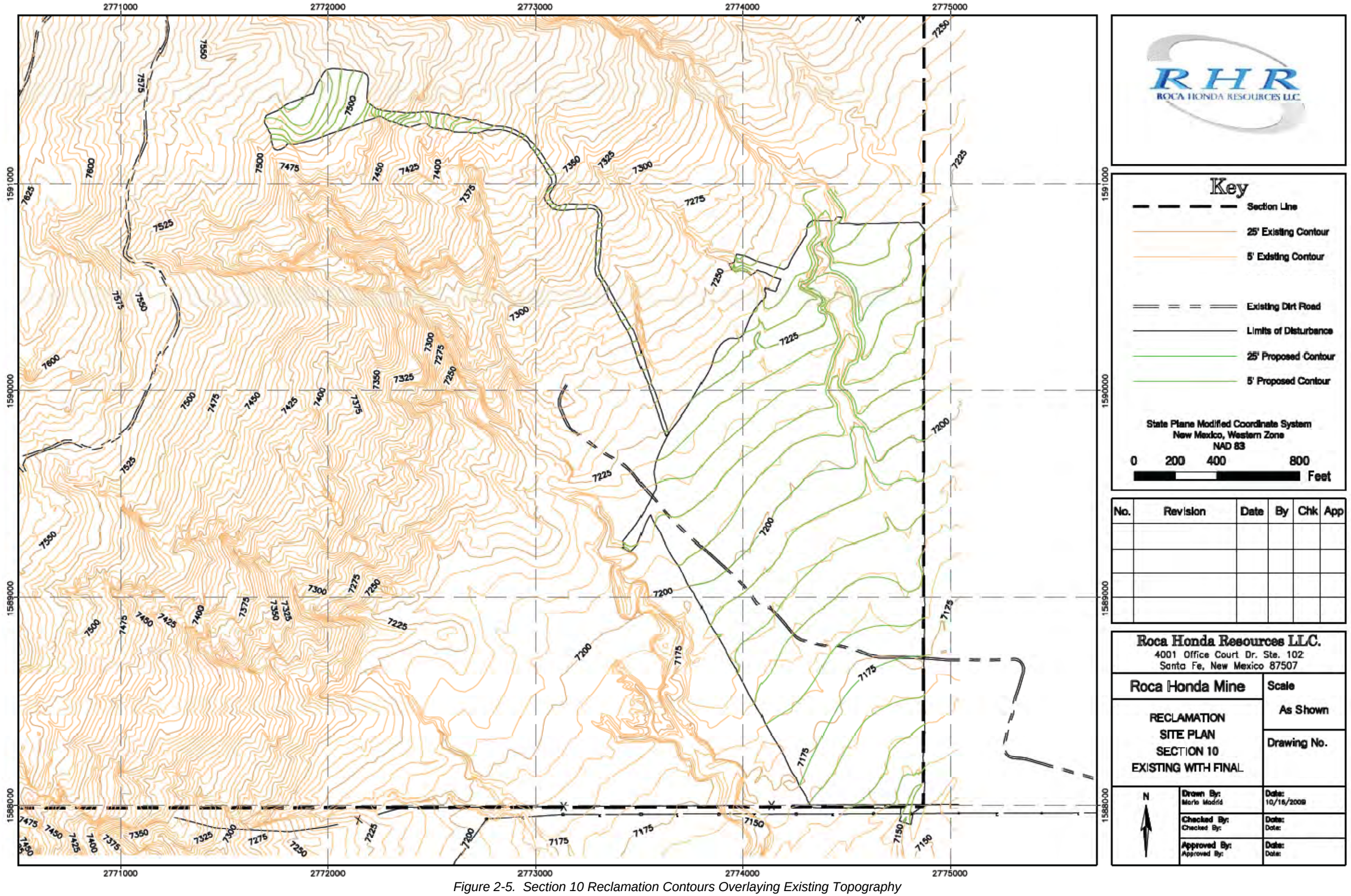


Figure 2-5. Section 10 Reclamation Contours Overlaying Existing Topography

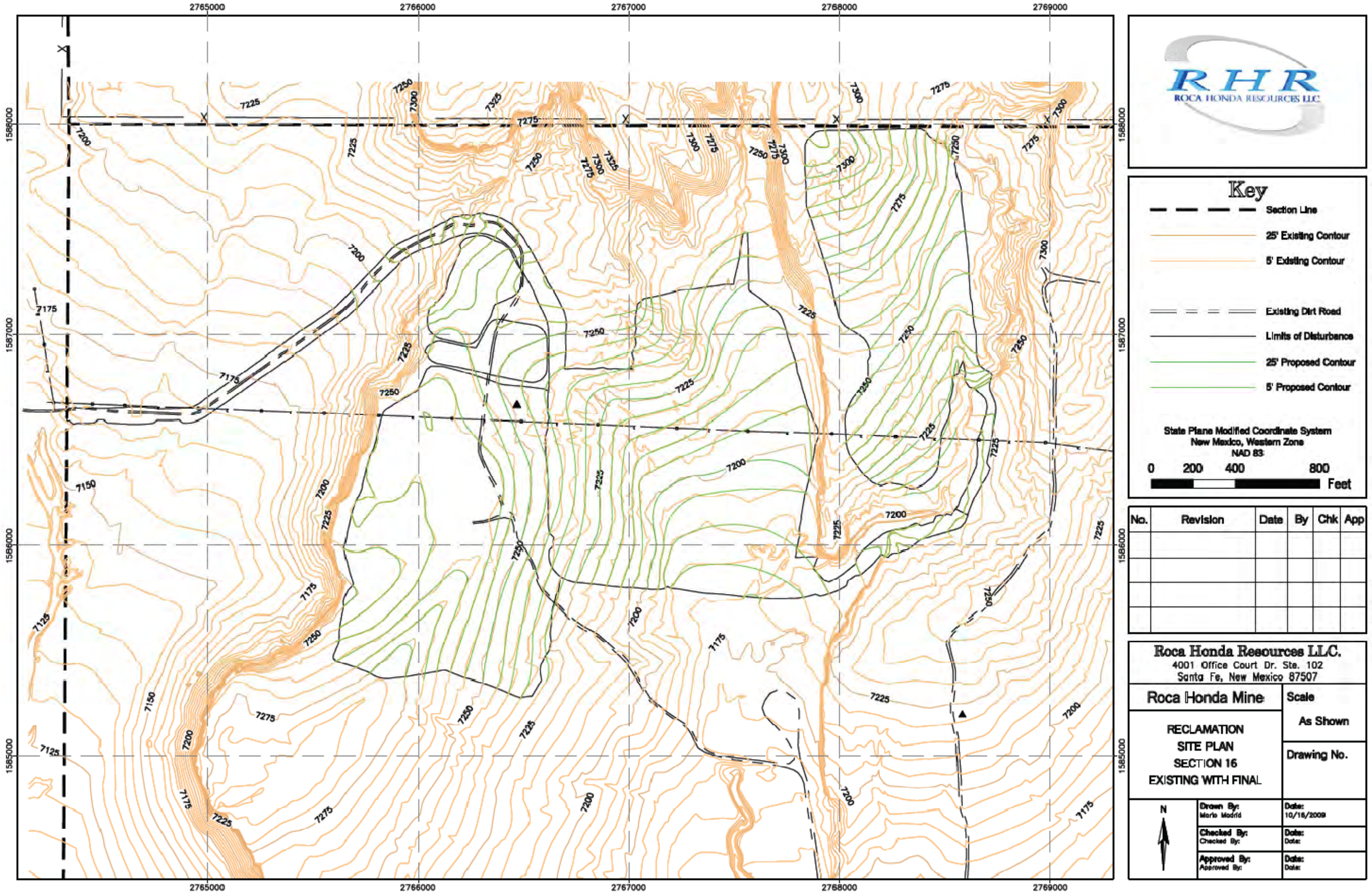


Figure 2-6. Section 16 Reclamation Contours Overlaying Existing Topography

The design, siting, and construction of excavated stockpiles are discussed in the Mine Operations Plan. The stockpiles will be designed and placed to prevent mass movement by controlling the side slopes and height. The stockpiles will also be protected from storm water run-on with drainage ditches and/or berms. The storm water that falls on the stockpiles will be handled per the Storm Water Pollution Prevention Plan (SWPPP). The preservation of clean soil and rock will be a part of contemporaneous reclamation. The non-ore material will be returned to the mine as a part of contemporaneous reclamation to partially fill the mined out rooms. The remaining stock piles will be returned to the shafts or used for surface reclamation when the site is restored.

Wastes that will be handled during operation and to some degree during reclamation include: solid waste (debris, packaging, piping, etc); hazardous waste (paint, chemicals, residuals); sanitary waste (wastewater treatment plant); scrap metal; grease; used oil; batteries; tires; liners; and wood. These materials will be collected and handled in accordance with operational protocols, best management practices, and requirements of removal contractors, recyclers, and disposal facilities. This waste management will be a part of daily operational business rather than contemporaneous reclamation.

3.0 Performance and Reclamation Standards and Requirements (NMAC 19.10.6.603 A through H)

The permit area will be reclaimed to a post-mining land use of grazing following closure. This Reclamation Plan has been developed to meet the site-specific characteristics of the mining operation and the site to ensure that the permit area meets the goal of returning it to grazing uses.

3.1 Most Appropriate Technology and Best Management Practices (NMAC 19.10.6.603 A.)

"Most appropriate technology" means the most suitable technology for a given application, in this case, reclamation activities. In practice, it means selecting and using the appropriate level of technology that can effectively achieve the intended purpose while disturbing the environment as little as possible. Best Management Practices (BMPs) are effective, practical, structural or nonstructural methods that prevent or reduce the impact of a particular activity on the environment. They include currently accepted, tested methods and materials.

The reclamation methods described in the following sections include both most appropriate technologies and best management practices. These methods are developed to achieve a balance between performance of the reclamation activities and protection of the immediate and surrounding environment. New technologies may be developed before final reclamation activities begin; such technologies may be used in lieu of those described in the following sections if they are demonstrated to be more appropriate.

3.1.1 Identification of Storm Water Constituents of Concern

Constituents having the potential to impact storm water during reclamation are the same as for site preparation and construction activities. These constituents of concern are listed in Table 3-1. This table includes information regarding material type, chemical and physical description, use, and the specific regulated storm water constituents associated with each material. Potential radiological constituents from ore or non-ore materials were removed earlier in the site remediation process as described in Section 2.1.

The following areas are identified as potential source areas of storm water impact:

- Cleared and graded areas
- All demolition and reclamation sites
- Site entrance(s) and exit(s) and access roads

Table 3-2 presents site-specific information regarding the concerns relative to each of these areas.

Table 3-1. Site Storm Water Constituents of Concern

Material	Chemical/Physical Description	Use	Storm Water Contaminant[1]
Antifreeze	Colorless or colored oily liquid	Antifreeze coolant for equipment	Ethylene glycol
Cleaning solvents	Colorless, blue, or yellow-green liquid	Cleaning equipment	Perchloroethylene, methylene chloride, trichloroethylene, petroleum distillate
Diesel fuel	Clear, blue-green, or yellow liquid	Fuel for generator, trucks, heavy equipment	Petroleum distillates, oil and grease, naphthalene, xylene
Gasoline	Colorless, pale brown or pink liquid	Fuel for trucks	Petroleum hydrocarbon, benzene, ethyl benzene, toluene, xylene, methyl tertiary-butyl ether
Grease, petroleum based	Reddish color, semi-solid gel	Lubricant	Petroleum hydrocarbon
Hydraulic fluid	Brown oily petroleum hydrocarbon	Hydraulic devices	Mineral oil
Oil	Brown or dark brown oily liquid	Lubricant	Petroleum hydrocarbon

[1]*Data from Material Safety Data Sheets, if available*

Table 3-2. Potential Sources of Storm Water Contamination

Drainage Area	Potential Contributors	Source of Potential Constituents of Concern
Cleared and graded areas	Soil and sediments	Erosion from cleared and graded areas
Demolition and reclamation sites	Soil; sediments; hydraulic fluid, oil, gasoline, and diesel from heavy equipment	Erosion from cleared and graded areas Leaking equipment and support vehicles Spills during fueling and maintenance of equipment and vehicles
Site entrance(s) and exit(s), and access roads	Soil, sediments, gasoline, diesel, oil, and hydraulic fluid	Leaking equipment and vehicles Spills during fueling and maintenance of equipment and vehicles Tracking of soil to and from work areas

3.1.2 Storm Water Management Controls

The types of temporary BMPs proposed to be used during reclamation of the Roca Honda mine site will provide soil stabilization for work areas and structural controls to divert runoff and remove sediment. These measures will also address potential storm water constituent sources from activities such as vehicle tracking and wind erosion. Practices to minimize storm water contamination are discussed, such as the coordination of the reclamation activities with the implementation of the BMPs.

Temporary and Permanent Best Management Practices

The following BMPs may be implemented, as appropriate, during the reclamation activities at the Roca Honda mine permit area (see typical design in Figures 3-1):

Preserving existing vegetation. Vegetation will be preserved to the maximum extent possible in the work areas to reduce or eliminate erosion in those areas.

Hydraulic mulch. Hydraulic mulch consists of applying a mixture of shredded wood fiber or a hydraulic matrix and a stabilizing emulsion to an exposed surface area with hydroseeding equipment, which protects exposed soil from erosion by raindrop impact or wind.

Fiber rolls. Fiber rolls are tubes of rice, straw, fiber or composted material used for erosion control, sediment control, and storm water runoff control. They help to stabilize slopes by slowing, spreading, and filtering overland water flow, which in turn helps to prevent sheet erosion and rill and gully development. Fiber rolls will be placed along the perimeter downgradient of the areas to be graded or recontoured before any reclamation takes place. They may also be placed along washes and arroyos, down-slope of exposed soil areas. Once in place, they will be staked to anchor them in place.

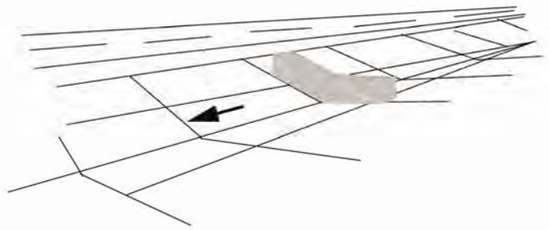
Wind erosion control. Wind erosion control consists of applying water and/or other dust palliatives as necessary to prevent or reduce erosion by the forces of wind. Water spray may be applied to small, temporary soil piles during reclamation activities.

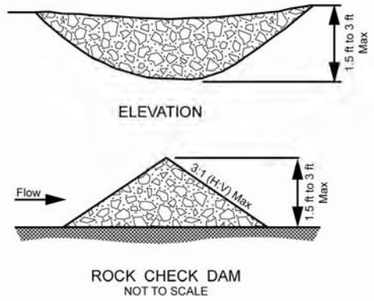
Practices to Minimize Storm Water Contamination

Specific management practices can be applied to reclamation activities to help minimize the potential for contamination of storm water at the Roca Honda permit area. These practices typically involve good housekeeping and spill control practices, as discussed below.

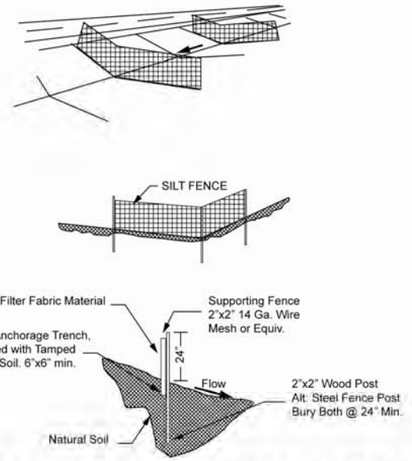
Trash and debris. All trash and debris from the site will be collected and deposited in a securely lidded metal dumpster, which will be emptied as needed. No trash or debris will be buried on site. All personnel will be instructed regarding the correct procedure for waste disposal during reclamation activities.

Sanitary waste. The sanitary wastewater treatment units will remain until late in the reclamation process. Portable units will be placed around the final areas after the treatment system has been dismantled.

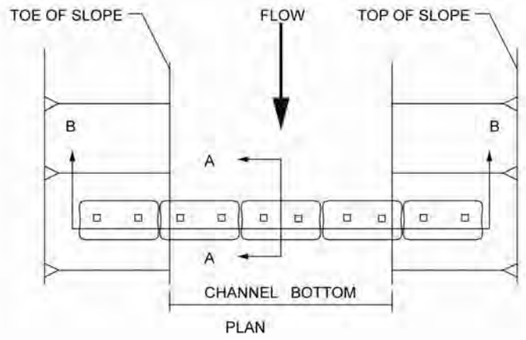


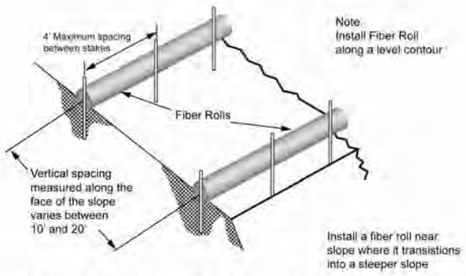


TYPICAL ROCK CHECK DAM SECTION

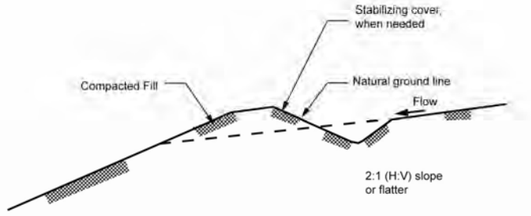


TYPICAL SILT FENCE INSTALLATION

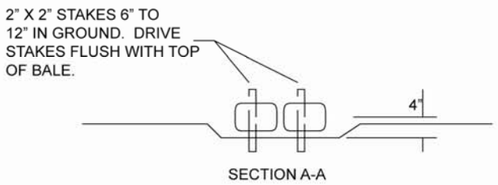


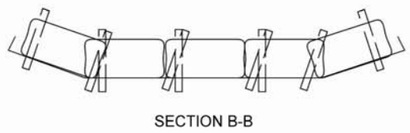


TYPICAL FIBER ROLL INSTALLATION

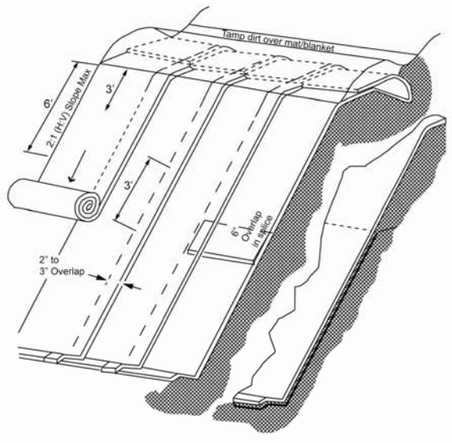


TYPICAL DRAINAGE SWALE
NOT TO SCALE



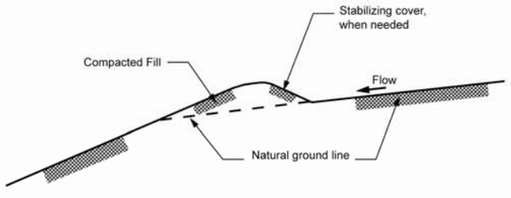


TYPICAL STRAW BALE INSTALLATION



TYPICAL SLOPE SOIL STABILIZATION

NOTES:
1. Stabilize inlet, outlests, and slopes
2. Properly compact the subgrade



TYPICAL EARTH DIKE
NOT TO SCALE

Figure 3-1. Typical Erosion Control BMPs

Project site access. The entrance and exit points to the project area will be stabilized to reduce the amount of mud and dirt tracked onto public roads by project vehicles and heavy equipment. Stabilization will be accomplished by:

- Limiting the points of entrance/exit to the project site
- Limiting the speed of vehicles to control dust
- Properly grading each entrance/exit point to direct runoff away from the entrance/exit.

Vehicle and equipment fueling. Vehicles that are taken from the site at the end of a work shift will be refueled off site whenever possible (i.e., in town). Equipment and vehicles refueled on site will follow the practices outlined below:

- The fueling area will be located at least 100 ft from downstream drainages and waterways.
- Absorbent spill clean-up materials and spill kits will be available in the fueling area and on fueling trucks used to refuel equipment outside the designated fueling area, and will be disposed of properly after use.
- Drip pans or absorbent pads will be used as necessary during vehicle and equipment fueling.
- Fueling will be performed on level-grade areas.
- Nozzles used in vehicle and equipment fueling will be equipped with an automatic shut-off to control drips. Fueling operations will not be left unattended.
- Fuel tanks will not be "topped off."
- Mobile fueling of equipment throughout the site will be minimized. Whenever practical, equipment will be transported to the designated fueling area.
- Attendant will be present during all fueling operations.

Vehicle and equipment maintenance. Vehicle and equipment maintenance procedures and practices will be designed to minimize or eliminate the discharge of fuel spills and leaks to site waterways.

- All site vehicles will be monitored daily for leaks, and will receive regular preventive maintenance to reduce the potential of leaks. Vehicles with leaks will be repaired immediately or will be removed from the project site, if further maintenance is required.
- Off-site maintenance facilities will be used whenever practical.
- Drip pans or absorbent pads will be used during vehicle and equipment maintenance work.
- All maintenance areas will have spill kits and/or use other spill protection devices.
- Maintenance areas will be located at least 100 ft from downstream drainage facilities and waterways.

- Absorbent spill clean-up materials will be available in maintenance areas and will be disposed of properly after use.
- Used oils, fluids, lubricants, and spill clean-up materials will be disposed of immediately and properly.

Coordination of BMPs with Reclamation Activities

Structural BMPs will be coordinated with reclamation activities so the BMP is in place before reclamation begins. The following BMPs will be coordinated with reclamation activities:

- The temporary downgradient perimeter controls (i.e., fiber rolls) will be installed before any grading and recontouring begin.
- Once reclamation activities cease permanently in an area, that area will be stabilized (i.e., permanent seed and mulch, soil amendments, revegetation).
- The temporary perimeter controls will not be removed until all reclamation activities are complete and soils have been stabilized.

3.2 Contemporaneous Reclamation (NMAC 19.10.6.603 B.)

Contemporaneous reclamation will be implemented by RHR to the maximum extent practicable, as described in the Mine Operations Plan. Some of the contemporaneous reclamation activities are reported in this Reclamation Plan so that the reviewer has a full understanding of how they "fit" into reclamation of the site. Others are summarized for clarity of the Plan. Still others are not included in the discussions here as they are simply part of the Mine Operations Plan.

The approach to contemporaneous reclamation is to avoid site disturbance where possible and minimize the area that must be disturbed. Contemporaneous reclamation will be initiated with topsoil stripping and continue through mine operations with protection and maintenance of material stockpiles, closure and reclamation of dewatering wells when they are no longer needed, and reclamation of drill sites as soon as possible after drilling. This early reclamation reduces erosion, isolates and protects material for later use, provides mitigation of potential impacts, and reduces the final reclamation work and costs.

Surface disturbances will consist of the administrative buildings and support facilities, water treatment plant and ponds, excavation material stockpiles, roads, utility corridors, surface water flow channels and detention basins, evaporation ponds, and other facilities as described in more detail in Section 4.0 of the Mine Operations Plan. The majority of these areas must remain as constructed until mining operations cease and final site reclamation begins. As mentioned in Section 2.2 and further discussed in Section 3.2.6 portions of the facilities in Section 16, those not needed for mining operations in Section 10, may be reclaimed approximately in the middle of the total mining schedule of 17 years.

3.2.1 Topsoil Stockpile

Topsoil will be removed per the Mine Operations Plan to the extent it exists in each area. Clearing of the disturbed areas will begin with the stripping of vegetation located in the footprint of facilities before the topsoil is collected during the site grading process. The vegetation will be mulched and mixed into the topsoil stockpile to increase the organic matter content. Suitable

topsoil is limited in most of the permit area; however, the high desert vegetation in the permit area is consistent with low organic soils and little water. It is expected that the topsoil will require amendments to enhance the initial plant growth during revegetation of the site.

The topsoil within the disturbed areas will be removed to a depth expected to be no greater than 12 inches, segregated, and stored in a stockpile designated and labeled for topsoil only. Topsoil from areas not directly related to the mining facility, such as roads, ventilation/escape shaft fan pads, and the water treatment facility area, will be added to an existing stockpile or placed in localized areas if transport of the soil is impractical, such as the more remote ventilation shaft locations. The stockpiles will be stabilized with a temporary grass cover until ready for use. The cover will be comprised of species compatible with the surrounding ecology so that additional exotic species will not be introduced into the area. Table 3–3 shows a recommended seed mix for a temporary soil stockpile grass cover. The vegetation will reduce erosion while providing micro-habitats for beneficial soil organisms. Diversion ditches will be constructed around the stockpiles where necessary to minimize storm water run-on erosion.

Table 3-3. Bureau of Land Management Recommended Temporary Cover for Soil Stockpiles

Common name	Scientific Name	Variety	Pounds Pure Live Seed/Acre
Western wheatgrass	*Pascopyrum smithii*	Arriba	6
Indian ricegrass	*Achnatherum hymenoides*	Paloma or Nezpar	6
Blue grama	*Bouteloua gracilis*	Hacheta or Alma	1
Purple three awn	*Aristida purpurea*	n/a	3
Needle and thread	*Hesperostipa comata*	n/a	3
Galleta	*Pleuraphis jamesii*	Viva	4
Little bluestem	*Schizachyrum scoparium*	Pastura or Cimarron	3
Sand dropseed	*Sporobolus cryptandrus*	n/a	0.5
		TOTAL	26.5

3.2.2 Subsoil Stockpile

After the topsoil has been removed from a disturbed area, any further excavation will be performed by removing the remaining soil horizons to the required depth or until rock is reached. A predetermined cut and fill grading plan will be used for the large operational facilities, water treatment facility, the smaller vent fan pads, and the roads, per the Mine Operations Plan. Subsoil not used as fill to obtain the desired grade during facility construction or used as cover soil on other stockpiles will be stockpiled and labeled. The subsoil will be seeded with mix recommended by the Bureau of Land Management (BLM) for a soil that is low in organics and nutrients. Diversion ditches around the stockpiles will be constructed where necessary to minimize storm water run-on erosion.

3.2.3 Sub-base Rock Stockpile

The excavated rock from construction of the surface facilities described in the Mine Operations Plan will be stored in a separate and labeled stockpile. Some of this material may be used as rip rap and/or crushed and used for road base. The stockpile will be protected with diversion ditches around the stockpiles where necessary to minimize storm water run-on erosion.

3.2.4 Shaft Excavation Material Stockpile

The production shafts and the ventilation/escape shafts will be excavated as described in the Mine Operations Plan (Sections 3.4 and 3.5 respectively). Shaft excavation material brought to the surface will be stockpiled separately, covered with subsoil and vegetated. The ventilation/escape shafts will be excavated using the blind bore method which is a wet boring method. The material produced from this activity will also be stockpiled along with the production shaft material as described in the Mine Operations Plan. All of this stockpiled material will be returned to the shafts as a part of reclamation.

3.2.5 Non-Ore Material Stockpile

The non-ore material produced during the mining operations is discussed in Section 4.2.5 of the Mine Operations Plan. Roca Honda Resources, LLC's contemporaneous reclamation approach for this material is to return the non-ore material that is stockpiled on the surface during operations to mined-out rooms before final reclamation begins. The non-ore material on the surface will be taken back underground via the production shaft intermittently, if practical, and placed in a mined out room even while mining operations are being conducted. In this manner, the non-ore stockpile will eventually be moved underground as the mine matures, and the newly excavated non-ore will stay below ground (see Mine Operations Plan discussion). Some non-ore material may be transported off site for processing should mineralization be found in economic grades.

While the temporary non-ore material stockpile is on the surface, diversions will be constructed around the stockpile to prevent run-on erosion and they will be covered with subsoil and vegetated. Storm water runoff from the stockpile will be diverted to the evaporation ponds.

3.2.6 Contemporaneous Reclamation Schedule

The final reclamation schedule would normally begin after the completion of mining operations (approximately 17 years after operations begin). However, because the RHR mining will be split between Section 16 and Section 10, contemporaneous reclamation will begin in Section 16 on facilities and areas not required for the mining efforts in Section 10. This contemporaneous reclamation is estimated to begin after year 8 and the final site reclamation in the permit area and haul roads would begin after year 16. The mining and reclamation schedules are only an estimate based on current predictions of production. If actual production differs from predictions, both mining and reclamation schedules will be affected to the same degree. Detailed reclamation schedules will be prepared as the detailed design for the mine and associated facility progresses.

3.3 Assure Protection (NMAC 19.10.6.603 C.)

3.3.1 Signs, Markers, and Safeguarding (NMAC 19.10.6.603 C.(1))

Roca Honda Resources, LLC will permanently close all of the production and ventilation shafts at the Roca Honda mine in a manner that will safeguard the public from unauthorized entry into the shafts. Each shaft will be plugged in accordance with good engineering practices. Section 2.1, item 4, of this Plan provides a description of how the shafts will be closed.

The Mine Operations Plan (Section 5.3.1) describes the fencing of the operational area and the signage around the permit area and operational areas and roads. The fencing described in the Mine Operations Plan will be removed per this Reclamation Plan and replaced with temporary fencing while the site is undergoing reclamation. Signs installed across the mine permit area at the beginning of construction and operation will remain until the completion of reclamation, as appropriate. Other markers or signs may be posted based on the activities occurring on the site at specific times.

After the site buildings are removed, a temporary field office will be used as a control point for workers and visitors. If a visitor requires entrance beyond the office, the reclamation personnel will accompany them. The access points not being used during reclamation will remain locked. As the site hazards, such as shafts, are removed from the site, the warning signs will be removed.

Signs, markers, and safeguarding will not be required after reclamation is complete because all facilities, shafts, and other hazards will be removed and reclaimed.

3.3.2 Wildlife Protection (NMAC 19.10.6.603 C.(2))

The wildlife protection measures put in place during operations will remain in place during reclamation (see Section 5.3.2 of the Mine Operations Plan). The post-mining land use will be grazing upon completion of reclamation, consistent with the pre-mining use of the land. As such, impacts to wildlife and important habitat will be minimized.

Toxic chemicals and petroleum products that may be onsite during operations will be removed from the site during closure. Overhead electric supply lines may remain on the site depending upon future plans of the utility company and land owner. No open water ponds will remain after reclamation, except for stock ponds, which may be rebuilt to pre-mining conditions. The New Mexico Department of Game and Fish (NMDGF) *Habitat Guidelines for Mine Operations and Reclamation* (NMDGF 2004) describes measures that minimize adverse impacts to wildlife and their habitat. Specific measures to be taken to mitigate wildlife habitat loss and degradation include:

- Creating topographic variability during grading (rather than traditional smooth slopes). Where feasible, topographic variability will be created that reflects the natural site surroundings. Such features include, where practicable, undulating profiles, niches or ledges on slope faces, clumps or rows of planted shrubs, brush piles, and rock piles.
- The exclusive use of native plant species.
- The exclusive use of certified weed-free seed and mulch.
- Implementing weed control to prevent the introduction and spread of noxious weeds, particularly those harmful to livestock and wildlife.

3.3.3 Cultural Resources (NMAC 19.10.6.603 C.(3))

Cultural resources will be protected during all reclamation activities in the same manner as during construction and operations activities. An archaeologist will be onsite to monitor reclamation activities. The State Historic Preservation Office will be involved in the decisions for the final disposition of the identified sites during and after reclamation. These cultural sites

were avoided during construction and mining operations and will be left as found during and after reclamation.

3.3.4 Hydrologic Balance (NMAC 19.10.6.603 C.(4)

The design and placement of the mine operation surface facilities were based on the premise of minimal disturbance and avoidance of cultural resources and to avoid alteration of arroyos, springs, and stock ponds, as described in the Mine Operations Plan. Surface water will be routed around the disturbed area via constructed diversion channels, to the extent possible. Surface water entering the permit area will continue to flow through and exit the permit area in its natural channels during operations. Some of the arroyos that transect the operational area may be armored or straightened to avoid further erosion into the site, but will otherwise be unaltered. Some detention basins will also be added to control the flow rate through the watercourses, per the Mine Operations Plan.

After operations have ceased, mine water will no longer be discharged. Final reclamation will include removal of armorment and flow structures in the arroyos and San Mateo Creek, removal of the detention basins (unless a land owner wishes to keep the basin), and reclamation of the evaporation ponds as described in Section 3.3.6. The natural drainage will be allowed to flow as before mining. The disturbed areas will be returned to grazing land use.

The following points describe reclamation specifics per NMAC 19.10.6.603 C.(4), to minimize change to the hydrologic balance in the permit area and potentially affected areas.

4(a) Non-point Source Releases

The non-point surface releases will be contained within the permit area, and only clean storm water or treated surface water will leave the area. The excavated materials will be retained within the permit area in constructed stockpiles, as described in the Mine Operations Plan.

Storm water that falls on disturbed areas that may have constituents of concern on the surface will be directed in constructed channels to a lined evaporation pond for disposal. If necessary, the water will be pumped to the water treatment facility.

4(b) Control of Suspended Solids

A SWPPP will be developed for the Roca Honda mine permit area that outlines the mechanisms to control storm water run-on and runoff from disturbed areas during operations and reclamation. The control of suspended solids release from the disturbed areas to the intermittent, perennial or ephemeral arroyos will be achieved with the use of BMPs. The following BMPs are examples recommended by the New Mexico Department of Transportation and the U.S. Environmental Protection Agency (NMDOT 2009, US EPA 2009):

- Regrading
- Runoff control swales
- Detention basins
- Seeding and mulching
- Fiber rolls

- Chemical soil stabilization
- Excavated sediment traps
- Sedimentation/evaporation ponds

The operational BMPs will remain during reclamation until the specific area is being reclaimed. New BMPs will be installed during and after reclamation of an area to help prevent formation of rills and gullies until the vegetation is established.

4(c) Background Surface Water Monitoring

The background quality and quantity of the surface water entering the permit area will be monitored as described in the Sampling and Analysis Plan.

4(d) Overland Flow Diversions

There are areas within Sections 10 and 16 of the permit area where rainfall is likely to flow from topographically higher locations into the disturbed area before entering the arroyos. The Mine Operations Plan (Section 5.3.4) describes the design and construction of diversion channels and a detention basin to collect and divert the overland flow away from the operational area and into existing arroyos during operations. These diversions will be designed, constructed and maintained to minimize adverse impact to the hydrologic balance and to assure public safety. These diversion designs will not increase the potential of landslides and the designs will conform to the peak storm event specified in the NMAC requirements.

During site reclamation, the small diversions channels will be filled and regraded to match the final site contour plan. The detention basins and diversion channels will be filled and recontoured to match the reclamation area and return the storm water flow to natural sheet flow. These areas will require erosion protection with fiber rolls and possibly other BMPs until the vegetation is established.

3.3.5 Stream Diversions (NMAC 19.10.6.603 C.(5))

No perennial stream channels exist at the Roca Honda permit area. Several ephemeral arroyos do exist, however, near the planned disturbed areas in the permit area. Arroyos that transect Sections 10 and 16 will be allowed to transport storm water in their natural channels. A small arroyo on the west side of the facility area in Section 10 will be diverted into a detention basin constructed within the larger arroyo that transects the facility area. The larger arroyo will be straightened and armored to prevent cutting into the operational area. The diversions are discussed in Section 5.3.5 of the Mine Operations Plan.

As a part of reclamation, the detention basin will be filled and will become a part of the arroyo reconstruction. The existing bank elevations of the arroyo will remain and the interior side slopes will be reconstructed to 3H:1V. The bottom inverts will match the original contours. The reconstructed arroyo will end at the location at which it turns into sheet flow. An energy dissipater (see Figure 3-2 of this plan) will be added to the point where the arroyo ends to enhance the transfer to sheet flow. The remainder of the improved channel will be filled and regraded to match the surrounding topography.

The treated mine water discharge structures in the Section 16 arroyo and the structures constructed within San Mateo Creek will be removed and the effected channels will be restored.

3.3.6 Impoundments (Ponds and Basins) (NMAC 19.10.6.603 C.(6))

Treatment ponds, evaporation ponds and detention basins will be constructed in the operational area of both Section 16 and 10 to collect storm water. Two settling ponds and a storage pond will be constructed at the water treatment plant in Section 16. Two detention basins will be constructed to control the flow in the arroyos that transect the operational areas in Section 16 and 10. The design drawings and location for these impoundments are found in the Mine Operations Plan (Figures 4-5 and 4-6). The ponds and basins will be designed, operated and maintained to minimize adverse impacts to the hydrologic balance and assure public safety in accordance with the NMAC requirements. Figure 3-2 contains typical designs of a detention basin, a detention basin outlet, and velocity dissipation devices.

The evaporation ponds and the water treatment plant ponds will be lined. If at the time of closure, the evaporation ponds contain water, it will be characterized and treated, as necessary, by pumping it to the treatment facility prior to discharge. The evaporation pond bottom solids and the liners will be removed and disposed of in the mine or in approved offsite landfills. The ponds will be leveled by pushing in the berms and adding stockpiled subsurface soil and topsoil. The area will be revegetated.

When the water treatment plant is no longer needed, the treatment ponds will be closed. Any pond bottom solids and the liners will be removed and disposed of in the mine or in approved offsite landfills. The ponds will be leveled by pushing in the berms and adding stockpiled subsurface soil and topsoil. The area will be revegetated.

The detention basins will not be lined because only storm water that has not contacted potentially contaminated disturbed mine-site areas will be caught in the detention basins. That water will slowly dissipate by soaking into the ground as it does naturally in the arroyos. The sole purpose for the detention basins is to control runoff.

At reclamation, the detention basins will be drained, the overflow structures removed, and the basins filled and regraded, if applicable, to match the natural surroundings. These basins may be appropriate for the land owners to consider leaving for use as livestock or wildlife water sources. Otherwise, they will be recontoured to blend with the adjacent topography and revegetated.

3.3.7 Minimization of Mass Movement (NMAC 19.10.6.603 C.(7))

All stockpiles will be designed to minimize mass movement by using designed slopes, vegetation, and erosion/stabilization mats (See Mine Operations Plan and drawings). The mine excavation stockpiles will be returned to the mine during reclamation. The soil and rock stockpiles will be used as part of the final reclamation for fill and vegetation growth. No stockpiles will remain on the surface in the permit area after final reclamation.

3.3.8 Riparian and Wetland Areas (NMAC 19.10.6.603 C.(8))

There are no known wetlands as defined by the Clean Water Act Section 404 in the Roca Honda permit area. It is anticipated that any riparian or wetland areas that exist down-gradient of the

permit area will likely be enhanced by the additional flow of treated mine water from the mine(s).

3.3.9 Roads (NMAC 19.10.6.603 C.(9))

Road construction and improvement activities for the permit area are described in Section 5.3.9 of the Mine Operations Plan. Figure 1-2 of this plan shows all roads (proposed new roads and improved existing roads) accessing surface facilities and mine operations. The roads will be constructed and maintained to control erosion as described in the Mine Operations Plan.

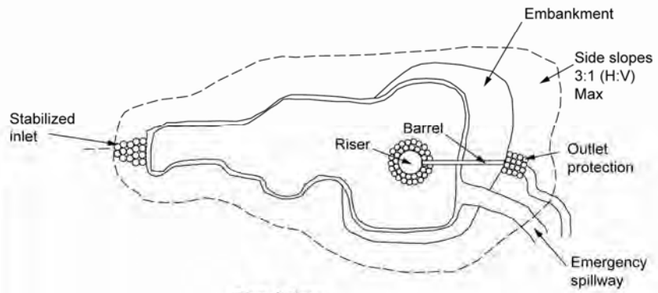
Prior to final reclamation, the USFS, State of New Mexico, and the neighboring rancher will be consulted to determine what roads will remain permanent and useful for the grazing land use. Reclamation of the roads will involve the removal of the arroyo crossings (culverts and concrete structures), removal of base material for use as fill in other reclamation areas, regrading of the entire cross-section to level the bar-ditches and road surface, adding fill if required, adding topsoil, and revegetating.

3.3.10 Subsidence Control (NMAC 19.10.6.603 C.(10))

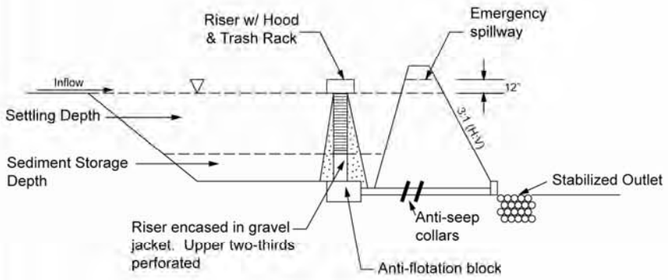
The potential of subsidence resulting from the mining operation at Roca Honda relative to damage to structures or property or to the aquifers is discussed in the Mine Operations Plan Section 5.3.10. No impact to the ground surface or aquifers is expected due to subsidence, as a result of underground mining activities on Sections 9, 10, or 16.

3.3.11 Explosives (NMAC 19.10.6.603 C.(11))

The use of explosives for construction and mining is discussed in the Mine Operations Plan. No explosives use is expected for reclamation. The explosive magazines will be part of the facility demolition activity. A final inventory of the explosives will be taken and be part of the chain-of-custody for the return of unused powder and blasting caps. The buildings and fence will be removed and the earthen berms used as fill in the immediate area.

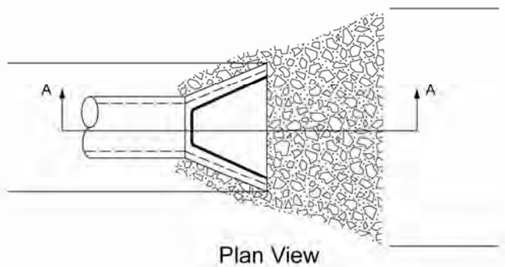


Top View

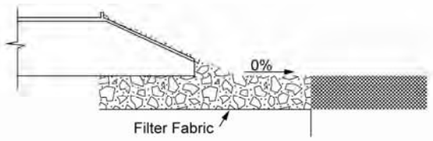


Side View

Typical Detention Basin

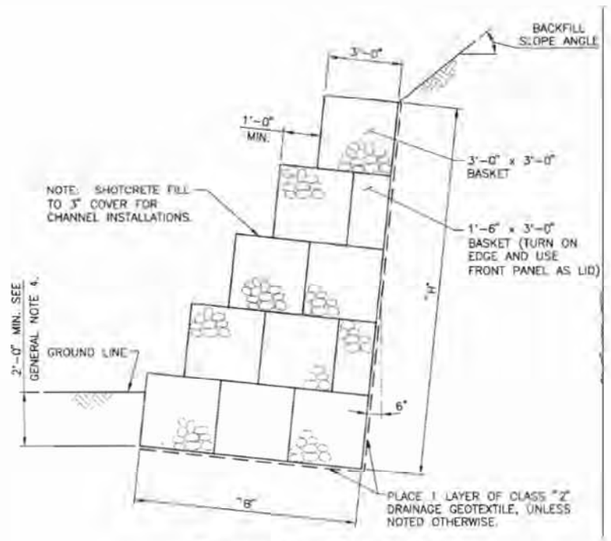


Plan View

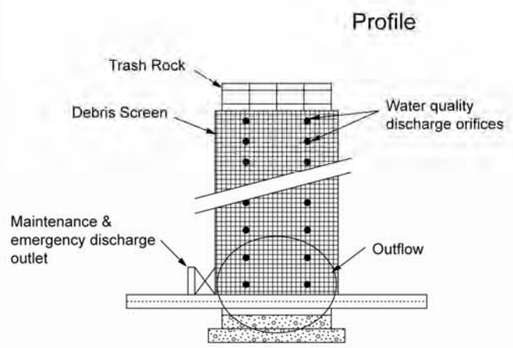


Section A-A

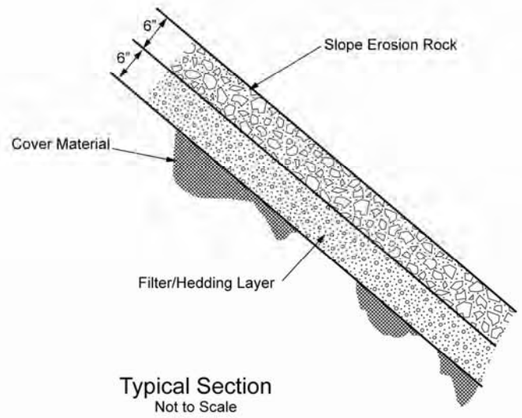
Typical Velocity Dissipation Device



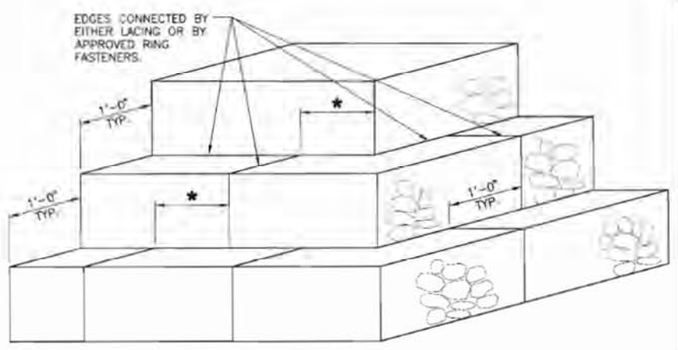
Typical Cross Section for
Type “A” Standard Retaining Wall



Typical Detention Basin Outlet



Typical Riprap Installation



Typical Gabion Retaining Wall
NMDOT 602.01 4/6

Figure 3-2. Typical Channel Protection BMPs

3.4 Site Stabilization and Configuration (NMAC 19.10.6.603 D.)

The permit area will be stabilized to the extent practicable to minimize future adverse impacts to the environment and to protect air and water resources. The following measures are planned to minimize impacts from completed mining operations and to restore the area to its post-mining use of grazing.

(1) Final slopes and drainage configurations will be similar to pre-existing conditions and where possible, sized and shaped to match natural drainages. Diversion channels will be filled and the original arroyo channels returned to their natural conditions. The armoring and/or lining within the arroyos will be removed. The overland flow diversions will be filled, compacted, and revegetated. Stockpiled soil will be used for fill in reclaimed areas. The new slopes and drainages will be revegetated and protected from erosion by riprap and other BMPs. The reclaimed surface will match the surrounding undisturbed land and be compatible for a grazing land use.

(2) Ponds and basins will be backfilled by pushing the embankment soil into the excavated area. Additional stockpiled soil will be used, if necessary, to fill voids, recontour and blend into the surrounding terrain. The channels diverting the storm water into the ponds and the discharge channels and protection features in the arroyos will be removed, regraded and vegetated.

(3) The reconstructed slopes will be blended into the surrounding undisturbed area as close as is reasonable. No embankments will be constructed as part of the site reclamation. The stockpiles of excavated materials will be returned to the mine or used in reclamation. Therefore, no area will be subject to mass movement due to erosion or caving after reclamation is complete. The roads that remain for use by the land owners or lease holders will be left in good repair. Roads not required for future use will be re-graded to surrounding contours, covered with topsoil and re-vegetated.

(4) The proposed mining operations will not produce materials with the potential to create acid or other toxic drainage.

3.5 Topsoil (NMAC 19.10.6.603 E.)

The characterization, removal, preservation and protection of topsoil from the disturbed areas during construction and operation of the mine is addressed in detail in the Mine Operations Plan, and is repeated here for the sake of completeness of the Reclamation Plan.

Roca Honda Resources, LLC assessed the quality and suitability of topsoil at the permit area by reviewing two separate soil surveys. The level of detail varies in the two surveys; however, both contain a recommendation on topsoil suitability. Both studies use the nomenclature “good,” “fair,” and “poor.” The first survey was conducted by the USFS (Strenger et al., 2007) and covered Sections 9 and 10 of the permit area. The second survey covered Section 16 of the permit area and was conducted by the U.S. Department of Agriculture, Natural Resource Conservation Service (NRCS) in cooperation with BLM, the Bureau of Indian Affairs, and the New Mexico Agricultural Experiment Station (NRCS 2006). The results of the two surveys and their respective areas are discussed in the BDR attached to this permit application. The two surveys rate the topsoil as poor to fair across the permit area due to steep slopes, depth to bedrock, too clayey, too thin a layer, too alkaline, too sandy, low fertility, sodium content, or presence of rock fragments.

(1) A soil survey and analyses program will be conducted by RHR to determine variations in topsoil depth and vegetation establishment suitability. Typical parameters tested are soil texture, salinity, sodicity, pH, organic matter content, macronutrients, and micronutrients.

(2) Suitable topsoil is limited; therefore, efforts will be made to carefully strip, stockpile and improve the growth material available on site. A map of the project disturbed area (Figure 1-3 of the Mine Operations Plan) also indicates the areas where topsoil will be removed. The estimate of topsoil volume (to be obtained from excavation calculations) is based on a 12 inch layer to be removed from all areas to be disturbed. These volumes will be refined with the results from the RHR soil survey and analyses.

Topsoil will be removed from the ventilation/escape shaft areas, new road surfaces, below the stockpiles (except the topsoil stockpile), the pond areas, and the pad areas for the surface facilities and water treatment facility and other areas of surface disturbance. Topsoil stockpiles will be constructed in Section 16 and later in Sections 10 and 9. The smaller quantities of topsoil, for example from the ventilation/escape shaft areas, may be hauled to the larger stockpiles or stockpiled at the vent shaft location if the location is too remote to justify moving. The existing vegetation in areas to be disturbed will be removed, mulched and stockpiled temporarily. As the topsoil stockpiles are constructed, the mulched vegetation will be mixed with the topsoil to increase the organic matter. Topsoil will be amended as necessary prior to planting with organic material (such as sanitized sewage sludge, cotton husks or feedlot waste) and/or inorganic fertilizers.

(3) The topsoil stockpiles will be constructed with slopes of 4H:1V and heights of approximately 25 feet. The flatter slope will reduce the loss of material from runoff erosion. Diversion ditches will be constructed around the stockpiles where necessary to minimize run-on erosion. The stockpiles will be vegetated to further reduce erosion and provide a micro-habitat for beneficial organisms.

(4) The subsoil and topsoil will be the final two layers applied to a filled and graded area. The material up to the topsoil will be watered and compacted with the heavy equipment used to apply the material. The regraded areas will be protected with BMPs to minimize loss of replaced material and the creation of rills and gullies. The topsoil will be added to the majority of the disturbed areas in the same time period. This strategy will reduce the loss of topsoil, and the placement will be coordinated with a seeding season. The topsoil layer will receive minimal compaction from the equipment.

(5) The revegetation effort will begin immediately after the topsoil layer is complete for the majority of the disturbed area. Revegetation and protection of the area is discussed in Section 3.7.

(6) The topsoil will be stored for several years during active mining operations and will be re-analyzed during that time for suitability as a growth medium. Amendments will be added as required.

3.6 Erosion Control (NMAC 19.10.6.603 F.)

A SWPPP will be developed for the Roca Honda mine permit area which outlines the mechanisms to control storm water runoff from disturbed areas during reclamation activities. These measures may include the installation of temporary silt fences, fiber rolls, and other devices that allow sediment to settle from runoff before water leaves the site. These devices will be placed along the perimeter of the areas to be reclaimed, along washes and arroyos, below the toes of exposed and erodible slopes, and down-slope of exposed soil areas before demolition, clearing, grading, or revegetation takes place. Temporary devices will be removed following revegetation.

The reclamation design will include the practices described in the following paragraphs.

(1) The disturbed areas will be cleared of all structures and equipment. Each disturbed area, whether it is a small area for a ventilation shaft or the large operational areas around the production shafts in Sections 10 and 16, will be graded and contoured in accordance with the final grading plan (Figures 2-1 through 2-6 of this Plan). The excavated sub-base rock below the subsoil will be used as initial fill or used as rip-rap. Reconstructed fill areas will be placed in one foot lifts and compacted to 90% standard proctor. These lifts will be placed until the sub-soil material matches the surrounding area. These one foot lifts will also be compacted to stabilize the slopes. The final lift of subsoil will only be compacted with the placement equipment and that lift will be covered with the final six inch lift of uncompacted topsoil. This procedure will leave at least an eighteen inch layer of minimally compacted soil to be seeded.

(2) The reclamation grading plan has maximum slopes of 4H:1V with most much flatter. The goal is to match the original terrain and improve it if it would reduce potential erosion.

(3) The natural drainage in the permit area has been via several arroyos that initiate from the northern mesas and flow to the south toward San Mateo Creek. The final grading plan will divert runoff to these same arroyos without creating new drainages.

(4) All reclaimed areas will be revegetated with the approved seed mix as described in Section 3.7.

(5) Armor protection placed in arroyos during mine operations will be removed during site reclamation unless the land owners prefer to leave it in place. The diversions of small arroyos in Section 10 will be removed and the arroyos returned to their natural channels.

(6) If portions of the natural arroyos need channel protection or improvements because of impacts from the mining operation, the type of enhancements required will be discussed with the regulators before implementation. The modifications made to the arroyos or San Mateo Creek will be removed unless the land owners prefer to leave them.

(7) The reclaimed areas will be protected with mulches, wattles or erosion control fabrics until vegetation becomes established. The reclaimed area will be monitored for the

first year for erosion until stabilization has been achieved. Major areas of erosion (e.g., gullies) will be repaired, stabilized and revegetated.

3.7 Revegetation (NMAC 19.10.6.603 G.)

A detailed revegetation plan will be included in the final Reclamation Plan to be completed when the mine project design is completed. The final Plan will have the detailed reclamation cost estimate used to establish the financial surety.

The revegetation requirements in NMAC 19.10.6.603 G.(3) provide for the revegetation of the disturbed areas to an approved post-mining land use. The current land use for the Roca Honda permit area is grazing. The surface owners have approved a post-mining land use of grazing, as provided in the letter from the USFS and the New Mexico SLO, contained in Appendix A of this Reclamation Plan. The following specific revegetation methods are designed to meet this requirement and match the neighboring land.

(1) The seedbed will be prepared with the placement of a minimally compacted layer of topsoil. The seeding will take place immediately after placement of the cover material. If the timing between placement of topsoil and seeding has allowed the surface to compact, those areas will be scarified to a depth of 12 inches prior to seeding.

(2) The seeding methods may vary according to the topography, soil conditions, and seed mix. The techniques will include broadcast, drilling, and hydroseeding.

(3) Only certified seed will be used for revegetation, and it will be free of weed seed designated as noxious by the State of New Mexico and McKinley County.

(4) Mulch, matting or netting may not be necessary in areas with sufficiently variable topography. In areas where mulch is necessary, only certified weed-free mulch will be used. It will be crimped into the soil according to standard practices. Degradable erosion control blankets and/or fiber rolls will be installed in areas with high erosion potential such as steep slopes (greater than 3H:1V) and arroyo banks.

(5) Seeding will be performed in the appropriate seeding windows for the native vegetation (i.e., early spring, late fall, or prior to monsoons in July-August).

(6) Irrigation is not proposed, but could be used during the first year of revegetation depending on the logistics, availability of water, and the long-term weather forecast.

(7) Clumps of live shrubs may be planted in some areas to create habitat variability, to match the natural surroundings, and to aid in erosion control.

A recommended all-native seed mix is included in Table 3.4. This mix is based on a BLM-approved mix. Species were also selected based on those currently growing at the site and on potential vegetation listed in soil surveys for the area. The recommended seed mix will be revised based on the results of these surveys.

Table 3-4. Recommended Seed Mix for Reclaimed Areas at Roca Honda Site

Common Name	Scientific Name	Pounds Live Seed/Acre
Western wheatgrass	*Pascopyrum smithii*	4.3
Blue grama	*Bouteloua gracilis*	0.6
Galleta	*Pleuraphis jamesii*	2.2
Mountain brome	*Bromus marginatus*	3.8
American vetch	*Vicia americana*	0.4
Rocky Mountain penstemon	*Penstemon strictus*	0.6
Annual rye		8.0
	TOTAL	19.9

Source: IM-010-01-001 Seed Mixture for Use in Restoration/Reclamation of Public Lands for the Albuquerque Field Office

The success of the revegetation will be determined through comparison of ground cover, productivity and diversity of the reclaimed areas with reference areas. A reference area to the north of the permit area was sampled. These data, summarized in the BDR, will be used as benchmarks for establishing revegetation success criteria. Technical guidance for these comparisons is published by the US Department of Agriculture. Observations will be conducted in accordance with the detailed revegetation plan. The revegetation plan will discuss in more detail the comparison of reclaimed areas versus reference areas for the grazing land use goals. Success criteria will include, but not be limited to the following criteria to ensure a post-mining land use of grazing:

(1) Vegetative cover and productivity of living perennial plants will be equal to or greater than 90 percent of the pre-existing cover to within a 90-percent statistical confidence using the same sampling methodologies as those used for pre-existing cover.

(2) Diversity of woody plants, grasses and forbs shall be similar to pre-existing species diversity.

(3) Woody plant density shall be equal to or greater than 90 percent of the pre-existing cover to within an 80-percent statistical confidence and shall be adequate to control erosion.

Revegetation activities will be conducted within the permit area and the adjoining sections used for roads and utility corridors. The same procedures will be consistent for all areas.

3.8 Compliance with Applicable Environmental Requirements (NMAC 19.10.6.603 H.)

In accordance with NMAC 19.10.6.603 H, the RHR reclamation will be designed to meet, without perpetual care, all applicable environmental requirements of the Act, 19.10 NMAC and other laws following closure.

4.0 Compliance with Other Applicable Laws (NMAC 19.10.6.604)

In accordance with NMAC 19.10.6.604 (A-C), RHR recognizes that enforcement of other state or federal laws, regulations or standards shall be conducted by the agency charged with the responsibility under the applicable state or federal law, regulation or standard; and that enforcement of non-point source surface releases of acids or other toxic substances shall be performed by the New Mexico Environment Department; and that environmental permits must be maintained for the permit area.

5.0 USFS Requirements

5.1 Section 11 Haul Road

The road in Section 11 which is not part of the Roca Honda Permit area, but provides access to the proposed Section 10 facilities is an existing Forest Service road which RHR is planning to improve for hauling activities during mining operations. This improved haul road will be reclaimed to pre-mining condition during the reclamation phase, unless other arrangements are made with the USFS.

The planned improvements to upgrade the existing road to a 60 ft wide haul roadway will include arroyo crossings, borrow-ditches, grading and base material as needed to support heavy equipment traffic. During road improvement activities the graded road material will be bermed adjacent to the south side of the haul road to create a visual barrier, screening hauling activities from public view.

Reclamation of the road will involve the removal of base material for use as fill in other reclamation areas, removal of the arroyo crossings, regarding bermed material, regarding of the entire cross-section to level the bar-ditches and road surface, adding fill if required, adding topsoil, and revegetating. Figure 5-1 shows the Section 11 haul road.

Prior to final reclamation, the USFS will be consulted to determine its final disposition.

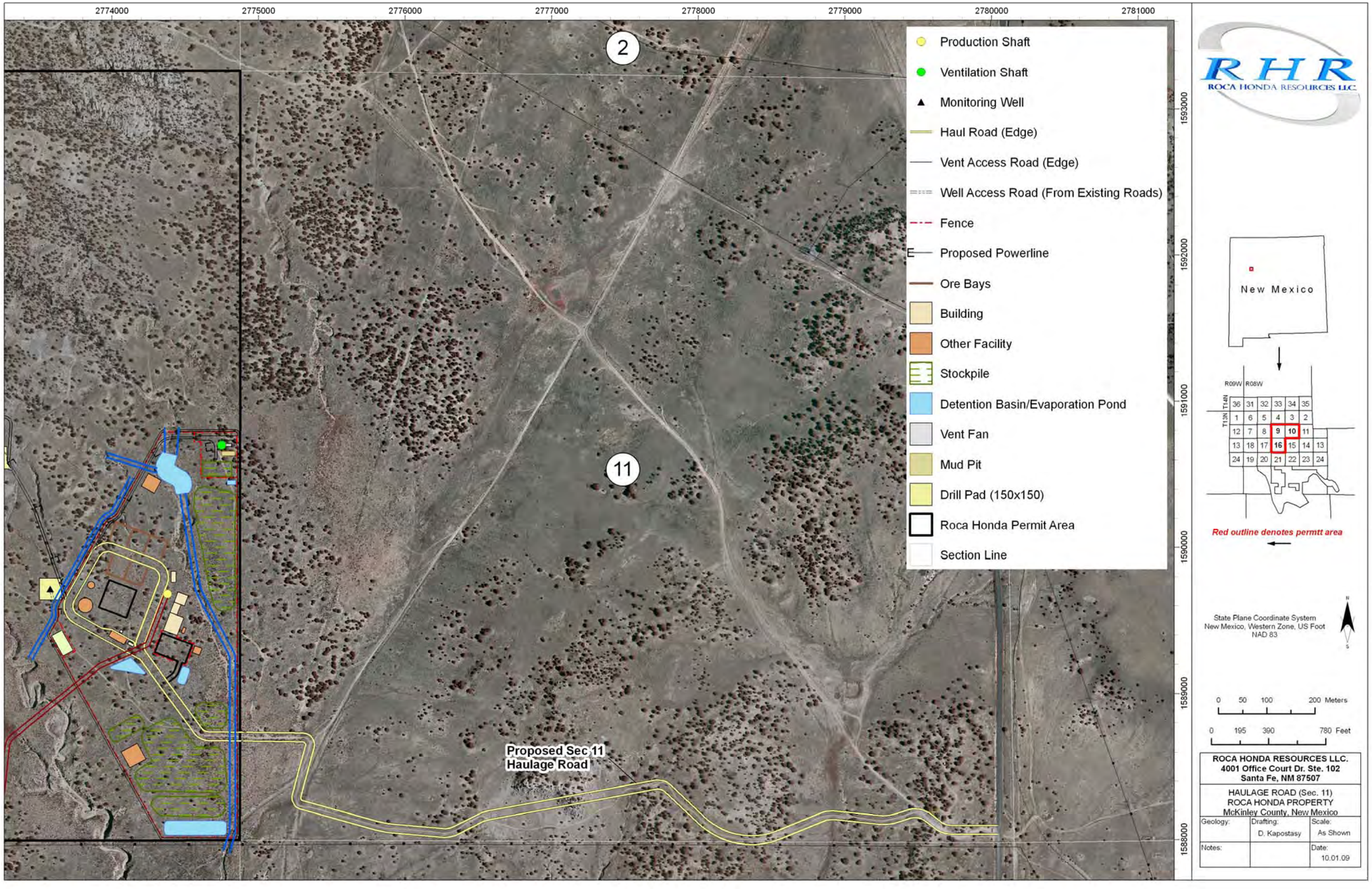


Figure 5-1. Section 11 Haul Road

6.0 References

Code of Federal Regulations Title 36, Parks, Forests and Public Property, Part228 Minerals, Subpart A, Locatable Minerals.

NMAC 19.10.6.602.D.15 (f)–(k). Title 19 New Mexico Administrative Code, "Natural Resources and Wildlife," Chapter 10 "Non-coal Mining," Part 6 "New Mining Operations," Subpart 602, "Permit Application Requirements," New Mexico Mining Commission, American Society for Testing and Standards.

NMAC 19.10.6.603. Title 19 New Mexico Administrative Code, "Natural Resources and Wildlife," Chapter 10, "Non-coal Mining," Part 6, "New Mining Operations," Subpart 603, "Performance and Reclamation Standards and Requirements," New Mexico Mining Commission, American Society for Testing and Standards.

NMDGF (New Mexico Department of Game and Fish), 2004. Conservation Habitat Handbook, "Habitat Guidelines for Mine Operations and Reclamation."

NMDOT (New Mexico Department of Transportation), 2009. Standards and Specifications Unit, Division 603, Temporary Erosion and Sediment Control.

NMMA (New Mexico Mining Act), Reclamation Program, 1996. Section 69-37-7(H), Closeout Plan Guidelines for Existing Mines.

NRCS (Natural Resource Conservation Service), 2006. Soil Survey of McKinley County Area, NM, McKinley County and Parts of Cibola and San Juan Counties, US Department of Agriculture, Natural Resources Conservation Service, in cooperation with US Department of Interior, Bureau of Land Management and Bureau of Indian Affairs, and the NM Agricultural Experiment Station.

Riese, W. C., Brookins, D. G., and Della Valle, R. S., 1980. *Scanning-electron-microscope Investigation of Paragenesis of Uranium Deposits, Mt. Taylor and Elsewhere, Grants Mineral Belt*: in Rautman, Geology and Mineral Technology of the Grants Uranium Region, 1979, NM Bureau of Mines and Mineral Resources, Memoir 38, NM Institute of Mining and Technology, Socorro, NM.

Saucier Saucier, A.E., 1980. *Tertiary Oxidation in Westwater Canyon Member of Morrison Formation*: in Rautman, C. A. (ed), Geology and Mineral Technology of the Grants Uranium Region 1979, NM Bureau of Mines and Mineral Resources, Memoir 38, NM Institute of Mining and Technology, Socorro, NM.

Strenger, S., et al., 2007. Terrestrial Ecosystems Survey of the Cibola National Forest and National Grasslands, U.S. Forest Service, Southwestern Region.

US Department of Agriculture, Forest Service, SW Region, Cibola National Forest Land and Resource Management Plan, July 1985.

US Environmental Protection Agency, 2009. National Pollutant Discharge Elimination System, Storm water, Storm Water Pollution Prevention Plans for Construction Activities.

Appendix A

Post-Mining Land Use Approvals

USDA United States Department of Agriculture | Forest Service | Cibola National Forest and National Grasslands | 2113 Osuna Road NE Albuquerque, NM 87113-1001 (505) 346-3900 FAX: 346-3901

File Code: 2800/2810
Date: July 21, 2009

Roca Honda Resources, LLC,
In Care of: Juan R. Velasquez
Vice President; Government, Regulatory &
Environmental Affairs
Strathmore Minerals Corp.
4001 Office Court Drive, Suite 102
Santa Fe, NM 87507

Dear Mr. Velasquez:

As a follow up to our phone conversation of June 10, 2009, I am sending you this letter for your inclusion in your mining permit application to the New Mexico Mining and Minerals Division (NMMMD) for the proposed Roca Honda mine. The Roca Honda mine will include sections 9 and 10 in T13N R8W in McKinley County, which are on National Forest System lands, managed by the Cibola National Forest.

I understand that the NMMMD regulations require written approval from the surface owner for reclamation of the disturbed areas to the proposed post-mining land use. The Roca Honda mine proposal is to reclaim the disturbed areas in sections 9 and 10 to a post-mining land use of grazing. This proposal is consistent with the Cibola National Forest Land Management Plan for the area in which the proposed mine is located.

If you have any questions, please contact Mary Lee Dereske, Recreation, Engineering, Archeology, Lands & Minerals Staff Officer, at (505) 346-3871.

Sincerely,

FOR

NANCY ROSE
Forest Supervisor

cc: Diane Tafoya, Matt Reidy

PATRICK H. LYONS
COMMISSIONER

State of New Mexico
Commissioner of Public Lands
310 OLD SANTA FE TRAIL
P.O. BOX 1148
SANTA FE, NEW MEXICO 87504-1148

COMMISSIONER'S OFFICE
Phone (505) 827-5760
Fax (505) 827-5766
www.nmstatelands.org

October 8, 2009

Juan R. Velasquez
Strathmore Resources U.S. Ltd.
4001 Office Court Drive, Suite 102
Santa Fe, NM 87507

Re: State of New Mexico General Mineral Lease No. HG-0036-02 – Roca Honda Resources, LLC

Dear Mr. Velasquez:

Thank you for informing the State Land Office of your plans to submit a permit application to the New Mexico Mining and Minerals Division for a new mine at the Roca Honda Resources (RHR), LLC project. We understand that the project includes Section 16, Township 13 North, Range 08 West in McKinley County, a state-leased parcel of land to which RHR holds the mineral lease pursuant to General Mining Lease number HG-0036-02. Further, we are aware that your permit application will propose reclamation of the mine to a post-mining land use of grazing and that EMNRD requires our approval for reclamation to that proposed post-mining land use for the aforementioned lease.

According to 19.2.2.24 NMAC, a reclamation plan, consisting of the mining permit or other authorization and any other supplemental requirements deemed necessary by the Commissioner must be reviewed and approved by the Commissioner of Public Lands and shall be incorporated into the lease. Please be sure and send a copy of these documents to the State Land Office when submitting them to EMNRD so that the Commissioner may participate in the process as required in 19.2.2.25 NMAC.

The historic surface use of Section 16 is grazing. The surface grazing lease is currently held by the Fernandez Land Company. Please be advised that the State Land Office concurs with and approves RHR's proposal to reclaim the area of Section 16 disturbed by its mining operation to a post-mining land use of grazing. We believe that such reclamation is consistent with historic and anticipated future use. If you have any questions please feel free to call Michael Mariano, Minerals Manager at (505) 827-5750.

Sincerely,

Jami Bailey, Director
Oil, Gas, and Minerals Division

JB/mm

Cc: John Pheil, EMNRD