ROCA HONDA RESOURCES, LLC
MINE OPERATIONS 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

BATF	Bureau of Alcohol, Tobacco and Firearms
BDR	Baseline Data Report
BLM	Bureau of Land Management
BMP	Best Management Practice
CFR	Code of Federal Regulations
CPRC	Cultural Properties Review Committee
EPA	Environmental Protection Agency
Ft	foot or feet
H	horizontal
LHD	Load/Haul/Dump
NM MMD	New Mexico Mining and Minerals Division
MSHA	Mine Safety and Health Administration
NMAC	New Mexico Administrative Code
NMDOT	New Mexico Department of Transportation
NM OSE	New Mexico Office of the State Engineer
NRCS	Natural Resource Conservation Service
POO	Plan of Operations
RGRC	Rio Grande Resources Corporation
RHR	Roca Honda Resources, LLC
SAP	Sampling and Analysis Plan
SPCC	Spill Prevention, Control and Countermeasures
SWPPP	Storm Water Pollution Prevention Plan
TCP	Traditional Cultural Property
USFS	U.S. Forest Service
V	vertical

Mine Operations Plan (NMAC 19.10.6.602 D.(15))

This Mine Operations 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 detailed description of the mining operations plan for Roca Honda Resources, LLC (RHR) proposed underground uranium mine in McKinley County, New Mexico. The plan is organized in conformance with the regulatory requirements outlined in NMAC Section 19.10.6.602 D.(15)(a) through (k) and 19.10.6.603 A through H. To the extent possible, this plan is also organized to meet the United States Forest Service (USFS) requirements for submittal of a Plan of Operations (POO) for operation of a mine on Forest Service lands.

This Mine Operations Plan describes the type and method of mining and engineering techniques that will be utilized at the Roca Honda mine to meet the performance and reclamation standards and requirements of NMAC. It contains the maps and describes the approximate time table and general sequence to be followed in constructing, operating, and reclaiming the mine.

1.0 Introduction

Roca Honda Resources, LLC has submitted an application for a new mine permit to the New Mexico Mining and Minerals Division (NM MMD) and the USFS for its proposed Roca Honda underground uranium mine. The proposed mine site is located approximately 3 miles northwest of the community of San Mateo, New Mexico, near the southern boundary of McKinley County and north of the Cibola County boundary. 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, owned by the State of New Mexico as shown in Figure 1-2.

The proposed permit area for the Roca Honda mine is approximately 1,920 acres in size which is based on 640 acres for each of Sections 9, 10 and 16. 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. The major surface facilities and some of the underground workings for the proposed Roca Honda mine are planned to be located in Section 16, while the remaining facilities, surface features, underground workings, and associated permit area are located in Sections 9 and 10. Figure 1-3 shows the surface facility footprints and associated disturbance of the proposed mine project.

This Mine Operations Plan provides the detailed information required by NMAC 19.10.6.602 D.(15)(a) through (e), including a description of the type and methods of mining and engineering techniques proposed, the required maps and approximate schedule of the proposed mining operations, a description and identification of acreages anticipated to be disturbed, maps and plans for the proposed facilities, contingency plans to mitigate impacts to wildlife, and measures which will be undertaken to reduce sediments and monitor non-point source discharges. In an effort to minimize duplication while fulfilling State and Federal requirements, this Mine Operations Plan has been prepared to meet NMAC requirements and 36 Code of Federal Regulations (CFR) 228A requirements.

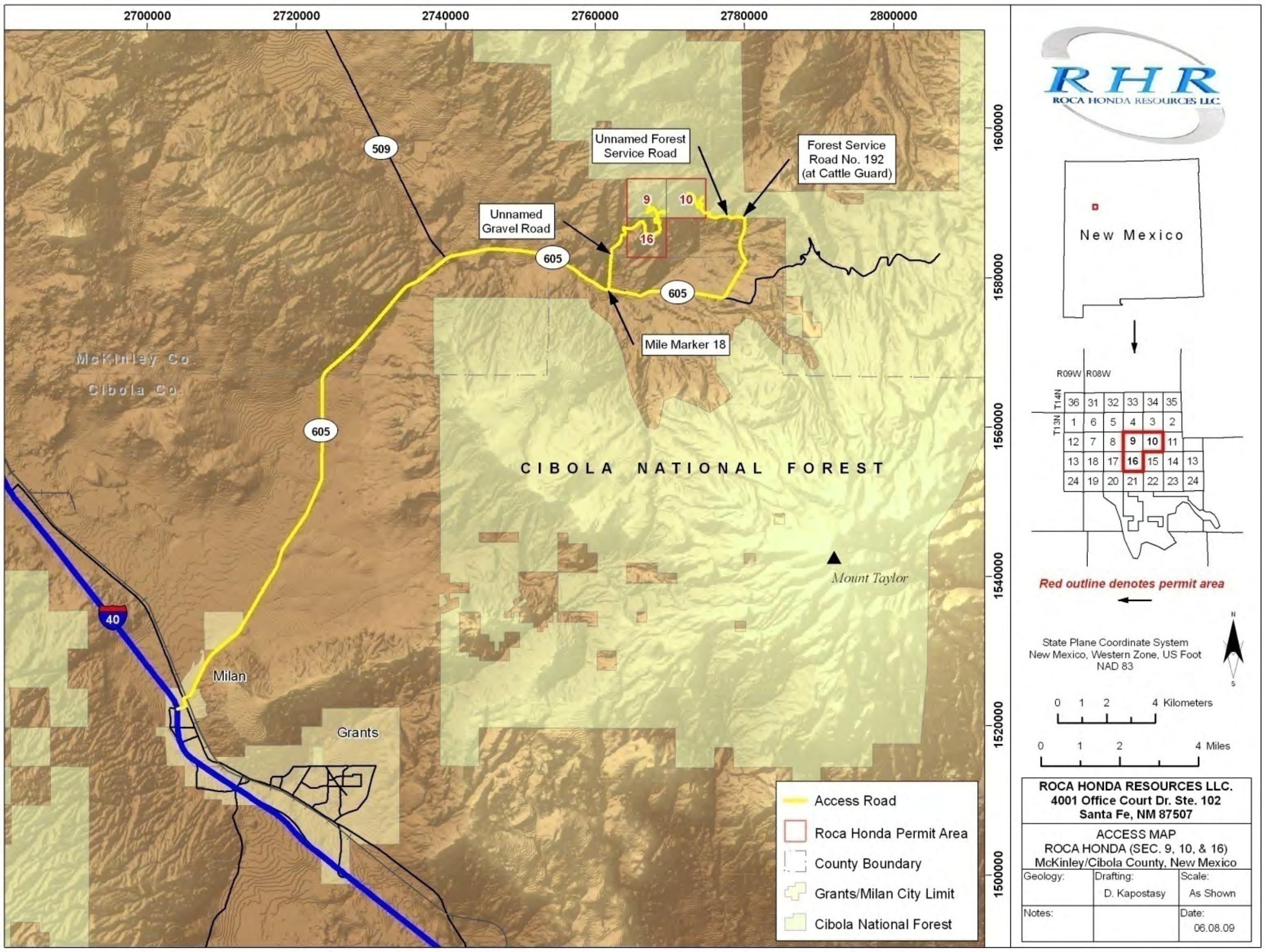


Figure 1-1. Location of and Access to the Roca Honda Mine Permit Area

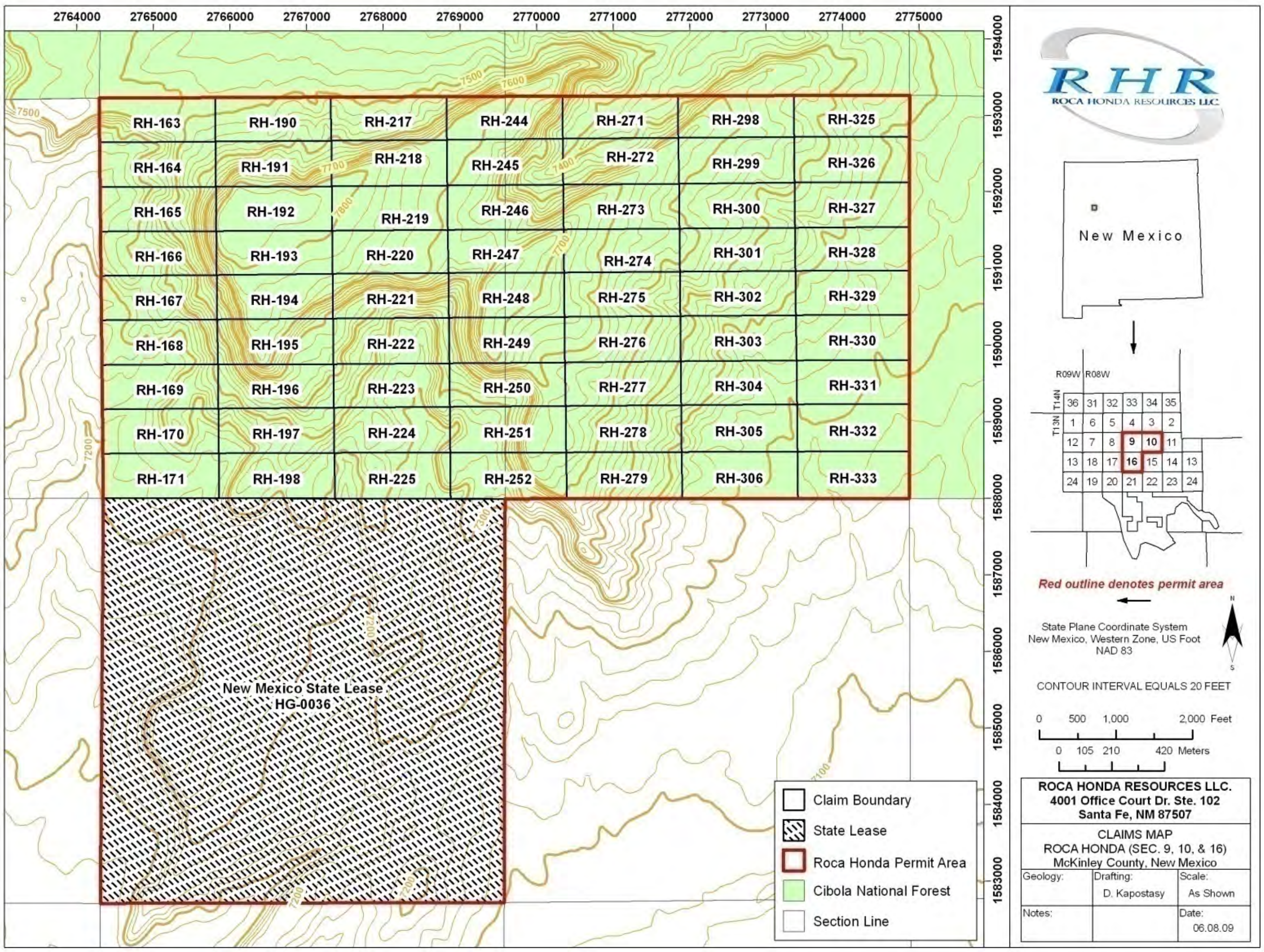


Figure 1-2. RHR Mining Claims and the New Mexico Mining Lease

1.1 Surface Facilities

Selecting the optimum facilities location requires the evaluation of various practical geographic, technical, cultural resource, and regulatory considerations. While the general location of the mine is dictated by the location of the ore body, the location of the surface facilities can be managed to some extent to maximize efficiencies and balance the geographic and technical constraints that the site presents with the cultural resource protection and regulatory requirements.

Potential facility locations were evaluated in relation to the desired mine shaft location using topographic maps as base maps to develop the location of surface facilities. These locations, which include the major surface and associated mine facilities, are generally located on level or gently sloping ground to the extent possible and otherwise situated to maximize the natural topographic advantages available. Flood plains and steeply sloping ground were avoided. Each mine site was evaluated for geologic suitability (including proximity to future mining areas), soils and ground stability. Other factors were also considered, including archaeological and cultural resources, erosion potential, proximity to the neighboring rancher, and visibility and sightlines from the highway, as well as wildlife considerations and aesthetics.

Cultural resources surveys were conducted to locate, categorize, and document all cultural resource sites within the Roca Honda permit area. The results of these surveys are discussed in detail in the Baseline Data Report (BDR), submitted with this application.

After the cultural resources were inventoried, they were located on topographic maps and aerial photographs. Section 11.0, Historic Places and Cultural Properties, of the BDR provides the details of these survey results. These maps were used to aide RHR in locating the surface facilities to maximize avoidance of archaeological resources as the preferred mitigation measure. Section 5.3.3 of this Mine Operations Plan describes in more detail the mitigation measures taken by RHR to protect cultural resources. A mitigation plan is also presented in Section 11.0 of the BDR. All of the factors resulted in locating the mine site facilities as shown in Figure 1-3. A CONFIDENTIAL cultural properties map package was submitted to the NM MMD and the USFS separately that contains the specific locations of the archaeological and cultural resources inventoried by RHR at the site. Roca Honda Resources, LLC has endeavored to minimize surface disturbance impacts wherever possible on all environmental media.

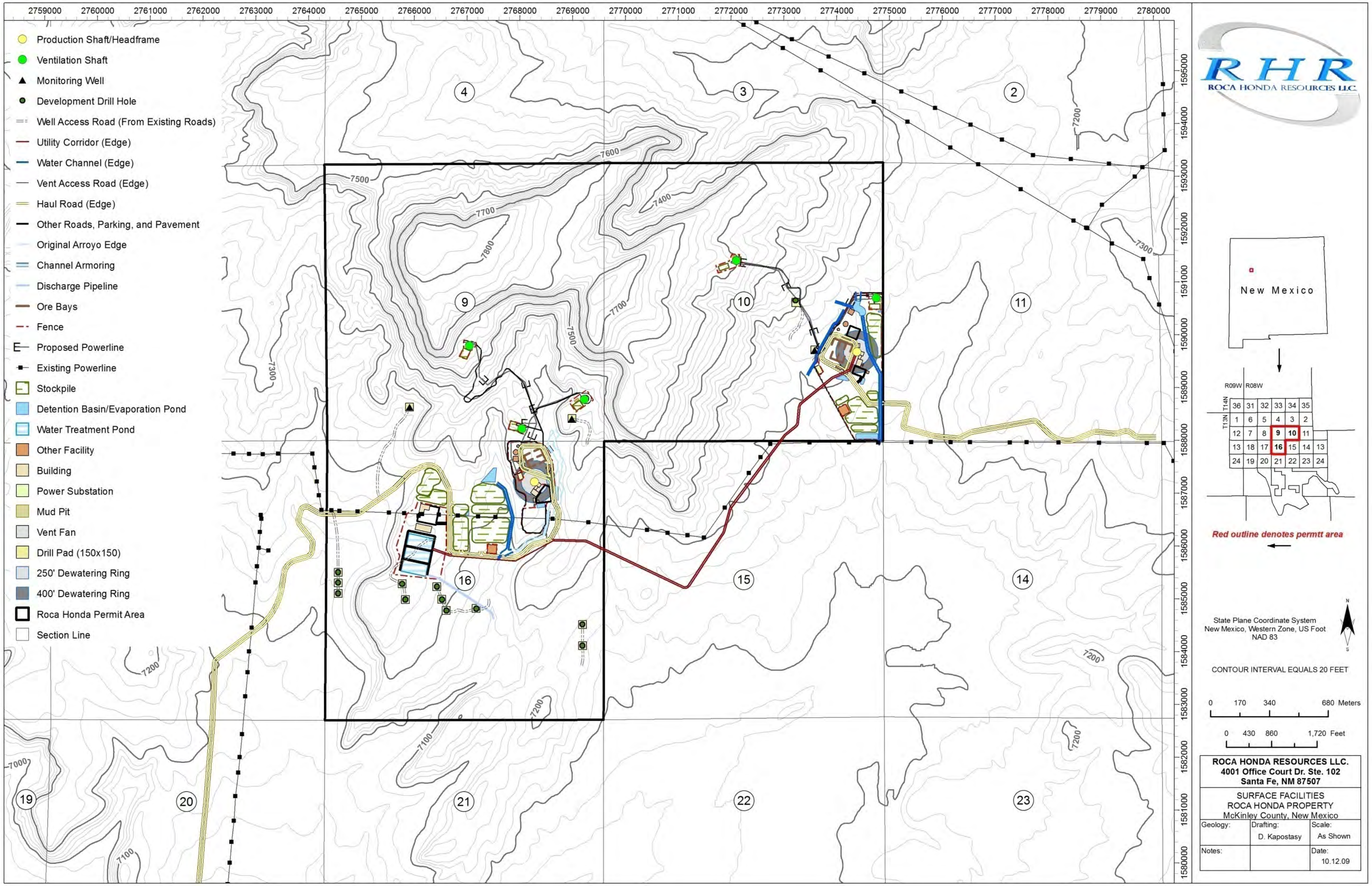


Figure 1-3. Roca Honda Mine Surface Facilities and Areas of Disturbance

2.0 Geologic Setting

2.1 Permit Area Regional Geology

The Roca Honda mine permit area is approximately 22 miles by road north-northeast of Grants in west-central New Mexico. The permit area is in the southeast part of the Ambrosia Lake subdistrict of the Grants uranium district (McLemore and Chenoweth 1989) and is near the boundary between the Chaco slope and the Acoma sag tectonic features. This subdistrict is in the southeastern part of the Colorado Plateau physiographic province and is mostly on the south flank (referred to as the Chaco slope) of the San Juan basin. The regional geology is shown in Figure 2–1. The Roca Honda permit area is also shown relative to the area depicted.

Bounding the San Juan basin to the south-southwest is the Zuni uplift, where rocks as old as Precambrian are exposed 25 to 30 miles southwest of the Roca Honda permit area (Figure 2–1). Less than 5 miles to the east and south of the permit area, Neogene volcanic rocks of the Mt. Taylor volcanic field cap Horace Mesa and Mesa Chivato. On the Chaco slope, sedimentary strata mainly of Mesozoic age dip gently northeast into the Central basin part of the San Juan basin. The permit area is structurally complex and is included in the part of the subdistrict that Santos (1970) described as the most folded and faulted part of the Chaco slope. Figure 2–2 identifies the regional structural features in relation to the permit area.

The San Juan basin and bounding structures were largely formed during the Laramide orogeny near the end of the Late Cretaceous through Eocene time (Lorenz and Cooper 2003). This Laramide tectonism produced compression of the San Juan basin between the San Juan and Zuni uplifts, resulting in faults and fold axes oriented north to north-northeast. The more intensively faulted east part of the Chaco slope may be related to the development of the McCartys syncline, which lies just east of the faulted Fernandez monocline (Kirk and Condon 1986).

The San Rafael fault zone cuts the Fernandez monocline and has right-lateral displacement (Figure 2–2) as evidence of shear near the San Juan basin margin. Other faults in or near the permit area are mostly normal with dip-slip displacement and vertical movement less than 40 ft. The large, northeast-striking San Mateo normal fault about 2 miles west of the Roca Honda permit area has vertical displacement of as much as 450 ft (Santos 1970). Strata in the permit area along the Fernandez monocline dip east to southeast at 4 to 8 degrees toward the McCartys syncline, an expression of the Acoma sag (Santos 1966a and 1966b).

Uranium ore deposits in the Grants uranium district are mainly in fluvial sandstones in the Westwater Canyon, Brushy Basin, and Jackpile Sandstone Members of the Upper Jurassic Morrison Formation. Other host rocks for minor uranium deposits are the Upper Jurassic Todilto Member of the Wanakah Formation and the Upper Cretaceous Dakota Sandstone. The Morrison Formation crops out near the south edge of the San Juan basin and dips gently northward into the basin. Formations of Late Cretaceous age that overlie the Morrison Formation, in ascending order, are: Dakota Sandstone, Mancos Shale, Gallup Sandstone, Crevasse Canyon Formation, Point Lookout Sandstone, and Menefee Formation. The Gallup Sandstone, Crevasse Canyon Formation, Point Lookout Sandstone, and Menefee Formation compose the Mesaverde Group.

The Morrison Formation was deposited in a continental environment, mainly under fluvial conditions. These deposits were derived from an uplifted arc terrane to the west and locally from

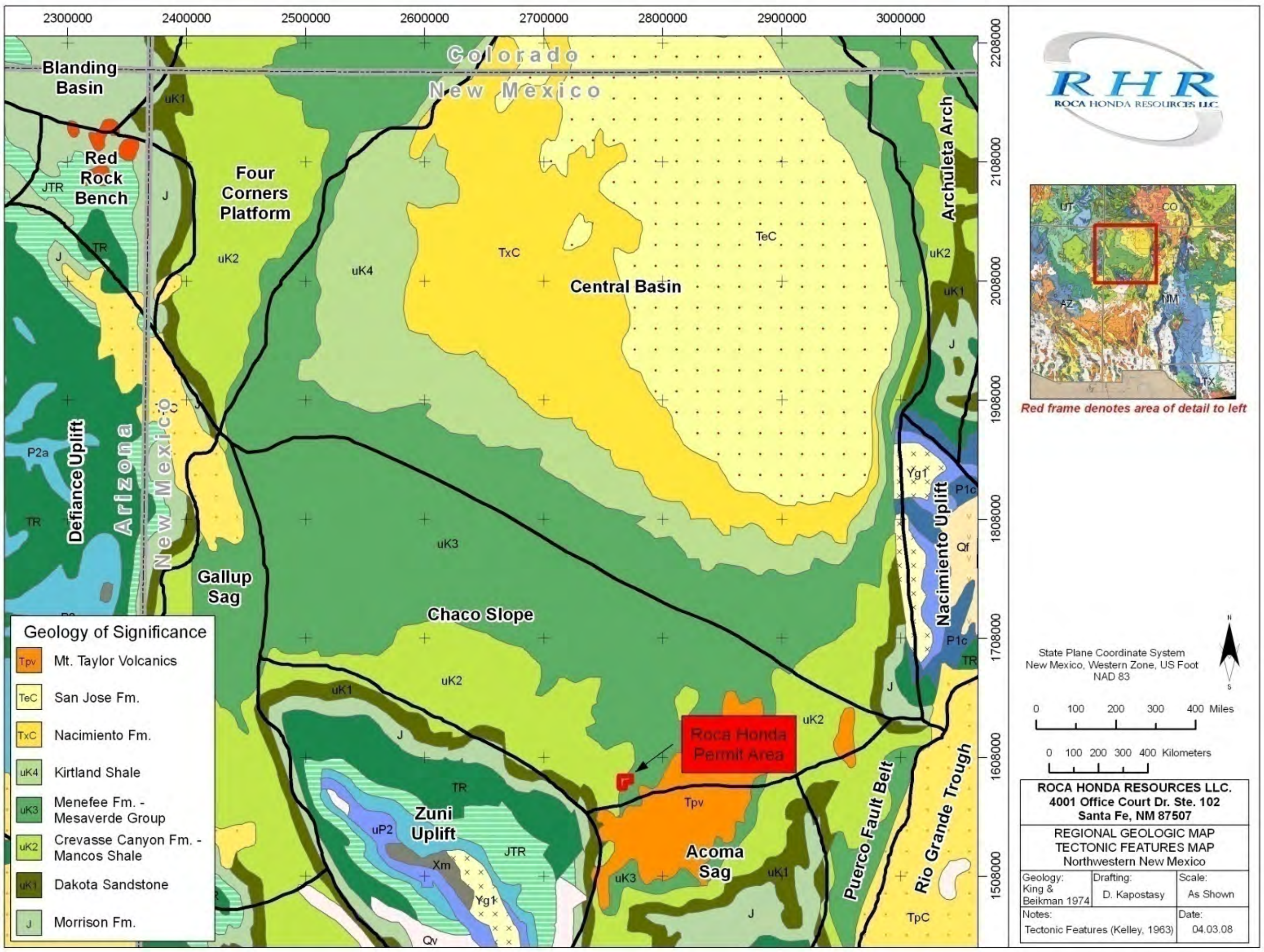


Figure 2-1. Regional Geologic Map of Northwestern New Mexico

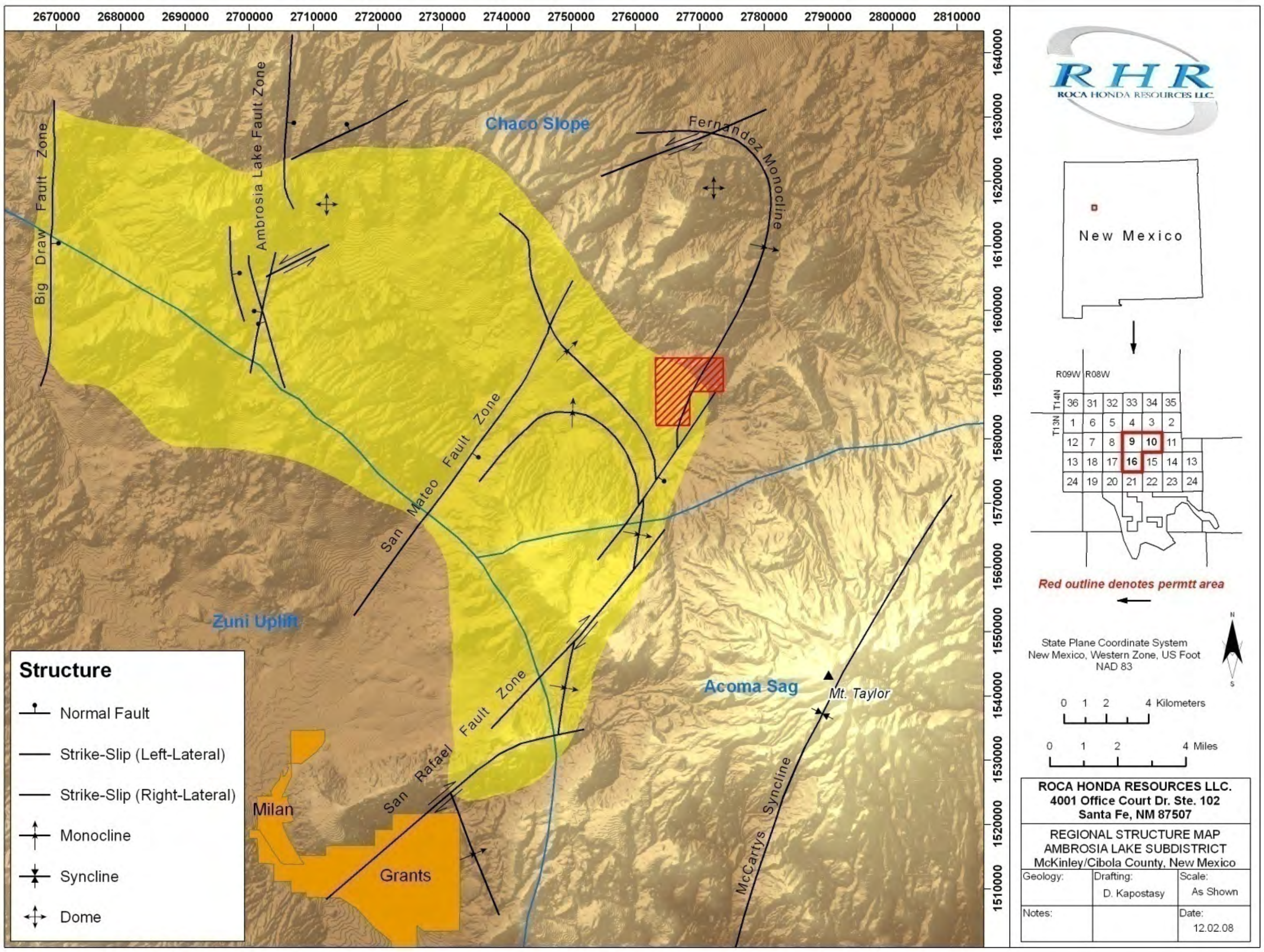


Figure 2-2. Regional Structural Features

the Mogollon highlands to the south (Lucas 2004). The Zuni uplift, currently bordering the San Juan basin to the southwest, did not exist in Late Jurassic time and therefore was not a source for Morrison Formation sediments.

Formations of Late Cretaceous age were deposited in or on the margin of the Western Interior Seaway, a shallow continental sea, and the formations represent transgressive or regressive episodes of the Seaway. The Mancos Shale and its several tongues were deposited on the shallow marine sea bottom, and the formations of the Mesaverde Group were deposited along the western shoreline of the Seaway.

2.2 Stratigraphy Beneath the Permit Area

Section 7.0, Geology, of the BDR submitted with this application contains a detailed description of the geology of the permit area. This section of the Mine Operations Plan summarizes that information to provide the reviewer with a context from which to better understand the details of the mine operations described herein. Rocks exposed in the Ambrosia Lake subdistrict include marine and nonmarine sediments of Late Cretaceous age, unconformably overlying the uranium-ore-bearing Upper Jurassic Morrison Formation. In this section, geologic units are discussed from youngest to oldest. The uppermost sequence of conformable strata consists of Mesaverde Group, Mancos Shale, and Dakota Sandstone. All rocks that crop out at the Roca Honda permit area are of Late Cretaceous age; these rocks and the Quaternary deposits that cover them in some places are shown in the geologic map in Figure 2–3.

The formations and members and their approximate depth from the surface are shown in the stratigraphic section in Figure 2–4 which is based on historical drilling in the area. The Menefee Formation does not crop out in the Roca Honda permit area (and it is not shown in Figure 2–4), but a partial thickness of it is below Quaternary colluvium as subcrop in the SE¼ Section 10. The formations present at the permit area are in descending order: alluvium, Point Lookout Sandstone, Crevasse Canyon, Gallup Sandstone, Mancos Shale, Dakota Sandstone, and the Morrison Formation. The Westwater member of the Morrison Formation is the ore bearing horizon. Figure 2-5 depicts the stratigraphy of the Morrison Formation.

2.3 The Ore Body

The uranium found in the Roca Honda mine permit area is contained within five sandstone units of the Westwater Canyon Member (Figure 2–5). Core recovery from the 2007 drilling program indicates uranium occurs in sandstones with large amounts of organic/high carbon material. The uranium in the permit area is dark gray to black and is found between depths of approximately 1,650 to 2,600 ft below the surface. Zones of mineralization are 1 to 25 ft thick, 100 to 200 ft wide, and 200 to more than 1,200 ft long; also characteristic of the ore is pyrite and bleaching alteration (Fitch 2006). The ore averages four to eight pounds U_3O_8 per ton of host rock. Non-mineralized host rock is much lighter (light brown to light gray) and has a background to slightly elevated radiometric readings.

Uranium ore in the permit area trends west-northwest. This trend is co nsistent with trends of the fluvial sedimentary structures of the Westwater Canyon Member (Falkowski 1980, Kirk and Condon 1986) and the general trend of ore across the Ambrosia Lake subdistrict. Figure 2-6 depicts the location of the ore bodies within the permit area as projected to the surface.

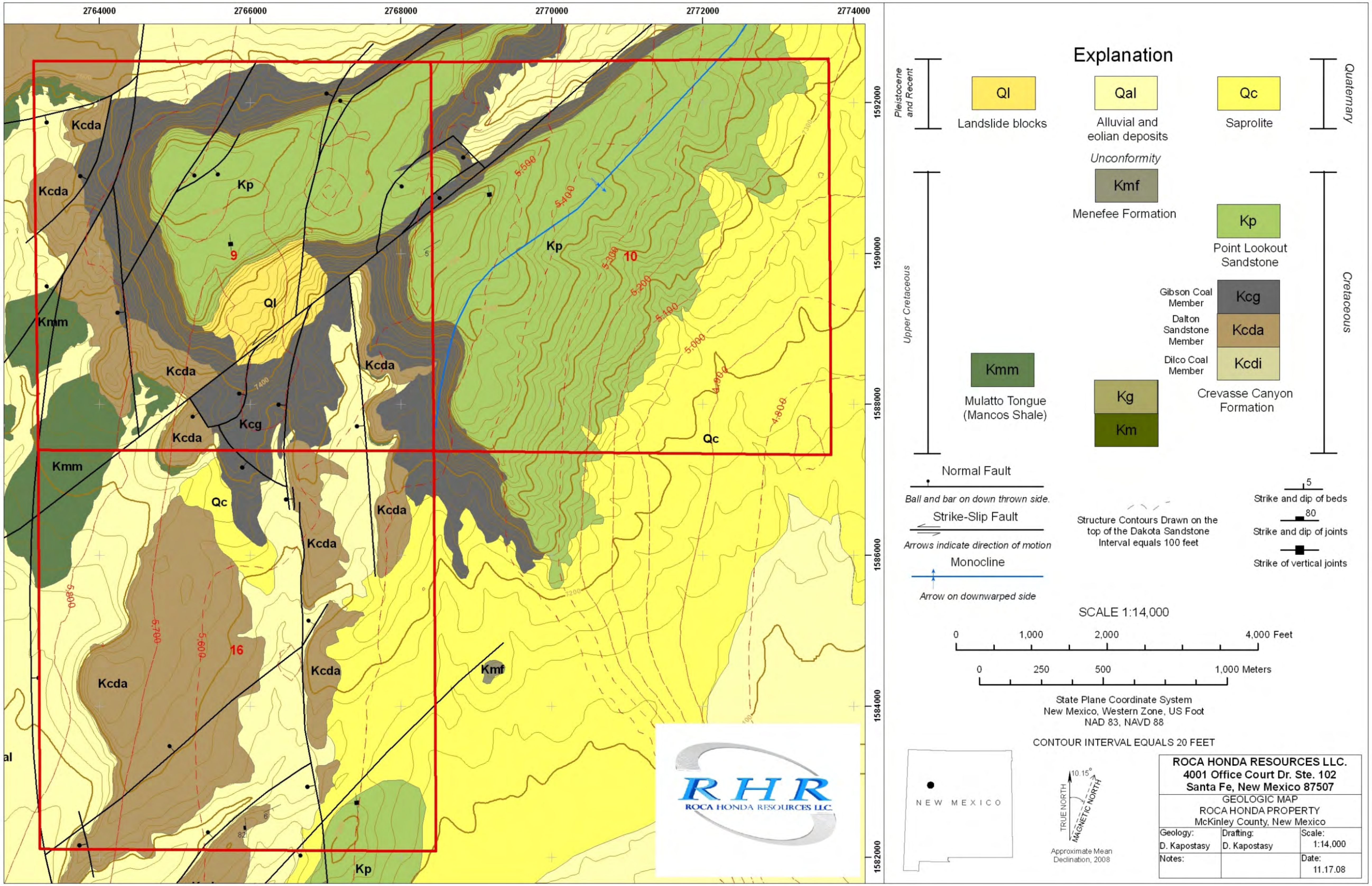


Figure 2-3. Geologic Map of the Roca Honda Permit Area

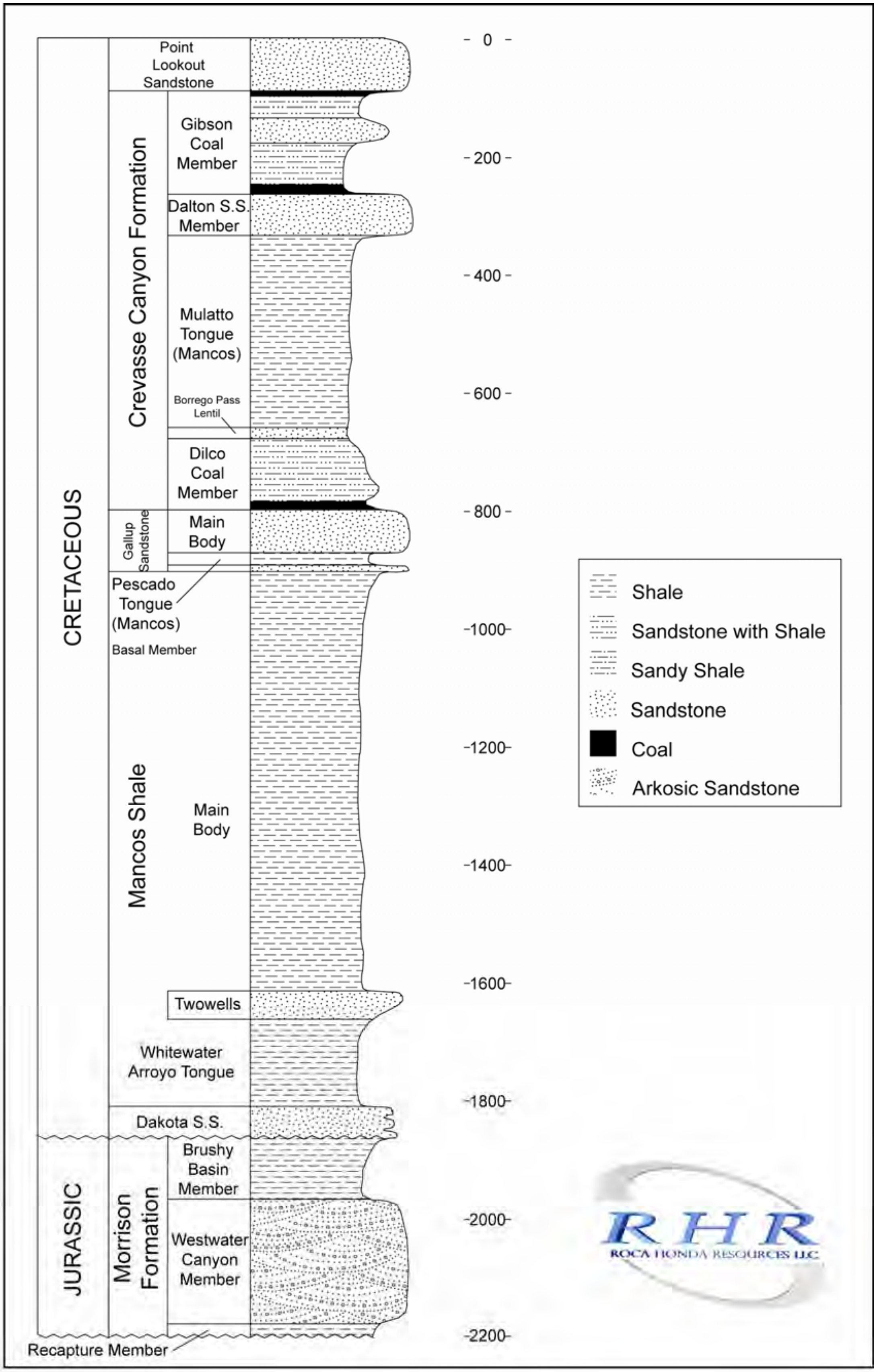


Figure 2-4. Typical Stratigraphic Section of the Roca Honda Permit Area

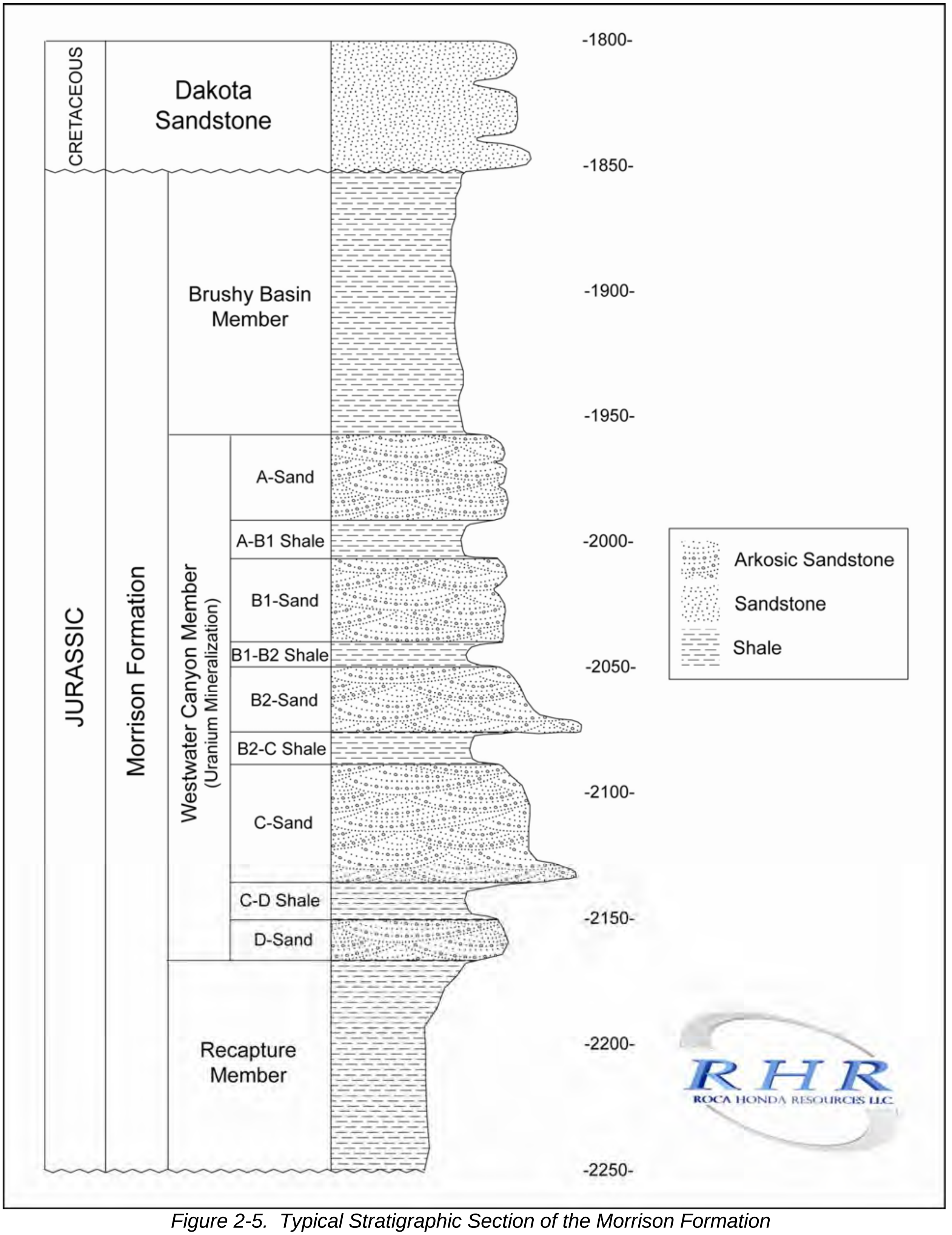


Figure 2-5. Typical Stratigraphic Section of the Morrison Formation

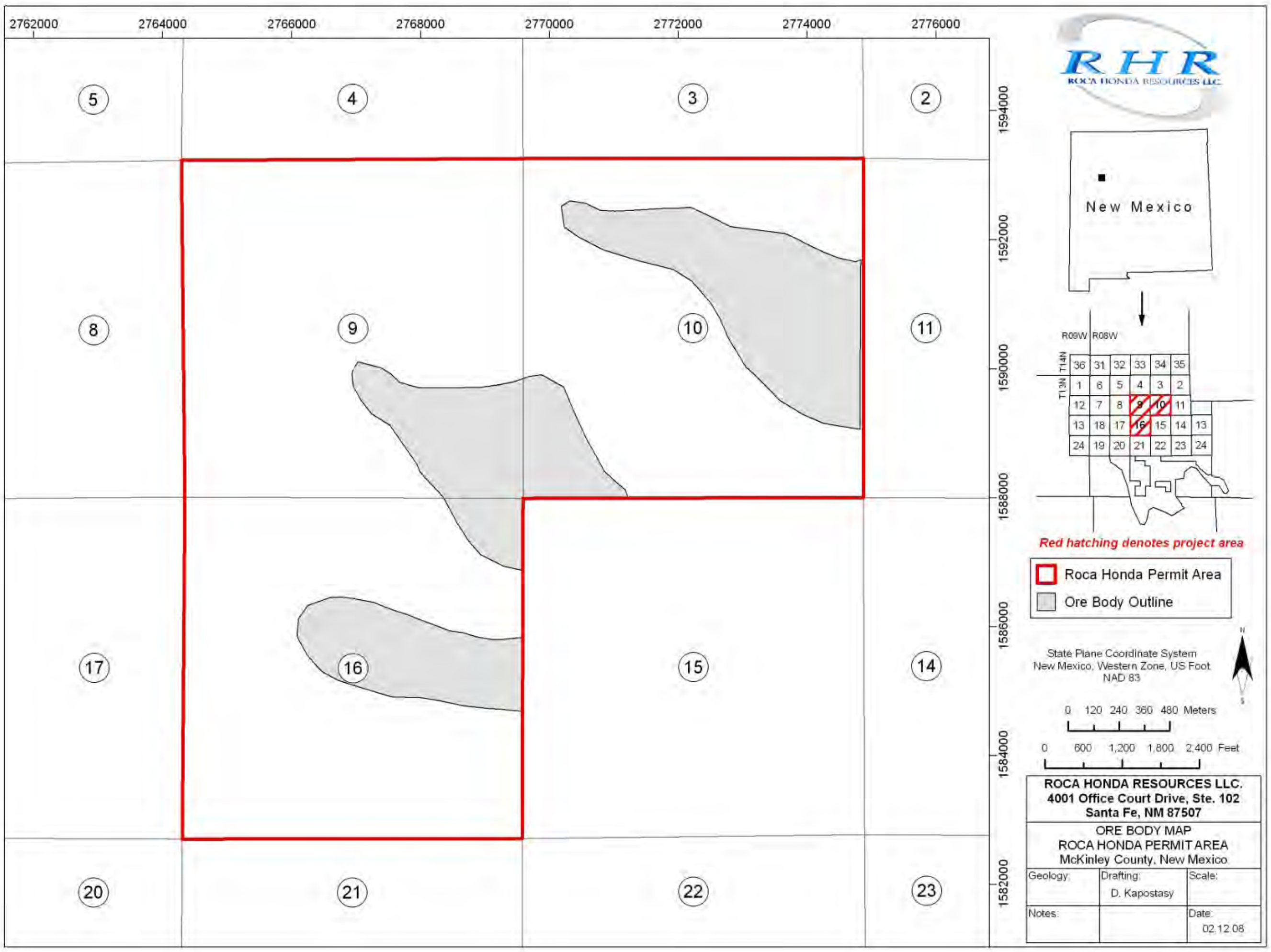


Figure 2-6. Currently Known Uranium Ore Bodies within the Roca Honda Permit Area Projected to the Surface

3.0 Mining Methods and Techniques
NMAC 19.10.6.602 D.(15)(a) and (b)

Mining operations at Roca Honda will be conducted using an underground modified room-and-pillar method as described in more detail in Section 3.6.2 of this Plan. The ore body will be accessed by constructing two production shafts; the first in Section 16 and the other in Section 10, as shown in Figure 1-3. The current anticipated life of the Roca Honda mine is approximately seventeen years. However, the ultimate life of the mine is dependent upon the mineralization and economics of the mine during development. Historically, the presence of more ore is identified as mining progresses.

3.1 Mining Operations Schedule

Table 3-1 provides a generalized schedule for construction, operation and reclamation of the Roca Honda mine project in compliance with NMAC Section 19.10.6.602 D.(15)(b). Fundamentally, it is an approximate schedule or time table of mining operations for a nominal 17-year period. However, the true life of the mine may well be different as recognized by the NM MMD regulation NMAC Section 19.10.6.602 D.(15)(b), wherein a permittee “not be required to meet specific dates for initiation or completion of mining according to the schedule or time table.”

The schedule reflected in Table 3-1 begins with day one (1) as the day that permit approvals are received for the project. On that day, mobilization to begin many activities will occur, including importantly, preparation of many site areas to start the various initial construction activities. Three of the critical early activities are: 1) installation of the dewatering wells necessary to begin the aquifer dewatering/depressurizing process in advance of mine shaft sinking activities reaching the water-bearing formations, 2) construction of the water treatment facilities to receive mine dewatering water that may have to be treated, and 3) development drilling.

It is anticipated that initial site preparation for the major site construction activities will be completed within the first ninety (90) days, although additional site preparation work may continue for many months throughout the construction phase. It is also anticipated that the initial phase of the water treatment plant construction will be completed one hundred eighty (180) days into the project, allowing treatment, if necessary, of water produced by the initial dewatering wells. It is assumed for the purpose of the Table 3-1 schedule that treatment of water produced from the wells may be required. However, quality of the water produced may be such that it can be discharged without undergoing treatment even before the water treatment plant is completed.

Construction of the Section 16 production shaft is scheduled to begin six (6) months into the project. This timeframe assumes that some of the dewatering wells into the shallower formations have been operating in advance of shaft construction, allowing sufficient dewatering of the upper water-bearing formations for the shaft to be constructed through and beyond them. As such, the construction schedule of the shaft is dependent upon the success of the dewatering activities.

The Section 16 production shaft and initial development is scheduled to be completed within three and one half years (1275 days) after commencement of the project. The first ore would be produced approximately thirty days later, following initial development mining activities.

Table 3-1. General Schedule for Roca Honda Mine

Activity	Number of Days from Permit Approval Date
SECTION 16	
Mobilization – site preparation	1
Begin dewatering well construction	1
Begin water treatment plant construction	1
Complete site preparation/construct facilities	90
Complete water treatment plant construction	180
Begin dewatering	180
Begin shaft construction	180
Complete dewatering well construction	545
Complete shaft/initial development	1275
First ore	1305
Five years Section 16 production	3130
SECTION 10	
Mobilization – site preparation	1885
Begin dewatering well construction	1885
Complete site preparation/construct facilities	2035
Begin dewatering	2035
Begin shaft construction	2035
Complete dewatering well construction	2400
Complete shaft/initial development	3130
First ore	3160
Six years Section 10 production	6050
Reclamation start	After 3130
Reclamation finish	6780

Approximately one and one half years (580) days after first ore in Section 16, construction will begin on the Section 10 site preparation. The Section 10 shaft and initial development is scheduled to be completed approximately eight and one half years (3130 days) after the Roca Honda project receives its permit. The first ore will be produced thirty days later.

The estimated life span of the mine is approximately seventeen (17) years. Reclamation will begin on portions of Section 16 after the end of production and continue until completion two years after production ceases in Section 10 (6780 days after permit approval).

As noted previously, the schedule presented in Table 3-1 is for planning purposes only. As provided for in the regulations, the actual schedule for the project will be dictated by many factors yet unknown, including the dates the permits are actually approved, the actual conditions encountered during construction, and the amount of ore ultimately available to be extracted. The remainder of this section is intended to provide the reviewer with a more detailed understanding of the work that will be undertaken to construct, operate and reclaim the Roca Honda mine in a manner that meets the performance and reclamation standards of the various State and Federal regulations that apply to the project.

3.2 Site Preparation

Upon obtaining permit approvals, RHR will mobilize a work force of company employees and contract personnel to begin site preparation. The three major areas of focus of onsite preparation will be the surface facility footprint around the production shaft in Section 16, the water treatment facilities, installation of the dewatering wells, and limited development drilling. Figure 1-3 shows the various surface facilities that will be needed.

Prior to initiating any surface disturbance activities, the proposed area for construction will be surveyed on the ground, as necessary, and checked against the site archaeological survey by a qualified archaeological expert and inspected onsite. When the location is “cleared” for cultural resource parameters, the topsoil and subsoil will be removed, as necessary, and stockpiled. A Storm Water Pollution Prevention Plan (SWPPP) will be developed and implemented. Access road(s) will be constructed, and all ingress and egress will be via these roads. Sedimentation control structures will be installed prior to facility improvement or construction.

Roca Honda Resources, LLC will clear and grub the surface facilities areas of the mine site and the water treatment plant to begin the process of preparing them for construction. Topsoil will be removed and stockpiled for future use in reclamation. The topsoil stockpiles will be clearly marked with signs and segregated from other site activities to ensure that they are available in the future. Subsoil that is not used as fill material will also be stockpiled for future use in reclamation. These surface facility areas will be leveled using traditional earthmoving equipment to cut and fill, as necessary, and the various construction activities will commence.

Coincident with the surface facility construction, RHR will begin installation of the dewatering wells, initially around the vicinity of the Section 16 shaft, and eventually in the area of the Section 10 shaft. The location of these wells is identified in Figure 3-1. These wells will be designed, permitted, and constructed in conformance with the New Mexico Office of the State Engineer (NM OSE) requirements. Once constructed, the water produced at each well will be tested to establish its water quality and determine if treatment is necessary prior to discharge. Operation of these wells will occur pursuant to approved State and Federal requirements.

3.3 Dewatering Wells

The purpose of the dewatering wells is to reduce the hydrostatic pressure around the vicinity of the mine production shafts, not to dewater the formation. The dewatering wells are, therefore, temporary, as described below.

Dewatering of some of the water-bearing formations above the ore zone, i.e., the Gallup and the Dakota formations, may be necessary. The proposed pump test described in Section 9.0 of the Roca Honda Sampling and Analysis Plan (SAP), submitted with this application, will provide the data needed to make this determination. Dewatering of these formations, as necessary, and the Westwater Canyon ore zone will begin in advance of reaching the formation(s) during construction of the shaft. (These wells will also be used to perform additional tests related to

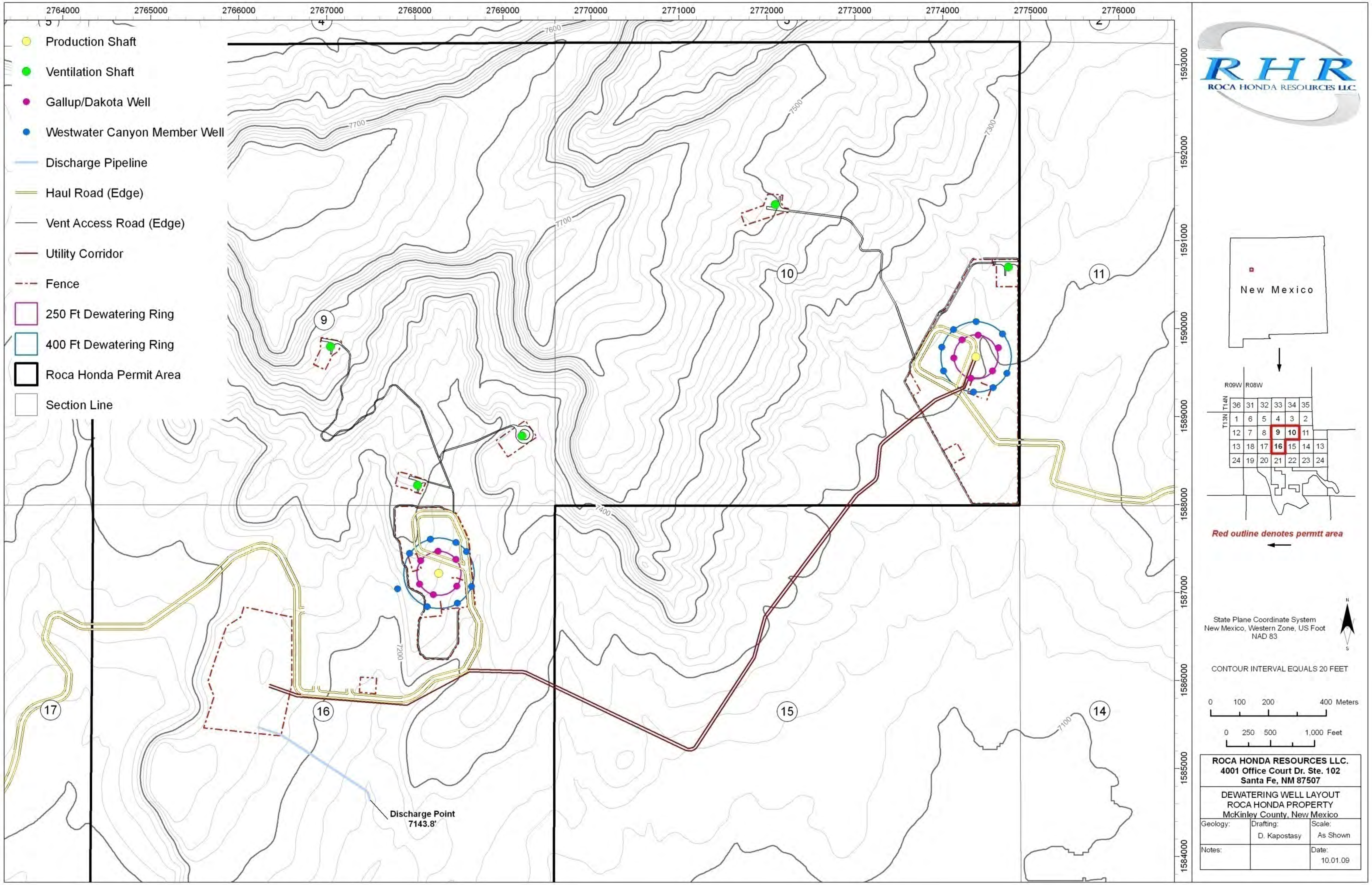


Figure 3-1. Typical Dewatering Well Layout

hydrology and aquifer properties.) The purpose of these wells, if necessary, for the aquifer above the Westwater formation, is to reduce the hydrostatic pressure in the formation(s) in the vicinity of the shaft construction activities. This action will minimize the inflow of water into the construction area of the shaft as the shaft cuts through the formation. A more detailed description of the shaft construction procedures is provided in subsequent sections of this Plan.

Similarly, the purpose for the dewatering wells in the Westwater formation is to reduce the hydrostatic pressure in the ore-bearing formation so that this shaft can be completed and initial development begun. As the mine is enlarged, the mine itself will become the primary means of mine dewatering, and the wells will no longer be needed.

The dewatering wells will be drilled in two circular rings or ellipses around each shaft location on Sections 10 and 16 and will coincide with shaft construction (see Figure 3-1). The final shape, configuration, and number of wells used will be determined following the pump test described in the SAP. Conceptually the wells will be installed in a circular arrangement, the first ring, containing up to 6 evenly spaced wells at a distance of approximately 250 ft from the shaft location. In the case of an elliptical arrangement, the shaft will be located at a point on the semi-major axis, with length of approximately 250 ft, of the ellipse. These inner ring wells will be drilled at a diameter of approximately 16" and cased with 12" to 14" casing into the Gallup Sandstone (approximately 600 to 800 ft below ground surface). Once shaft construction has reached and been grouted through the Gallup, these wells will be advanced to the lower Mancos Shale/Dakota Sandstone at a smaller diameter.

In a circular arrangement, the second ring, containing up to 8 evenly spaced wells, will be at a distance of approximately 400 ft from the shaft. In the case of an elliptical arrangement, the shaft will be located at a point on the semi-major axis, with length of approximately 400 ft, of the ellipse. These outer ring wells will be drilled at a diameter of approximately 16" and cased with 12" to 14" casing into the Westwater Canyon Member of the Morrison Formation. All wells will be completed to State of New Mexico artesian well standards as outlined in New Mexico Administrative Code 19.27.4.31. Prior to being cased and grouted, all wells will be logged to determine screened intervals.

While in use, the wells will have an approximately 50 ft by 50 ft footprint, though it should be noted that the disturbance will fall within the mine surface facility footprint. Surface or submersible pumps rated at 250 to 500 gallons per minute will be installed, and all water requiring treatment will be piped to the mine water treatment facility. Once the wells are no longer needed, the wells will be abandoned and reclaimed. However, some of the wells will be kept to be used as a contingency in emergency situations, such as pump failure in the main shaft during mining.

3.4 Shaft Construction

Site development will begin at Section 16 first. Construction of the Section 16 production shaft will begin as soon as possible after the site has been prepared. The shaft will be approximately 18-ft in diameter and will be constructed using conventional shaft sinking techniques.

Typical conventional shaft sinking involves vertical excavation from the ground surface downward. Little difficulty is anticipated in shaft sinking through solid rock. Excavation consists of a cycle of drilling, blasting, excavating or removing rubble (i.e., mucking and hoisting), constructing a liner in the excavated area and repeating the process until the ore horizon is reached. When sinking the shaft through water-bearing strata, careful shoring and sealing of the shaft lining will be necessary, and pumping facilities will be needed.

In addition to dewatering, as described in Section 3.3, grout will be used to further reduce the inflow of water into the shaft. Grout is a liquid material that when solidified, forms a seal that reduces or eliminates the flow of water in the area where it is applied. Using grout technology facilitates control of the inflow of water from the formation being grouted during the construction of the shaft, and importantly, during the operating life of the mine.

There are a number of ways grout can be introduced into the formation. Fundamentally, the approach is to drill a number of holes from above the formation around the circumference of the shaft and pump the grout into the formation, forming a "curtain" in the formation in the area surrounding the shaft sinking excavation. In the grouting process, liquid cement is forced into the water-bearing earth under very high pressure. On mixing with the water, the cement solidifies the adjacent area, and it is removed by drilling and blasting as with rock.

The use of the conventional shaft sinking method will allow the segregation of the various aquifers by facilitating the ability to grout water-bearing formations prior to penetrating the formation. The Gallup and Dakota Sandstone formations are expected to be under high hydraulic pressure and to flow at significant volumes. Grouting will be used to prevent water flow into the shaft during construction. When shaft sinking reaches the pad elevation for the formation, a probe hole will be drilled into the water-bearing formation. The hole will be equipped with special packers and gauges to measure water volumes and pressures. If volumes and pressures are within acceptable tolerance levels, shaft sinking will resume without grouting. If volumes and pressures are outside of these levels, grouting will be implemented prior to advancing the shaft sinking process. Figure 3-2 shows the typical stratigraphy anticipated to be encountered at Roca Honda. Figure 3-3 shows a typical grout curtain scenario in more detail.

The shaft sinking activities will proceed as described above through the water-bearing formation. The grout remains in the surrounding formation providing a seal to minimize water inflow. The water, which continues to flow into the shaft, will be controlled by installing "water rings" to gather the water and direct it to sumps in the mine so that it can be removed to the surface. These rings are heavy cast-iron segments, with flanges for connecting, and bolted together in place.

As noted above, the excavated shaft material will be brought to the surface during shaft construction using conventional, temporary hoist equipment. This material will be segregated as appropriate, and placed in designated stockpile areas on the surface at the mine site. A permanent hoist house for operations will be installed at a later time.

Upon completing shaft construction, a permanent pumping level station will be developed to accommodate mine dewatering during mine operations. Figure 3-4 shows details of a typical pump station. Ultimately, the production shaft will be fitted with a permanent 90-120 ft tall headframe and hoist for operations. After completion of the Section 16 shaft, the contractor will mobilize to Section 10 and begin construction of that production shaft. The sequence of construction activities at the Section 10 shaft will be the same as those of Section 16.

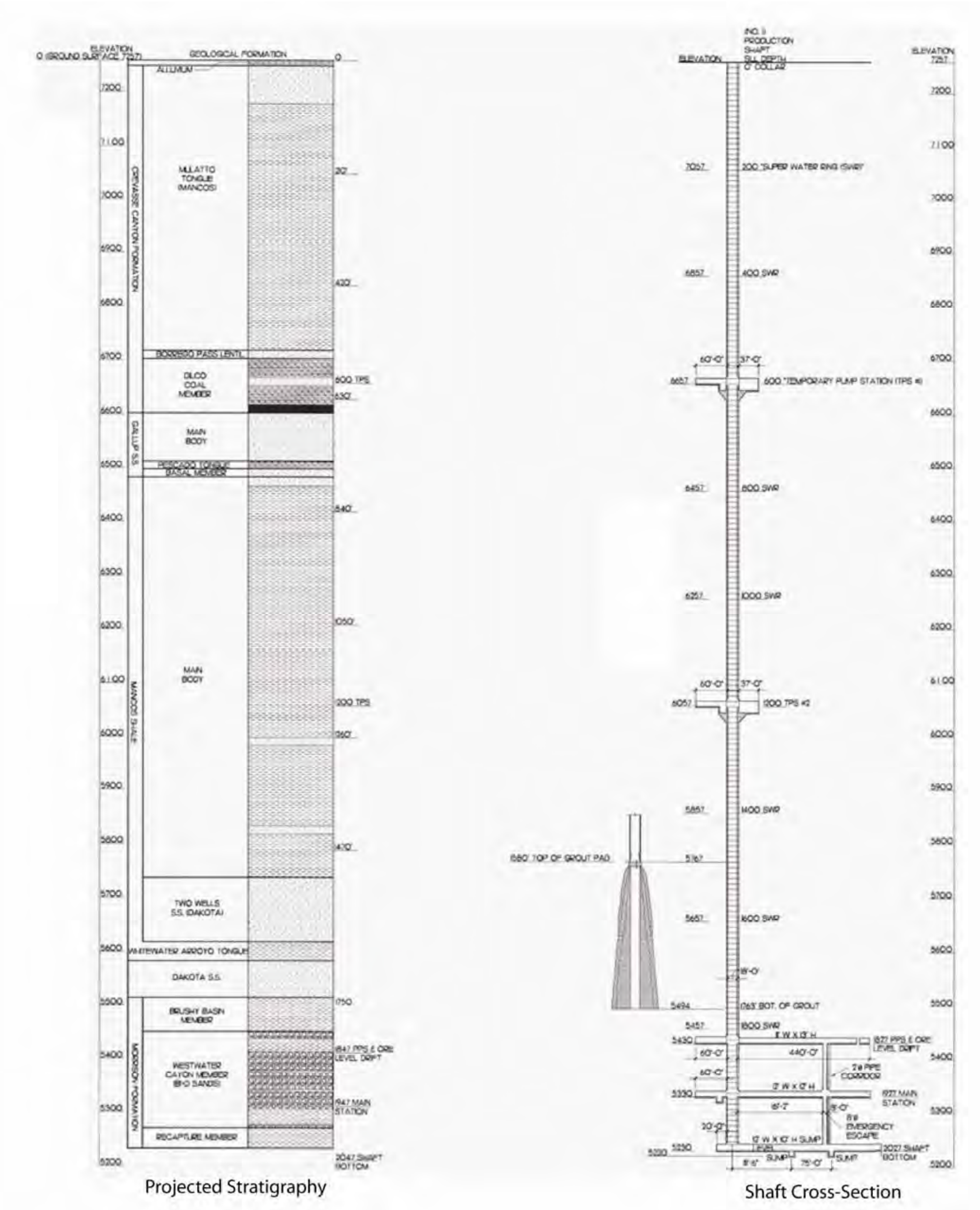


Figure 3-2. Typical Stratigraphy at Roca Honda Shaft Location

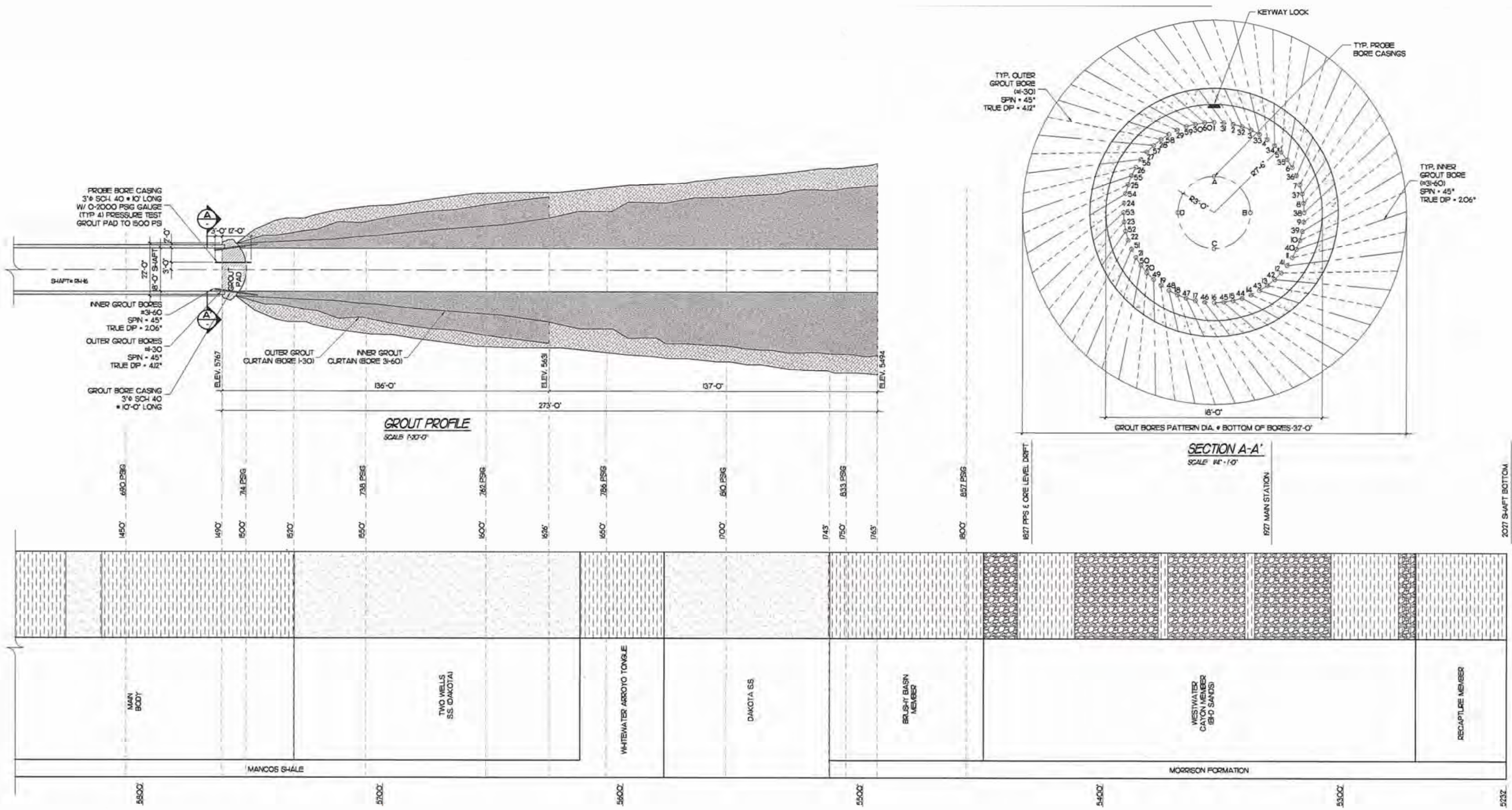
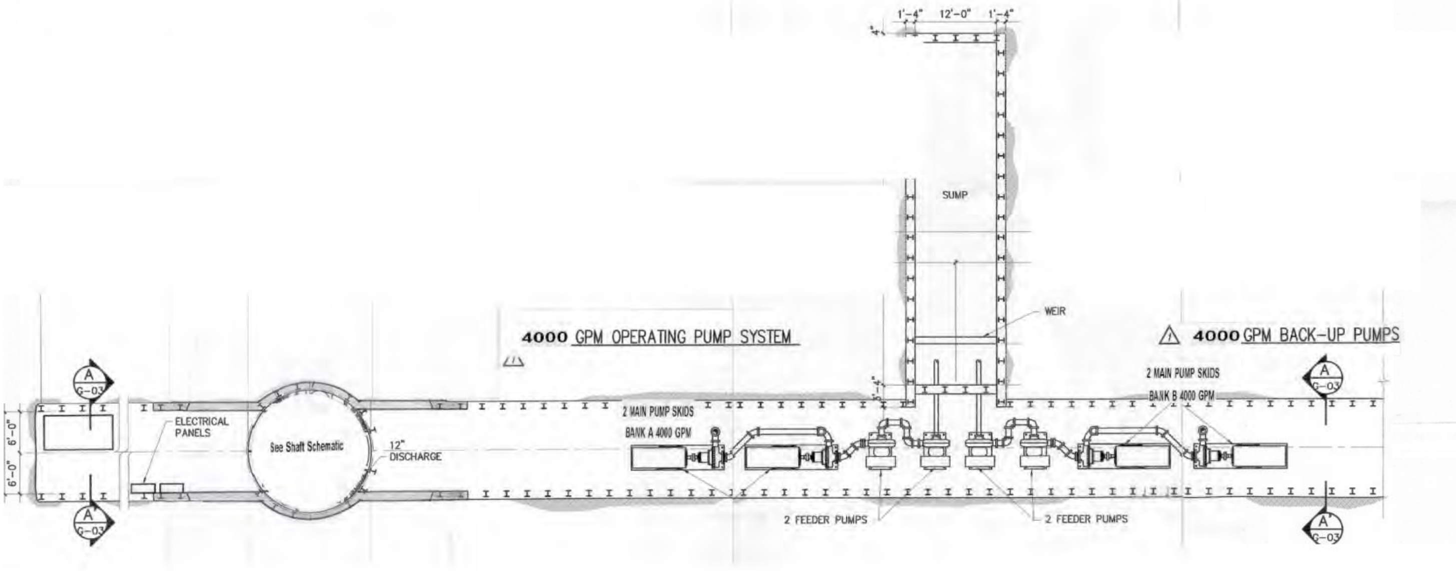


Figure 3-3. Typical Grouting Technique for Shaft Construction



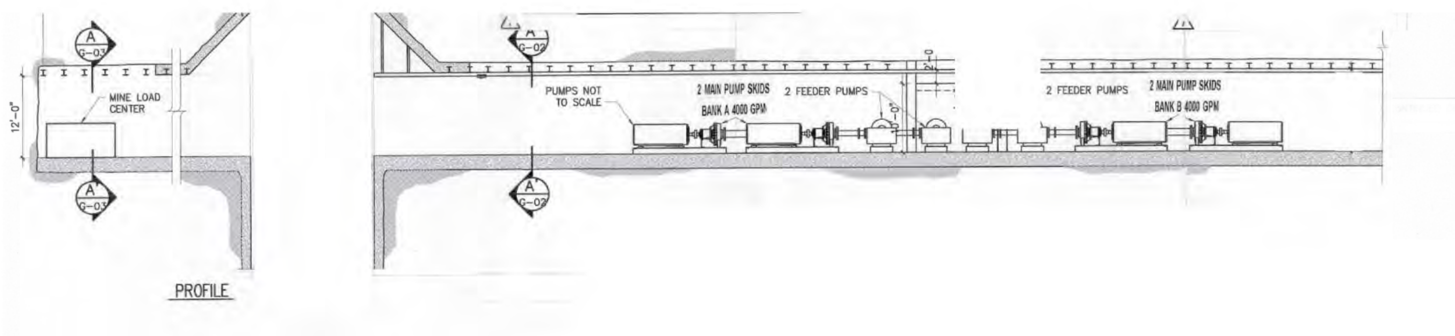


Figure 3-4. Typical Pumping Level Station

3.5 Ventilation Holes and Escape Shafts Construction

An estimated five (5) ventilation holes will be installed in the Roca Honda permit area. Their locations are shown in Figure 1-3. The size of each ventilation shaft will vary from 8 to 12 ft in diameter depending on the results of the detailed ventilation studies currently ongoing. The first ventilation hole will be installed (after the Section 16 production shaft is completed) immediately north in Section 9. Ventilation holes will be constructed using the blind boring method, which is similar to the construction method for a large diameter well. In this method, a hole will be bored from the surface using a large mechanical boring machine.

Figure 3-5 shows a typical blind boring equipment setup. Blind boring uses a shaft drilling rig with a rotary table connected to a reamer body (or cutting tool) by a heavy double walled rod or "drill string." The rotary table provides the torque or turning action for the reamer. To create upflow, the boring is filled with water which is maintained at a constant level throughout the entire shaft development, similar to drilling a well. The water fills both the shaft and the hollow drill string creating two independent columns of water. Compressed air is injected into the water column of the drill string, displacing the fluid and creating a much lighter column. As the reamer cuts, the heavier water column inside the shaft pushes down and across the bottom of the shaft. The water is then forced through a small opening called a "pick-up" on the reamer body, which displaces the lighter water column in the drill string.

The displacement of the lighter drill string fluid results in an upward flow or "reverse circulation." The volume of fluids being displaced creates a vacuum at the pickup point that sucks the cuttings from the face. The reverse circulation is maintained by providing a constant level of water in the shaft, which provides both a downward pressure for flow and the added benefit of concentric outward pressure on the shaft wall. Concentric pressure reduces the potential for surrounding strata to shift or move and, in turn, increases overall stability.

Material produced from this excavation will be contained in a large segmented pit or container and the water decanted for recirculation in the drilling. The material will be allowed to dry and periodically transported to a stockpile on Section 16 or Section 10 (depending on the location of the ventilation hole). There will be at least one ventilation hole associated with each production shaft. The final number will be dictated by the detailed ventilation plan design to be completed later in the mine design process. The ventilation holes will be designed with upcast or exhaust ventilation air direction and a volume of 200,000 cubic feet per minute. The air will be provided by an electric motor and fan assembly mounted horizontally on the surface on a concrete pad. This design will allow dual purpose use of some of the ventilation holes as emergency escape ways for mine personnel at the haulage level and mine working level elevations.

The production shafts are designed using downcast ventilation, in which fresh air is pulled down the shaft and is distributed throughout the mine. Fresh air will also be vented upward from the haulage level, which is below the ore level, to the mine working level (ore level) by means of raises. These two mine levels are discussed in more detail later in this Plan.

Once completed to full depth, each ventilation shaft will be lined with steel, concrete or composite material. In constructing the ventilation shafts, it is anticipated that the water-bearing formations encountered may produce water such that grout may be used to curtail the amount of water flowing into the boring as the formation is transected.

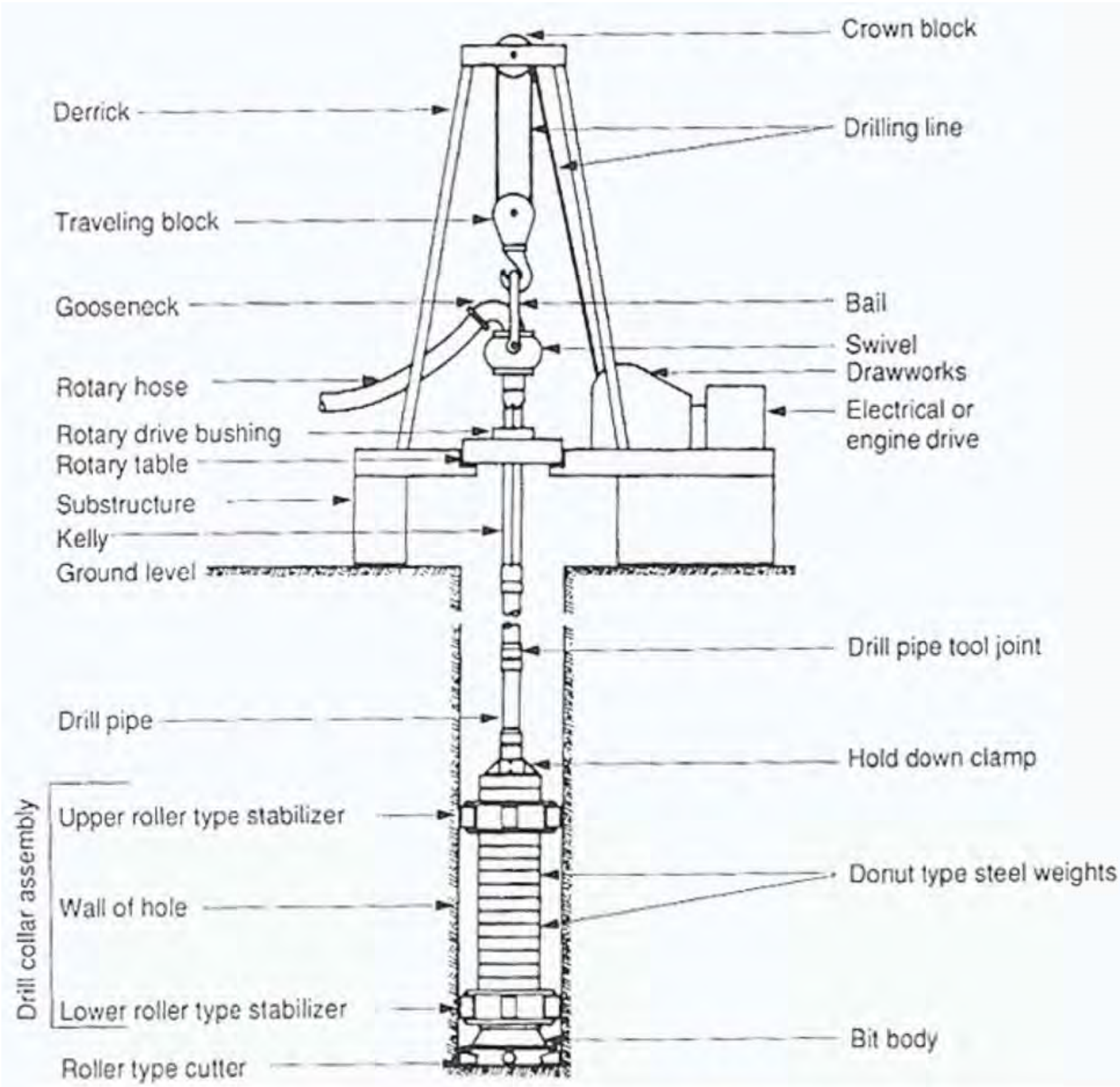


Figure 3-5. Typical Blind Boring Equipment Setup

3.6 Mine Operations

Once the production shaft is completed, a permanent sump will be constructed at the lowest point of the mine shaft(s) to provide a collection point for mine water. Water produced from the mine as the mine is developed and work areas are excavated will be collected and held in the sump to remove sediment with the aid of decantation trenches. The collected water will be pumped through a series of pump stations to the surface, where it will be pumped to the water treatment plant for treatment, as necessary, prior to discharge.

3.6.1 Haulage Level

The haulage level development will begin under the ore horizon as soon as practical after shaft construction has been completed. The haulage level of the mine serves several purposes. It provides a location from which to conduct longhole drilling underground that further defines the ore body. The longholes then provide a means of further dewatering the mining level by providing drainage from below. The haulage level also provides the clean air ventilation passageway and importantly, it provides the ore transport route from ore chutes to the hoisting transfer facilities.

Figure 3-6 illustrates the concept of longhole drilling in underground mining. Longhole drilling is a dual-purpose technique used to define the location of the ore and to dewater the portion of the formation to be mined. A comprehensive longhole program will be used to define the ore prior to extraction. Information obtained from the longholes will be used to develop a detailed view of the approach to use in extracting the ore. The longholes will allow RHR to delineate, with specificity, the location of ore-containing pods within the mining horizon. Use of this technique reduces significantly the surface disturbances required for development drilling. Development drifts will be excavated to provide access to and outline the uranium pod defined by the longhole drilling.

As shown in Figure 3-6, the longhole drilling machine, located at the haulage and/or ore level, is capable of drilling at the face (see front view) for distances into the rock of 200-300 ft ahead of the excavation in predetermined patterns. The top and side views show how the longhole drilling will be performed radiating out and up into the rock at various angles. The longholes will allow the water to drain from the rock in advance of excavation. The holes will also provide access into the rock with probes that will allow the ore to be more carefully defined.

During initial development of the haulage level, the excavated material will be hoisted to the surface and placed in stockpiles. As noted previously, the haulage level is located below the ore horizon. Therefore, the excavated material is not expected to contain radiological constituents of concern. Nonetheless, all of this material will be stored in stockpiles on the surface of the mine site and handled in a manner protective of human health and the environment. The details regarding the mitigation measures implemented at the site to ensure this protection are described later in this Plan.

As development of the mine continues, more and more of this excavated material will be moved and placed in underground areas of the mine that were previously excavated and no further mining is planned. In this manner, much of the mine excavated material will never be brought to the surface.

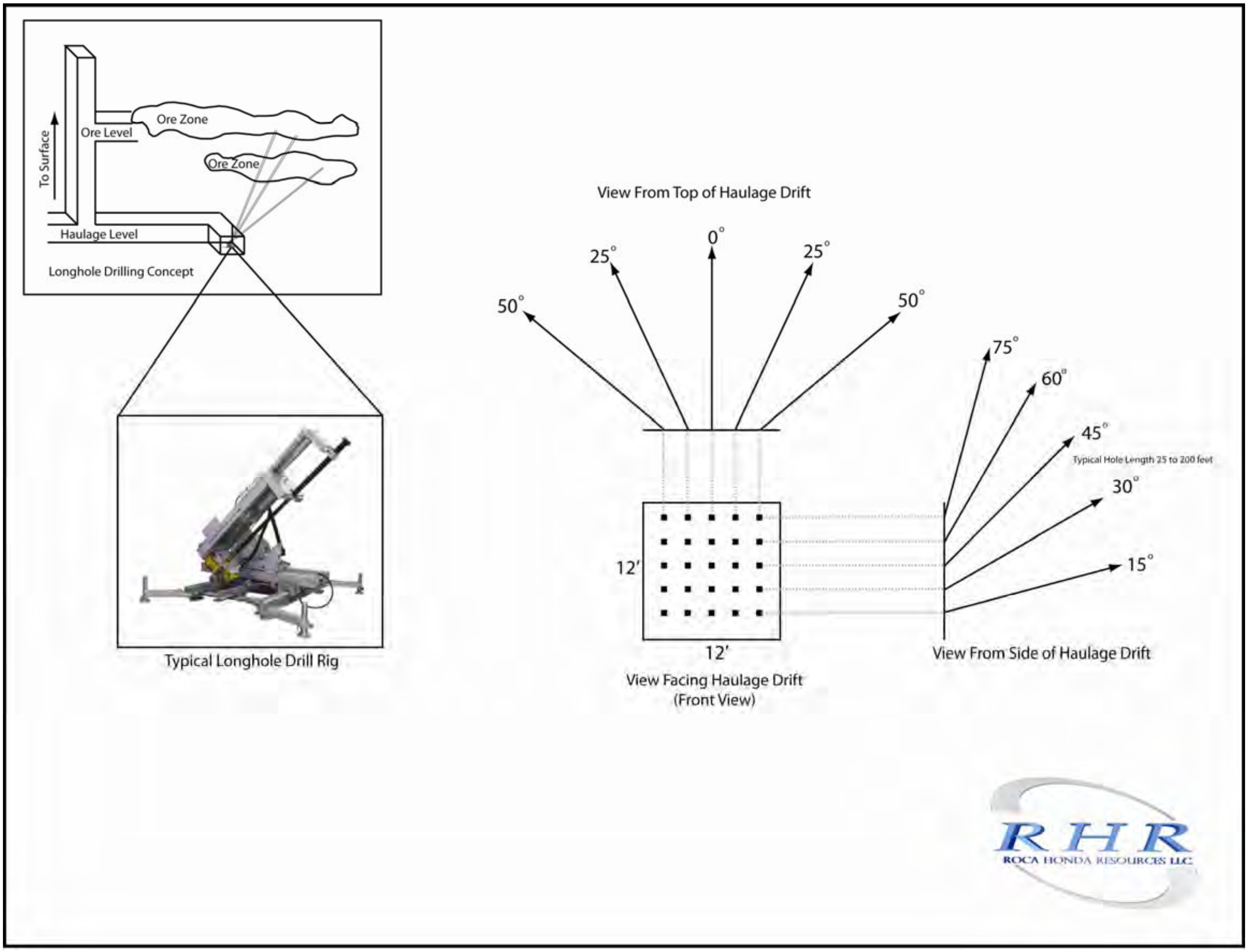


Figure 3-6. Typical Longhole Drilling Technique

Ore will be removed by drilling holes into the working face when the ore is located and inserting explosives in the drilled locations. After blasting the material face, the rubblized ore materials will be moved away from the face using rubber-tired equipment or a cable drag machine, known as a slusher, to a designated collection point. From the collection point, the ore will be loaded on a Load/Haul/Dump vehicle (LHD), transported to the bottom of the production shaft, and hoisted to the surface.

3.6.2 Ore Mining Method

Ore at the Roca Honda mine will be extracted using a modified room and pillar mining method. Room and pillar mining is a common mining method. It is flexible and economically viable. Figure 3-7 illustrates the layout in a room and pillar extraction area.

In this mining system, mined material is extracted across a horizontal plane while leaving "pillars" of material in place to support the rock above and resulting in open areas or "rooms" underground. This method is usually used for relatively flat-lying deposits, such as those that follow a particular stratum like uranium deposits in the Grants Mineral Belt. The key to successful room and pillar mining is selecting the optimum pillar size. If the pillars are too small, the rock overhead cannot be supported. If the pillars are too large, significant quantities of valuable material will be left behind, reducing the profitability of the mine. The size of the pillars is calculated based on the competency, or load-bearing capacity, which is calculated from rock mechanic studies before and during the operation by defining required parameters of the material above and below the area being mined.

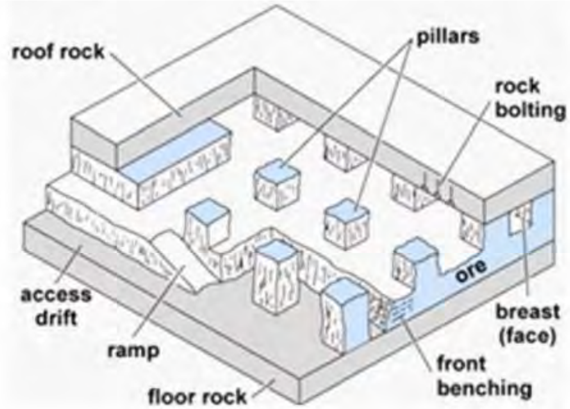
This type of mine is normally developed on a grid creating a regular mining pattern. Geologic features such as faults may require this pattern to be modified. The percentage of material mined varies depending on many factors, including the material mined, height of the pillar, and roof conditions.

A typical design may have entry ways (or rooms) with a width of 20 ft and pillars with widths of 40-60 ft. As mining advances in the “room,” roof bolts are placed in the ceiling of the rooms to prevent ceiling collapse. Roof bolts are long steel rods that are inserted and tightened into holes drilled up into the ceiling of the rooms. The roof bolts are often further supplemented with the use of wire mesh draped on the ceiling and sidewalls and held in place with the roof bolt. Figure 3-8 shows a typical roof bolting operation.

3.6.3 Pillar Extraction

In some room and pillar mines, the pillars are removed or “pulled”, allowing the roof to collapse after the rooms have been mined. This method is known as retreat mining. This method will be utilized at Roca Honda where practical. Figure 3-9 demonstrates the pillar extraction process.

To prepare an ore block for extraction, the pillars will be split for drilling and blasting access. The size of the area to be extracted will be based on results of rock mechanic studies of the ground conducted during mining. The pillars will be monitored and if the geomechanics of the ground prove to be sufficiently stable, the pillars will be split again to facilitate more drilling and blasting.



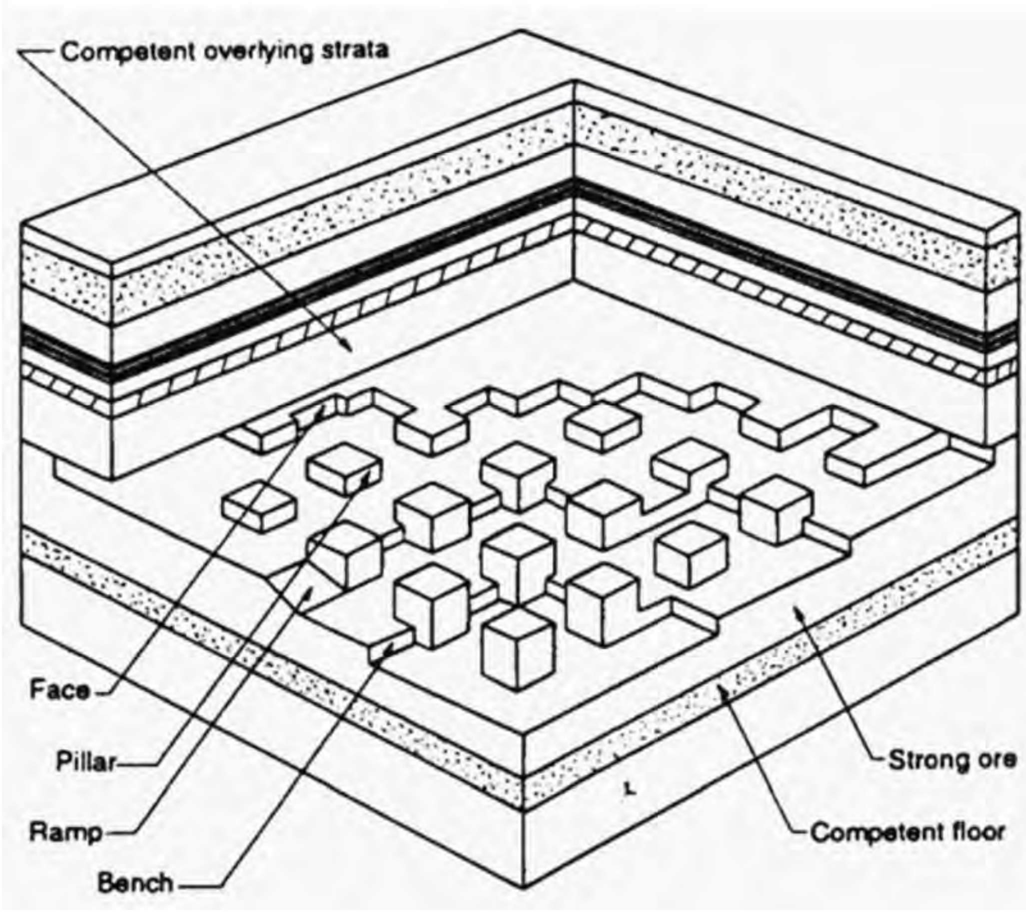


Figure 3-7. Typical Room and Pillar Mine Design

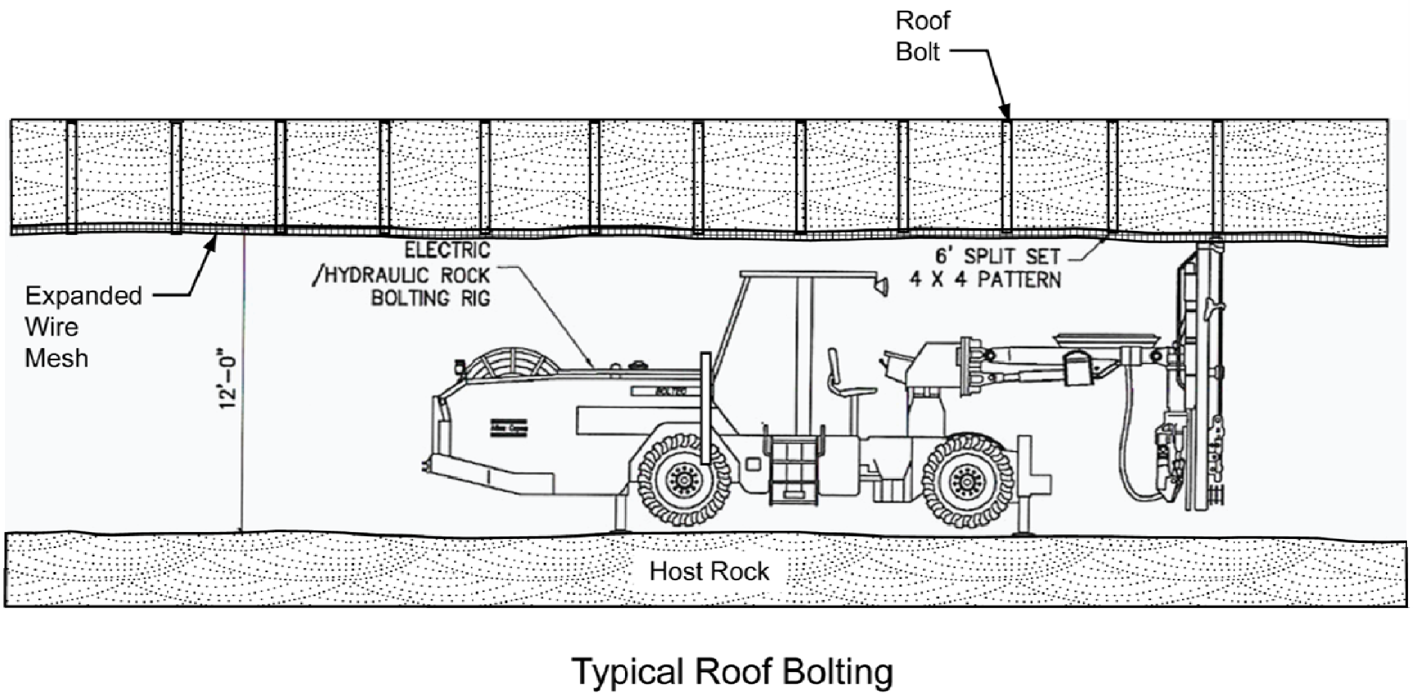


Figure 3-8. Typical Roof Bolting Method for Room and Pillar Mining

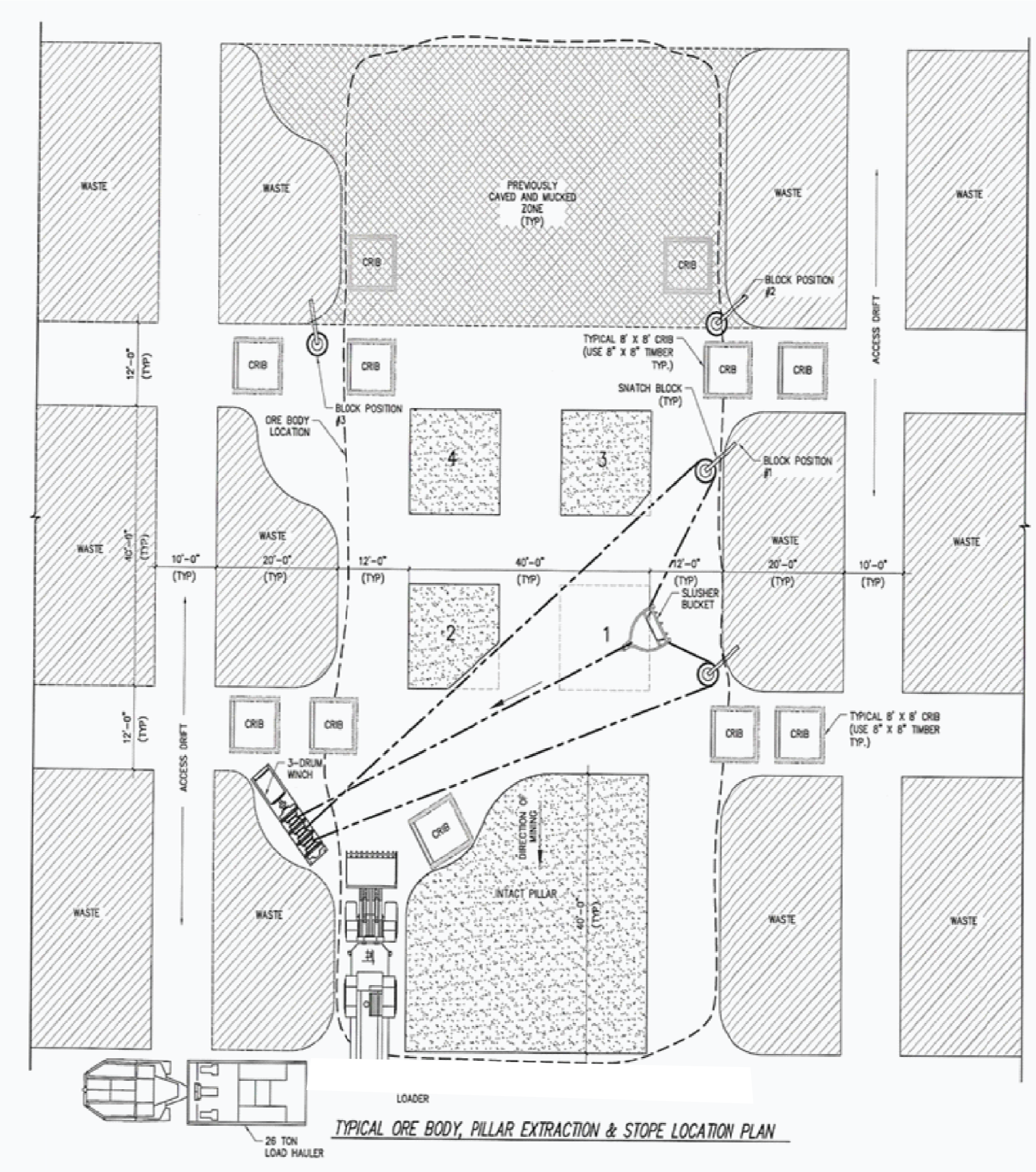


Figure 3-9. Typical Ore Body Pillar Extraction and Stope Location Plan

When the pillars are blasted and extraction begins, a slusher may be used to remove the broken ore. Miners will not enter an active pillar extraction area. The ore will be dragged out by the slusher, and LHDs will load trucks or haul the ore to a chute to be transported to the production shaft. When the pillar extraction is complete, the area will be allowed to cave shut. In shallow mines, use of this method can result in the caving manifesting itself as surface subsidence. At the Roca Honda mine, however, the ore is sufficiently deep (over 2000 ft. below the surface), and the overlying formations are sufficiently competent, that surface subsidence is not an issue.

4.0 Mine Surface Facilities (NMAC 19.10.6.602 D.(15)(c))

While the Roca Honda mine permit area encompasses three (3) sections of land on 1,920 total acres, approximately 183 acres are expected to be disturbed during construction and mine operation activities. Anticipated surface facilities include ore pads, stockpiles, ponds, detention basins, diversions, disposal systems, water treatment facilities, storage areas for equipment, vehicles, chemicals and solutions, top soil and subsoil stockpiles, excavated materials storage, parking areas, mine shafts, vent shafts and escape ways, roads, drill holes, dewatering wells, fences, power and water lines, and surface water runoff control features.

Figure 1-3 shows anticipated surface disturbances areas related to the permit area. Figures 4-1, 4-2 and 4-3 provide a more detailed view of the proposed surface facilities and associated surface disturbances on Sections 9, 10, and 16, respectively, including the anticipated location of the production shafts and ventilation shafts. Certain facilities and/or structures will be located (e.g., power lines and pipelines) or their locations adjusted as the mine design progresses. The majority of the surface area disturbance will occur on Section 16. Section 16 will have the majority of the stockpile areas, larger support facilities, and the water treatment facility. The size and locations of some of the facilities and areas of disturbance will be refined or may be revised as the design progresses toward final detailed design. However, the “footprint” of the disturbance is expected to remain the same. It should be noted that the only disturbances anticipated in Section 9 are the construction of three ventilation shafts and associated mud pits and an access road in the extreme southeast corner of the section.

Concurrent with dewatering facilities and shaft construction will be the construction of all other pertinent surface facilities. An archaeologist will monitor all surface disturbance activities, as discussed previously. Archaeological sites will be surveyed, topsoil will be removed and stockpiled, and the sites will be graded to their designed elevations; facilities will then be constructed. Buildings will be constructed with exteriors of a color selected from an approved Bureau of Land Management (BLM) or USFS list.

The location of all surface facilities has been determined after careful consideration to minimize environmental impact and cultural resources disturbance, as described in more detail later herein. The surface facilities will be fenced with 8-ft cyclone fencing material topped with angled 3-strand barbed wire or equivalent.

Mined ore will be brought to the surface and staged on pads in the ore bays on Sections 16 and 10 awaiting transport offsite for processing. The capacity of each of these bays is approximately 40,000 tons and 50,000 tons for Sections 16 and 10, respectively. Ore will be segregated and loaded into over-the-road haul trucks for transport offsite for processing. Each load will be assayed and weighed. Trucks will be inspected and cleaned of any detrital materials at the washing station prior to leaving the site. A record will be kept of all over-the-road ore sampling results and weights.

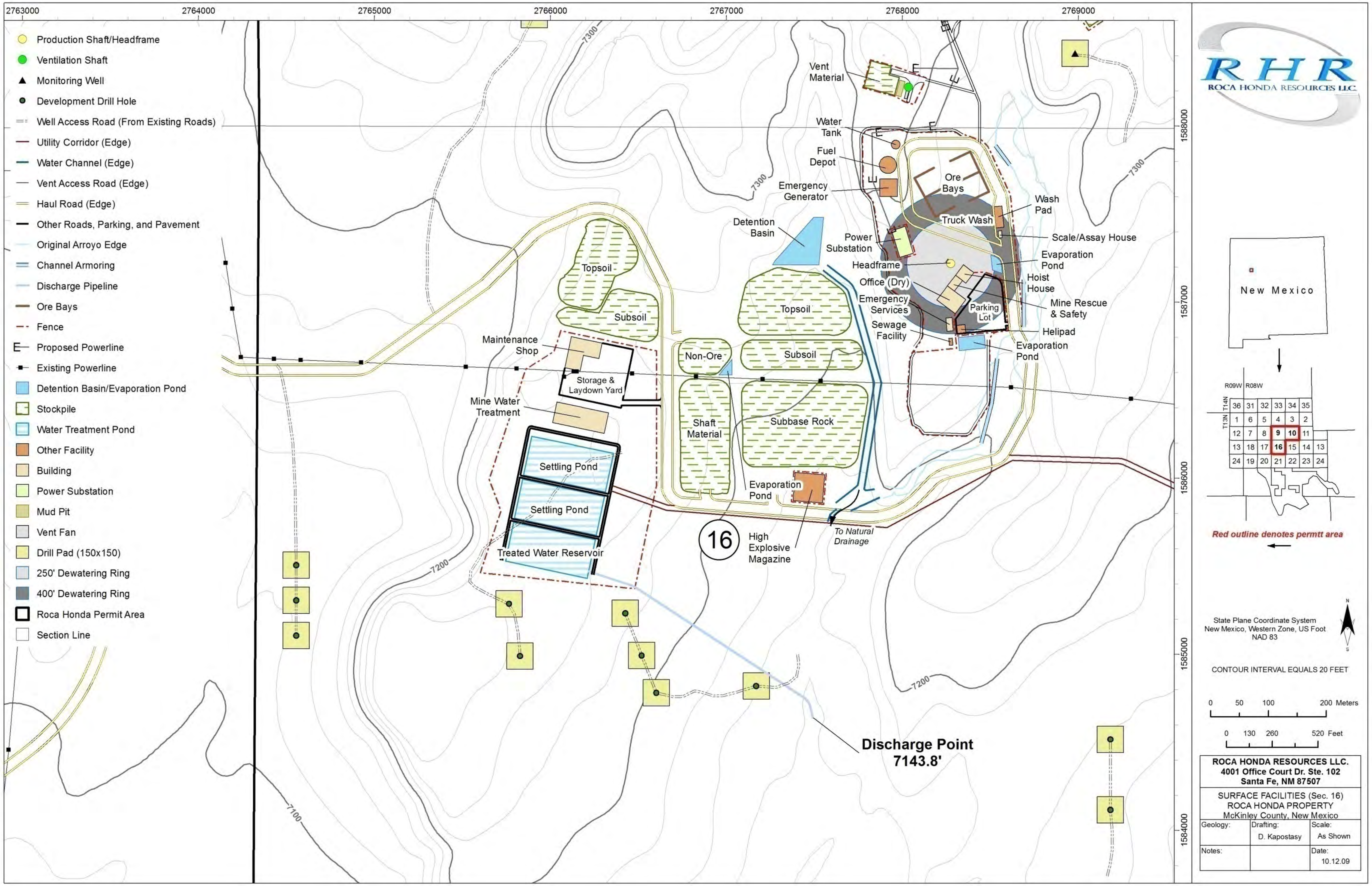


Figure 4-1. Planned Surface Disturbance on Section 16

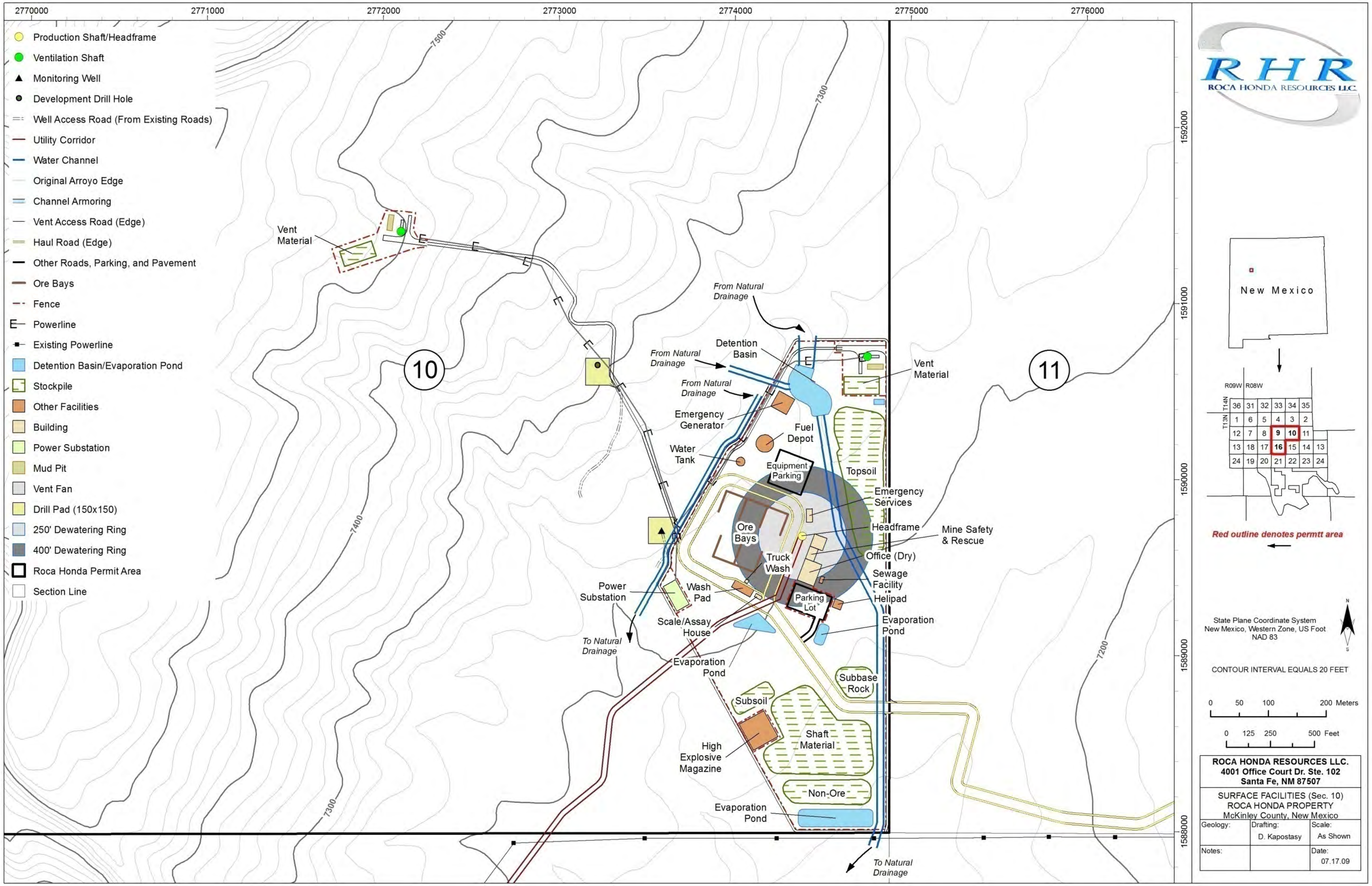


Figure 4-2. Planned Surface Disturbance on Section 10

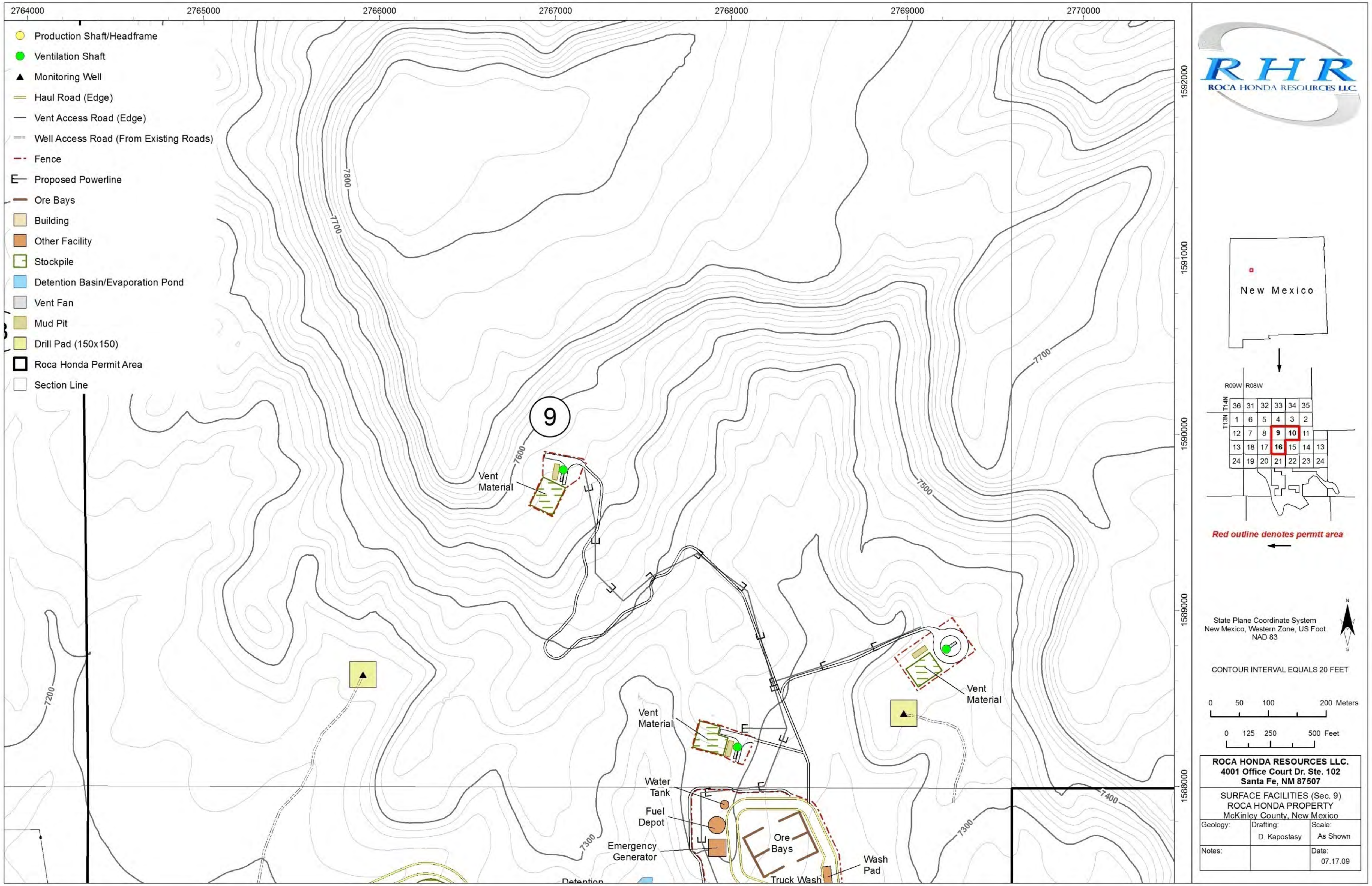


Figure 4-3. Planned Surface Disturbance on Section

Stockpiles will contain various types of materials segregated during site preparation activities and mining operations. Separate stockpiles will include topsoil, subsoil, sub-base rock, shaft construction material (includes station and haulage level material), and non-ore material (material excavated from the mine that may contain some uranium mineralization, but does not contain ore). The total stockpile disturbed area is approximately 37 acres and 12 acres for Sections 16 and 10, respectively. The stockpile area for each type of material will be constructed differently, depending on the material it contains.

The topsoil stockpiles will be located within the operational facility footprint but out of the traffic patterns and will be placed in areas cleared of vegetation but not scraped of topsoil. The slopes will be 4H:1V (horizontal (H):vertical (V)) and at an estimated height of approximately 25 ft. When a stockpile is completed, it will be seeded with an interim seed mix as recommended by the BLM to reduce erosion. Diversion ditches will be constructed around the topsoil stockpiles where necessary to minimize storm water run-on/runoff and erosion of the stockpiles. Fiber rolls or other Best Management Practices (BMPs) will be installed below the stockpiles to minimize sediment release due to storm water erosion of the stockpile. The storm water will be directed to the nearest arroyo.

A subsoil stockpile will be located within each of the facility areas in Sections 16 and 10. The topsoil will be removed and added to the topsoil stockpile before the subsoil stockpile is placed. The subsoil stockpile slopes will be 3H:1V and at an estimated height of 25 ft. The subsoil stockpile will be seeded with a mix recommended by BLM for a soil that is low in organics and nutrients. Diversion ditches will be constructed around the subsoil stockpiles where necessary to minimize storm water run-on and erosion of the stockpile. Fiber rolls or other BMPs will be installed below the stockpiles to minimize sediment release from the stockpile due to storm water on the stockpile. The storm water will be directed to the nearest arroyo.

The excavated sub-base rock below the subsoil will be placed in a separate stockpile designated for sub-base rock in Sections 16 and 10. During initial construction activities, excavated rock will be crushed and spread as road base for new roads and for improvements to existing roads. The remaining rock not used for road construction or improvement will be stockpiled. Diversion ditches will be constructed around the stockpile to minimize storm water run-on erosion. Fiber rolls or other BMPs will be installed below the stockpiles to minimize sediment release from the stockpile due to storm water on the stockpile. The storm water will be directed to the nearest arroyo.

The shaft excavation material stockpiles will be located as near the production shafts and the vent/escape shafts as possible to reduce the haulage and keep the material accessible for return to the shafts during reclamation. However, in the case of the vent shafts closest to the production shafts, the material will be hauled to the production shaft stockpiles to decrease the disturbed area around the vents. The side slopes will be 3H:1V, and the height will be limited to 25 ft to minimize the visual impact. As the mine operations progress, material from the underground station and haulage levels of the mine (just below the shafts) will be added to the shaft material stockpile. After the finished grade is achieved in portions of the stockpile, a layer of subsoil will be added as a cover and will be seeded with a mix recommended by BLM for a soil that is low in organics and nutrients. Diversion ditches will be constructed around the stockpile where necessary to minimize storm water run-on erosion. The storm water runoff from the stockpile will be directed to a lined evaporation pond.

The non-ore material (from the Westwater ore horizon) from Sections 16 and 10 will initially be brought to the surface and placed in separate, labeled stockpiles within the operational areas (see Figures 4-1 and 4-2). The stockpile areas will be cleared of topsoil and subsoil and lined to prevent seepage from the non-ore material into the ground surface. This stockpile, designed to store a maximum of 20,000 cy of material, will have 3H:1V slopes and an estimated height of 25 ft. After the finished grade is achieved in portions of the stockpile, a layer of subsoil will be added as a cover and seeded with a mix recommended by BLM for a soil that is low in organics and nutrients. Diversions will be constructed around the stockpile to prevent run-on erosion. Storm water runoff from the stockpile will be diverted to a lined evaporation pond. RHR's contemporaneous reclamation plan, discussed in more detail in Section 5.2 of this Plan and in the Roca Honda Reclamation Plan, allows for the eventual return of the non-ore material to mined-out rooms and the ultimate removal of the stockpile. As underground rooms become available, newly excavated non-ore will stay below ground.

Several detention basins and evaporation ponds are planned within the permit area to control storm water flow, reduce the quantity of potentially contaminated water, and to treat and store treated mine water. Their design and function are described in more detail in Section 5.0 of this Plan.

Diversions are currently planned in Section 16 and Section 10. Overland flow and storm water from a small drainage area north of the stockpile area on Section 16 will be collected in a detention basin, which in turn flows to a constructed drainage channel which directs the water around the stockpile area and into the original arroyo (see Figure 4-1). Overland flow and a small arroyo on the west side of the Section 10 facilities will be diverted away from and/or around facilities or other site structures via a constructed swale to a natural drainage channel (see Figure 4-2). A detention basin will be constructed in an existing arroyo on the northern edge of the area to control the flow. A small arroyo from the west will be diverted into this basin. The flow from the detention basin will enter an improved existing arroyo which travels south to an existing channel (see Figure 4-2). Other surface water control features will be constructed within the permit area arroyos such as armorment to minimize erosion. These features are discussed in detail in Sections 4.0 and 5.0 of this Plan.

A water treatment facility will be constructed on Section 16 to collect and treat mine water from the permit area for discharge. This facility encompasses approximately 30 acres and consists of the water treatment building, two settling ponds, and a treated water reservoir. The capacity of the treatment facility is 8,000 gallons per minute. Water generated from mine dewatering activities and water collected from within the Roca Honda permit area in the evaporation ponds that may be diverted from the ponds will be treated, as necessary, onsite at the water treatment facility. The plant will be located in Section 16 (see Figure 4-1).

Water produced by the mine will be gathered in a sump located within the mine itself to remove sand and grit. The water will be pumped to the surface, where it will be passed through an in-line mixer where barium chloride coagulants and/or other water treatment chemicals will be added to remove radium from the water and precipitate out as solid barium/radium sulfate. This solid will settle to the bottom of the settling pond. The water will then be passed through a uranium selective ion exchange system to remove and recover the uranium, as necessary. If the water requires additional treatment to remove elevated total dissolved solids, a reverse osmosis system will be utilized. A pre-treatment step will involve hydrochloric or sulfuric acid to reduce the pH, if necessary, and an anti-scalant to preserve the reverse osmosis membranes. The water will then be adjusted for pH and sent to the treated water reservoir and discharged.

Figure 4-4 is a schematic diagram of a typical water treatment plant. A detailed design will be submitted in conjunction with a future discharge permit application submittal for review and approval by the New Mexico Environment Department.

Storage areas for chemicals, fuels, explosives and supplies, parking areas for equipment and vehicles, and electrical substations will be constructed where appropriate for the designated activities. Their current locations are indicated on Figures 4-1 and 4-2, although these are subject to change as the surface facility design progresses. The capacities of each area will also be determined as the design process continues.

As described in Section 3.5, ventilation holes and escape shafts will be constructed as designed for the required air ventilation and egress in the event of an emergency. The estimated disturbed area for these structures is approximately 2 acres for each. This area includes the shaft excavation material pit and drilling recirculation mudpit associated with each shaft. Each disturbed area will include an approximate 100 x 250 ft pit for the shaft excavation material, and a 100–ft radius drill pad. Fiber rolls or other BMPs will be installed around these areas to minimize sediment release from storm water on the drill area. Additionally, the areas around the ventilation holes and escape shafts will be graded to minimize storm water run-on.

Roads and fences will be constructed to provide access to and security for surface facilities and associated utilities. These features are indicated on Figures 4-1, 4-2, and 4-3. Roads are discussed in more detail in Sections 4.2.2 and 5.3.9. Total road surface disturbance within the permit area (access and haul roads) is estimated to be approximately 36 acres. Separate exclusionary fences will be constructed around explosives facilities, electrical substations, and shafts. Fencing specifications are discussed in Section 5.3.1.

The existing meteorological and air quality monitoring stations in Section 16 will be relocated prior to construction activities in the area where it is currently located. Additional stations (largely air quality stations) will be installed as necessary in and around the facility at locations to be determined in the future.

Figures 4-1, 4-2 and 4-3 also show that RHR will conduct some additional limited development drilling and install some additional monitor wells. This activity will begin immediately upon approval of the mine permit application and will be continuous through the construction process. The purpose of the development drilling is to provide additional data for future planning of the mine. The purpose of the monitor wells is to provide additional pre-operational baseline water quality data for long-term monitoring locations for mine dewatering. Total surface disturbance in these areas is minimal, approximately ½ acre per site, or 7.5 acres, not including access roads. However, most of the access will be in conjunction with other planned surface disturbance. Drilling and well construction will be performed pursuant to approvals obtained from the NM OSE, as will plugging and abandonment of boreholes and wells.

Power and water lines will be constructed to support mine operations as illustrated in Figure 1-3. Details of these features, such as the water pipeline from Section 16 shaft dewatering to the water treatment plant, are not yet designed, but details will be provided as the mine design progresses.

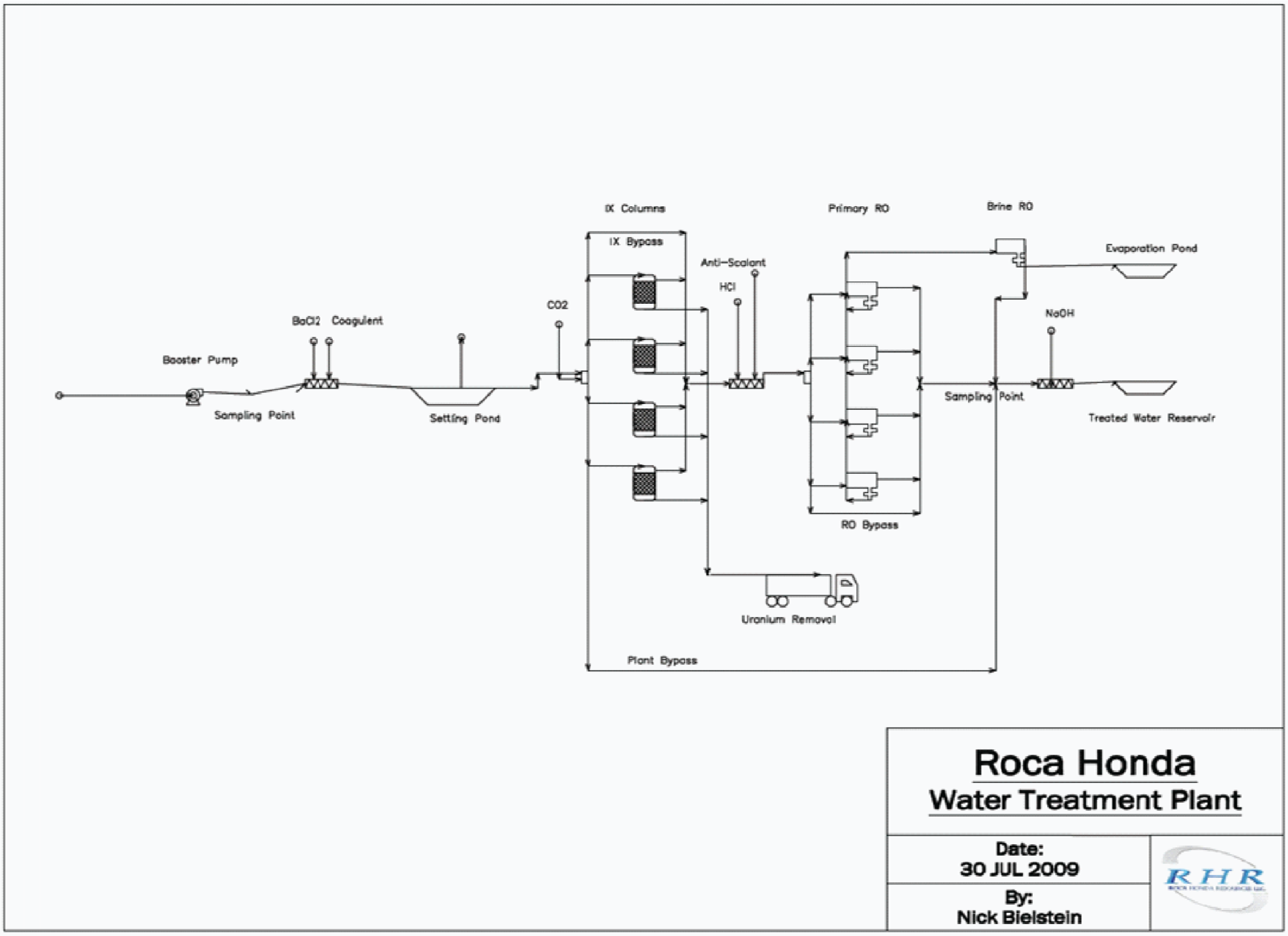


Figure 4-4. Schematic of a Water Treatment Plant

4.1 Wildlife Mitigation Contingency Plan (NMAC 19.10.6.602 D.(15)(d))

NMAC requires that a contingency plan be developed for mitigating impacts to wildlife when there has been an emergency or accidental discharge of a toxic substance that may impact wildlife. It is highly unlikely that there will be any emergency or accidental discharge of toxic substances from the Roca Honda mine and its related surface facilities. With the exception of the storage and use of diesel fuel and/or gasoline, all other materials and supplies used onsite will be in small quantities.

Small amounts of hydrochloric or sulfuric acid, perhaps a half dozen 55-gallon barrels or a small bulk tank, will be stored onsite at the water treatment facility in an area having secondary containment to prevent accidental release. Hydraulic oils, lubricants, antifreeze and other such liquids will all be stored in relatively small quantities, insufficient to cause any impact should they somehow be accidentally released.

The mine facilities will house fuel storage tanks for diesel and gasoline. The size of these tanks has not been determined with specificity at this time. Nonetheless, all such tanks will be constructed with secondary containment of sufficient capacity to hold all of the contents of the tank.

The Roca Honda mine operations will be required to have a Spill Prevention, Control and Countermeasure (SPCC) Plan as part of its operating protocols. This SPCC Plan is considered sufficient to address mitigation of potential impacts to wildlife from emergency or accidental releases of toxic substances.

4.2 Sediment Reduction, Surface Runoff Control/Non-Point Source Monitoring (NMAC 19.10.6.602 D.(15)(e))

This section describes the measures that will be undertaken at the Roca Honda mine site to reduce sedimentation from the permit area and monitor non-point source sediment releases from the disturbed areas.

Roca Honda site soils have a high potential for erosion. Development of the mine surface facilities and associated infrastructure support, as well as the actual mining activities will disturb portions of the permit area, making them more vulnerable to erosion. Therefore, surface runoff control measures will be implemented within the Roca Honda permit area to ensure that non-point sources of suspended solids and other potential surface water contaminants are contained and not released from the permit area.

Best Management Practices (BMPs) will be used to stabilize the site and ensure that the permit area does not contribute suspended solids or other constituents of concern to off-site areas in excess of regulatory standards. A SWPPP will be developed and implemented for the facility. The following types of BMPs will be designed, constructed and maintained at the Roca Honda permit area in accordance with the requirements of the New Mexico Department of Transportation (NMDOT 2009) and the U.S. Environmental Protection Agency (US EPA 2009).

- Runoff control devices (swales, ditches, fiber rolls)
- Energy dissipaters
- Slope drains

- Excavated sediment traps
- Evaporation ponds
- Diversion channels (overland flow and stream)
- Detention basins
- Stockpile slope construction
- Stockpile soil cover and vegetation

All controls will be inspected and maintained as designed, as described in Section 5.1.2.

4.2.1 Surface Facilities

The proposed site drainage controls and grading plans for the mine operation support facilities are shown in Figures 4-5, 4-6, and 4-7. The installation of site drainage and erosion control BMPs for these facilities will generally proceed according to the following sequence.

Prior to installing or constructing any erosion control BMPs, the proposed area for construction will be surveyed on the ground, as necessary, and checked against the site archaeological survey by a qualified archaeological expert and inspected onsite. When the location is "cleared" for cultural resource parameters, the topsoil and subsoil will be removed, as necessary, and stockpiled.

The topsoil and subsoil storage locations are indicated on Figure 1-3. Slopes of these stockpiles will be constructed at a ratio of 4H:1V for topsoil and 3H:1V for subsoil. A diversion ditch will be constructed around the base of topsoil and subsoil stockpiles and terminated at an excavated sediment trap with rock filter per NMDOT Standard 603-01-5/7 (NMDOT 2009). Fiber rolls or other similar BMP will be installed below the stockpiles to minimize sediment release due to storm water erosion of the stockpile. Runoff will be directed to the nearest arroyo.

Excavated rock will be placed in the sub-base rock stockpile, shaft excavation material (including material excavated from the station and haulage levels) in the shaft material stockpile, and non-ore material in the non-ore material stockpile, as shown in Figures 4-1 and 4-2. These stockpiles will have 3H:1V side slopes.

A diversion ditch will be constructed around the base of the sub-base rock, shaft, and non-ore material stockpiles and terminated at an excavated sediment trap with rock filter per NMDOT Standard 603-01-5/7. Fiber rolls or other similar BMP will be installed below the stockpiles. Runoff from the sub-base stockpile will be diverted to the nearest arroyo. The storm water runoff from the shaft and non-ore material stockpiles will be directed to a lined evaporation pond.

The upslope diversion channel, perimeter runoff control swales, detention basins and/or evaporation ponds will be installed. Slope drains and energy dissipaters, used to carry diverted water to nearby arroyos will be constructed in accordance with the NMDOT detail on their Standard Drawing 603-01-6/7 (NMDOT 2009**)**. The site will be finished to grade. All cut slopes will be 2H:1V and all fill slopes will be 3H:1V. Runoff control swales and excavated sediment traps will be installed at the toe of cut slopes.

Evaporation ponds will be constructed with a liner and leak detection system (e.g., shallow monitoring wells), as necessary, to retain water that has run through the mine site. Disposal of this water will be accomplished by evaporation. In the unlikely event the evaporation ponds

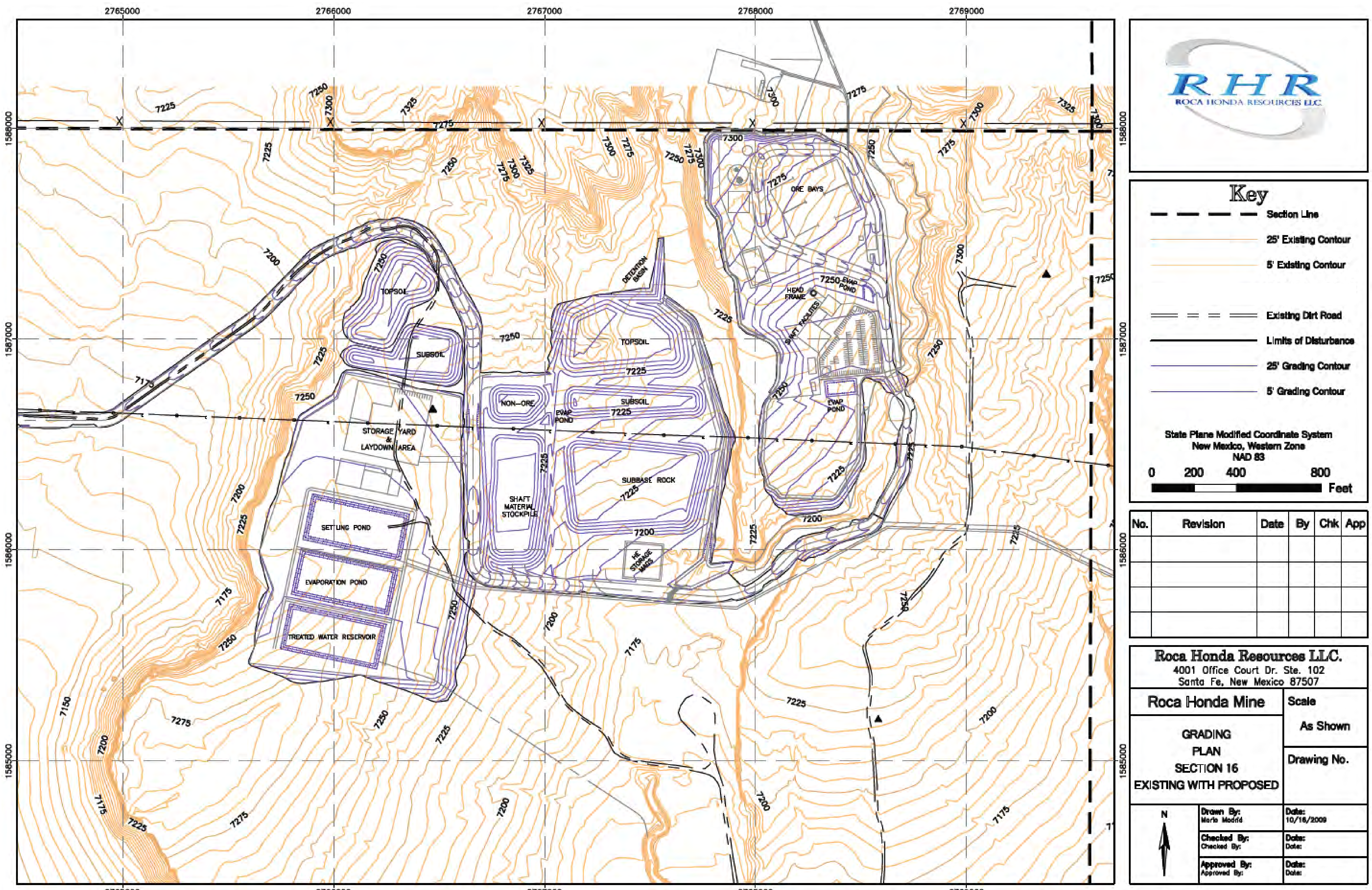


Figure 4-5. Proposed Grading and Drainage Plan for Section 16 Surface Facilities

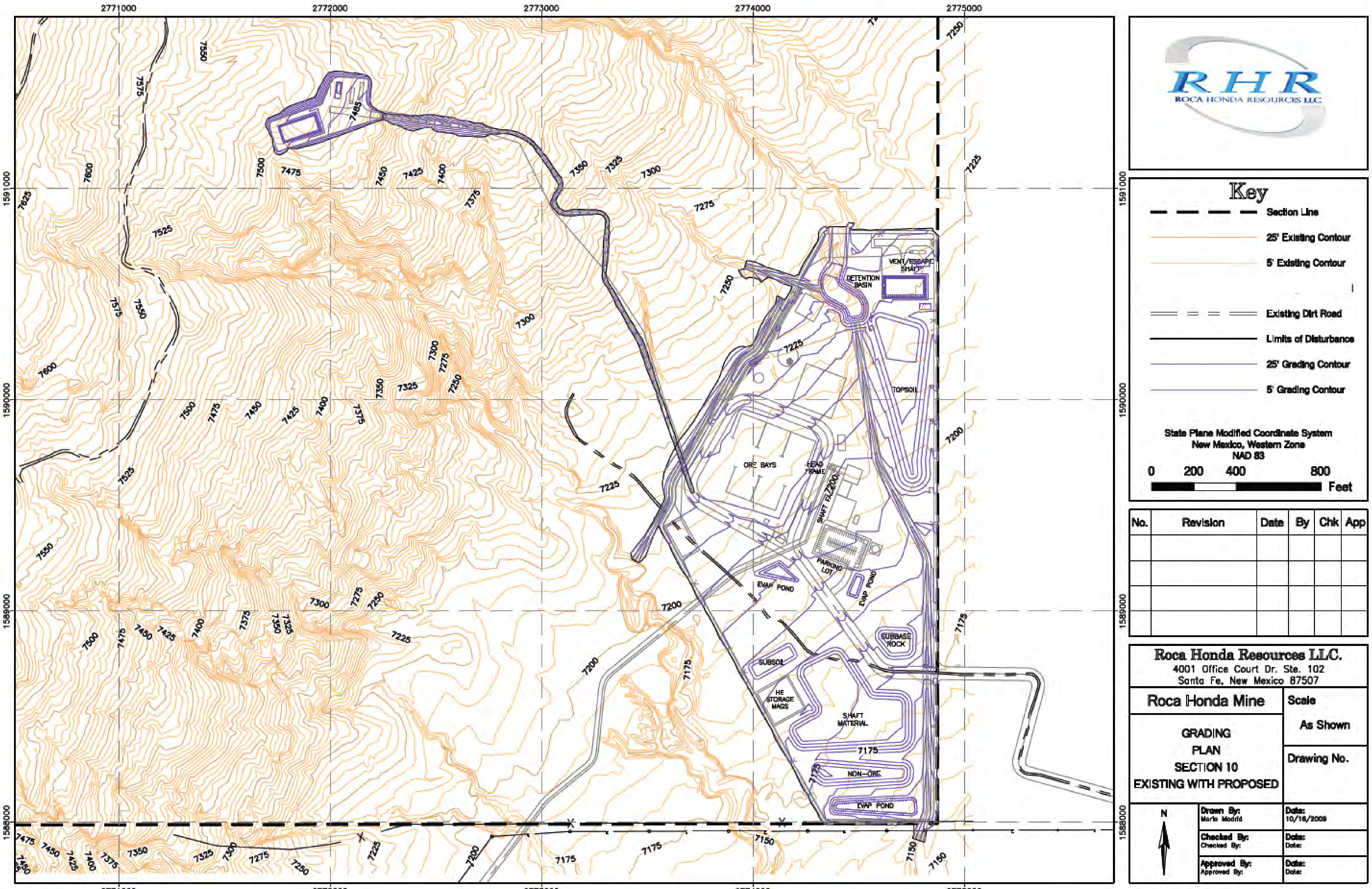


Figure 4-6. Proposed Grading and Drainage Plan for Section 10 Surface Facilities

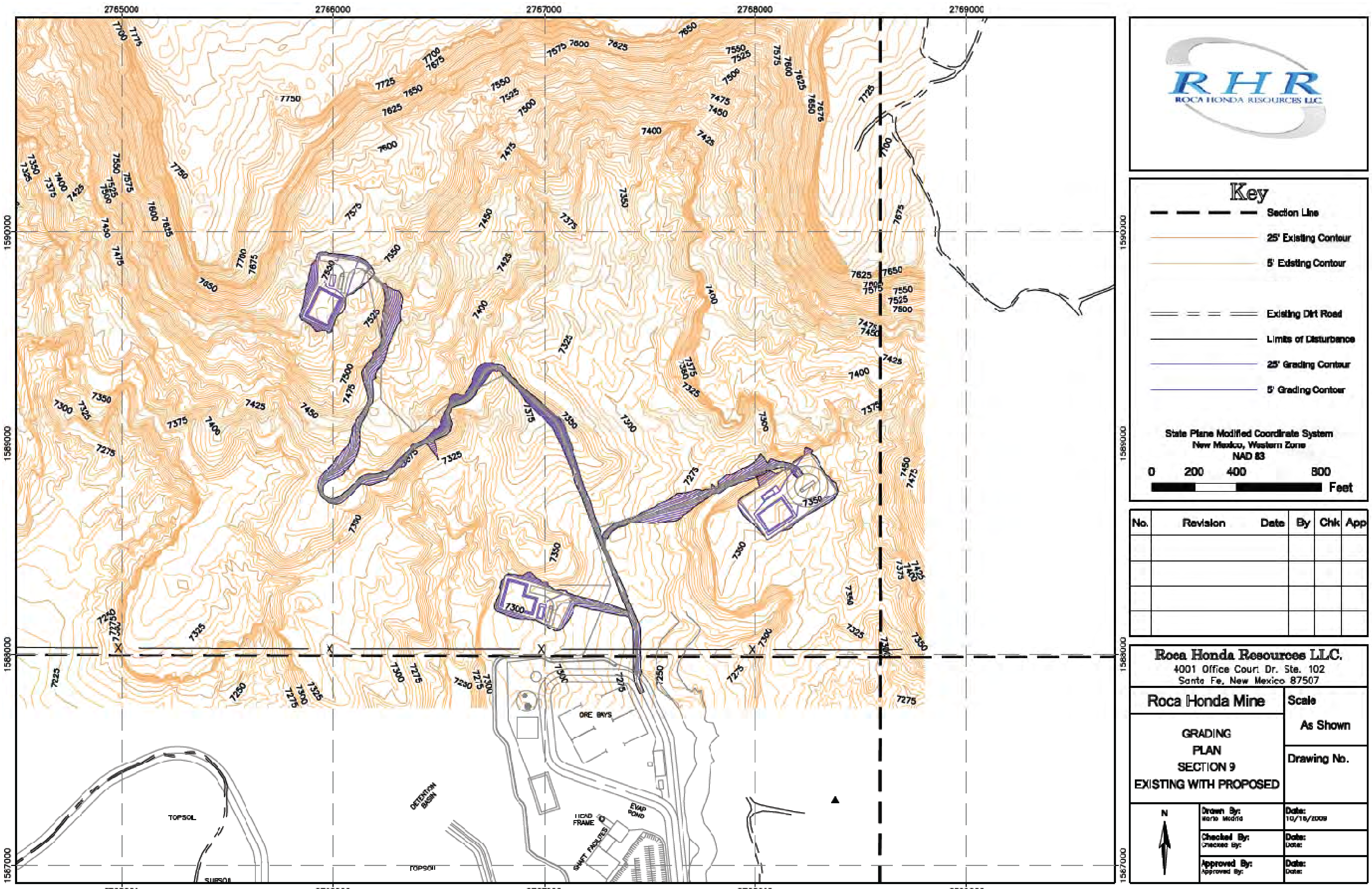


Figure 4-7. Proposed Grading and Drainage Plan for Section 9 Ventilation Holes, Escape Shafts and Access Road

approach overflow conditions, the water will be diverted to the water treatment facility. Detention basins will be unlined and allow for capture of water that has been directed around the site and controlled release to receiving drainages. When necessary, drainages may be enhanced (e.g., straightened, armored).

To further minimize mass movement of sediments from the site, stockpiles (except the sub-base rock) will be covered with soil and revegetated, as appropriate (see Section 5.2 discussion).

Following installation of all runoff control measures, construction of buildings and other site features will commence.

4.2.2 Roadways and Utility Transmission Corridors

As with the previously described installation of BMPs, prior to constructing new roadways and utility corridors, or improving existing roadways, RHR will ensure that there are no impacts to archaeological and/or cultural resources. Where appropriate, topsoil will be removed and stockpiled for future use and reclamation.

Access roadways and utility corridors will be constructed at or near existing grade, where possible. Some cut and/or fill may be necessary. Roads and utility corridors are indicated on Figure 1-3.

Roadside swales, designed to safely convey a 10-year, 24-hour precipitation event, will be constructed adjacent to all access roadways to collect surface runoff and convey it along the corridor to the nearest drainage channel. A typical road cross section is shown in Figure 4-8. Typical arroyo crossing and culvert cross sections are also shown on this figure. Excavated sediment traps will be used immediately upstream of all locations where roadside swales discharge to existing drainage channels. Swales and sediment traps will be checked and maintained following runoff events. Maintenance will include restoring all roadside swale damage to their original constructed condition and repairing any slope erosion damage. In some cases, it may be necessary to install water bars across roads to decrease erosion potential.

Except where indicated otherwise, the road profile will dip to permit flow across the roadway at locations where access roadways cross existing drainage channels. These roadway sections shall also be inspected and maintained following all runoff events.

4.2.3 Water Treatment Facility

The water treatment facility will be located in Section 16. The proposed drainage controls and grading plan for this facility are shown on Figure 4-5. Site drainage and erosion control BMPs will generally be installed in the following sequence, after archaeological clearance has been confirmed:

1. Install the perimeter runoff control swales.

2. Strip topsoil and store in the designated location as indicated on Figure 4-1. Topsoil slopes will be at a ratio of 4H:1V. Install diversion ditch around base of topsoil

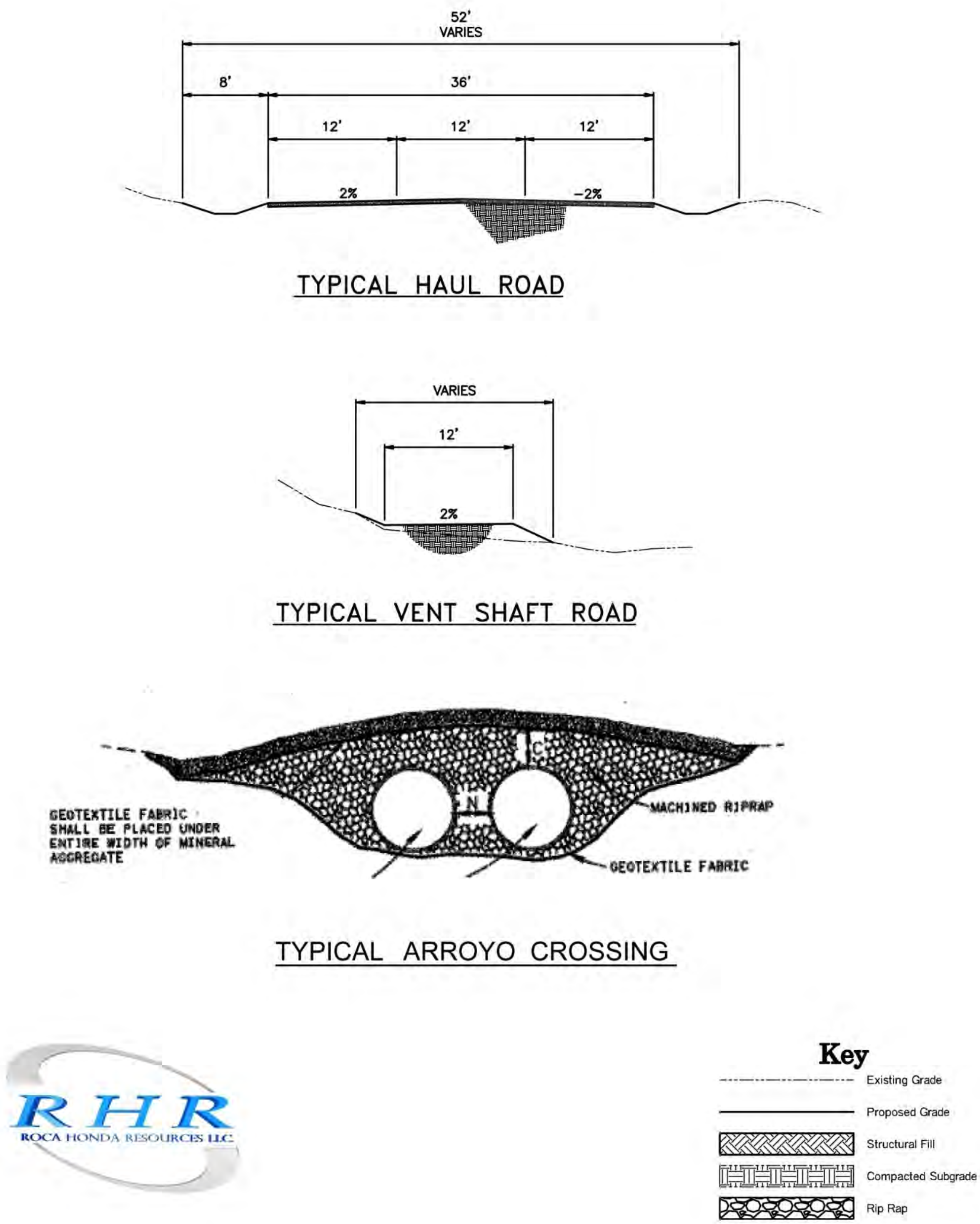


Figure 4-8. Typical Road Cross-Section with Arroyo Crossing and Culvert

stockpile and terminate at an excavated sediment trap with rock filter per NMDOT Standard 603-01-5/7 (NMDOT 2009). Install fiber rolls below the stockpile. Divert runoff to nearest arroyo.

3. Grade site to finish grade. All cut slopes will be 2H:1V and all fill slopes will be 3H:1V. Place all subsoil in the subsoil stockpile and excavated rock in the sub-base rock stockpile, both located in Section 16. These stockpiles will have 3H:1V side slopes.

4. Install runoff control swale and excavated sediment trap at toe of cut slopes.

5. Following installation of all runoff control measures, begin construction of the treatment facility, associated ponds and pipeline. The ponds will be designed and constructed with a minimum of two feet of freeboard.

4.2.4 Non-Point Source Sediment Monitoring Plan

The Roca Honda permit area is drained by ephemeral arroyos that in turn drain to San Mateo Creek, as discussed in more detail in Section 8, Surface Water, of the BDR. Discharges from the permit area will enter the ephemeral drainages and flow southward to San Mateo Creek, potentially reaching areas of ephemeral or intermittent flow in San Mateo Creek. Therefore, these discharges, which include potential sheet flow or other runoff from the permit area during storm events, will be monitored. The primary regulatory requirements for monitoring the receiving drainages affected by the Roca Honda mine operations discharges are identified in NMAC 20.6.4, which establishes water quality standards for surface waters of the State and includes an anti-degradation policy.

The general requirements for monitoring the quality of the receiving drainage, including ephemeral, intermittent, and perennial water bodies, are established in NMAC 20.6.4.13 and include limits on the following constituents:

- Suspended or settleable solids
- Floating solids
- Oil and grease
- Color
- Odor and taste of water
- Concentrations of plant nutrients
- Toxic pollutants
- Radioactivity
- Pathogens
- Temperature
- Turbidity
- TDS
- Dissolved gases (nitrogen, oxygen and ammonia)

Potential non-point source sediment from storm water discharges from the permit area as a result of storm events will be monitored during and/or following storm events, to the extent practicable. Locations to be monitored will include the outlets from two planned detention basins, from a slope drain to the energy dissipater at the receiving drainage in Section 16 and at the south end of the fenced area in Section 10.

The detention basins will be designed to temporarily hold surface runoff across specified portions of the permit area in order to slow discharge to the receiving drainage(s). Runoff to the detention basins will not come in contact with the mine site. Only water diverted around and/or captured prior to reaching the mine site will be held in a detention basin. More detail on detention basins is found in Sections 5.1.2 and 5.3.6 of this Plan. One basin will be located in Section 16 and one in Section 10. The planned locations of these basins are indicated on Figures 4-1 and 4-2, and are described below:

- *Section 16* - north of the material stockpile area to capture run-on from a small drainage basin in Section 9 and the surface runoff from the northern portion of Section 16 prior to entering the stockpile area. Water released from this detention basin will enter a channel constructed east of the stockpile area, flow southward around the stockpile area and merge with runoff from the natural channel located along the east side of the Section 16 surface facilities area. This combined flow will continue south through a culvert under the new haul road to an energy dissipater which creates the normal sheet flow into the receiving drainage arroyo that continues southward.

- *Section 10* - north of the surface facilities within the fenced area to capture run-on from the watershed basin north of the facilities area. This basin will also receive run-on from a small drainage beginning west of the facilities area. Water will be released from the detention basin to the arroyo running through the eastern portion of the surface facilities area. Current design plans call for the arroyo to be straightened and armored through the surface facilities area, and then discharged to an energy dissipater at the south end of the fenced area.

During operations the two detention basins will be sampled at the outlets after a storm event, when practicable, to provide background sediment and water quality data. Samples will also be collected at predetermined locations below the operational areas in the arroyos. Analyses will include major cations, major anions, other water quality parameters, and targeted constituents for ephemeral, intermittent, and perennial receiving drainages. Specific analytes will be determined following an evaluation of sediment sampling data collected per the SAP.

4.2.5 Mine Excavated Materials Management

Management of the excavated material generated during Roca Honda mining operations will generally be addressed in the following ways. Materials produced from excavation and construction of the shaft represent an estimated fifteen to twenty percent (15-20%) of the excavated volume of material to be stored onsite in stockpiles. Shaft excavation material will be stockpiled separately in a designated area. When mining has been completed, this material will be re-deposited in the mine and the shaft as part of the final reclamation activities.

The majority of the excavated materials, i.e., the ore brought to the surface of the mine, will be transported offsite for processing. A small amount of sub-grade mineralized material will be temporarily stockpiled at the mine surface and will either eventually be blended with the ore and transported offsite for processing or returned to the mine during reclamation. Production of this material will be minimized to the extent possible as this material represents inefficient production of economic ore. A third category of excavated materials is non-mineralized mine excavated materials. This material is excavated outside of the mineralized zone to gain access to the ore. These excavations include haulageways, drifts, raises and other mine development passages that are designed and located so as to not contain mineralization. Some of these materials will be hoisted to the surface and stockpiled for the life of the mine, particularly in the early development of the mine. These materials will be re-deposited in the mine as part of reclamation. As the mine develops and matures, this type of material produced in the underground excavations will be managed in a manner that it will be excavated and immediately deposited in nearby mine openings that are no longer in use, such as previously mined stopes or drifts. These materials will never reach the surface of the mine.

The following volumetric calculations account for the excavated material anticipated to be encountered during mine operations at Roca Honda. Table 4-1 summarizes anticipated life-of-mine excavated waste volume by type and origin.

Table 4-1. Roca Honda Mine Materials Volume (Loose Cubic Yards-15 percent in-situ)

MATERIAL	MATERIAL VOLUME		TOTAL
TYPE	SECTION 16	SECTION 10	
Production Shaft, Station and Haulage	112,200	118,500	230,700
Typical Vent Shaft	36,100[1]	24,100[2]	60,200[3]
Non-Ore	20,000	20,000	40,000
Topsoil	159,500	73,900	233,400
Subsoil	90,900	1,000	91,900
Sub-base rock (30% in-situ)	193,600	9,400	203,000
Total	**612,300**	**246,900**	**859,200**

Note: 1. Three vents actually in Section 9
2. Two vents in Section 10
3. Total of five vents

5.0 Performance Standards and Requirements – Mine Operations (NMAC 19.10.6.603)

This section addresses the performance standards and requirements that will be used to operate the RHR mine in a manner that will lead to reclamation of the permit area once operations are completed to achieve its approved post-mining land use, i.e., grazing.

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

The Roca Honda mine and the reclamation of the permit area will be designed and operated using the most appropriate technology and BMPs available. The sequencing of activities and the implementation of BMPs such as erosion control and sediment control will be scheduled to take into account local climate (rainfall, wind, etc.) in order to reduce the amount and duration of soil exposed to erosion by wind, rain, runoff, and vehicle tracking. These measures and practices are described in the following sections.

5.1.1 Identification of Storm Water Constituents of Concern

Several constituents of concern are identified as having the potential to impact storm water during the site preparation, construction and mining activities. Constituents of concern resulting from these activities that may be present in storm water runoff are listed in Table 5-1. This table includes information regarding material type, chemical and physical description, use, and the specific regulated storm water contaminants associated with each material.

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

- Cleared and graded areas
- Construction sites
- Site entrance(s) and exit(s) and access roads

Table 5-2 presents site-specific information regarding the concerns relative to each of these areas.

Potential radiological constituents from the ore and non-ore material are not included in these tables. Storm water that may contact these materials in the ore bays, the non-ore stockpiles, and traffic areas within the facility will be collected in constructed channels and directed to the evaporation ponds. These controls are discussed in separate paragraphs in Section 5.0.

5.1.2 Storm Water Management Controls

The purpose of this section is to identify the types of temporary BMPs proposed to be used at the Roca Honda mine site. The controls will provide soil stabilization for disturbed areas and structural controls to divert runoff and remove sediment, and will also address other potential storm water constituent sources, such as vehicle tracking and wind erosion. Additionally, practices to minimize storm water contamination are discussed, such as the coordination of the construction activities with the implementation of the BMPs.

Table 5-1. Site Storm Water Constituents of Concern

Material	Chemical/Physical Description	Use	Storm Water Constituent[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 5-2. 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
Construction sites	Soil; sediments; hydraulic fluid, oil, gasoline, and diesel from drill rig and/or earthmoving 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 construction vehicles Spills during fueling and maintenance of construction vehicles Tracking of soil to and from work areas

Temporary and Permanent Best Management Practices

The following BMPs may be implemented, as appropriate, during the construction activities at the Roca Honda mine permit area:

*Preserving existing vegetation***.** Vegetation will be preserved to the maximum extent possible and for as long as possible in the work areas to reduce or eliminate erosion in those areas and provide visual barriers to the site for adjacent land owners and the public.

*Fiber rolls***.** Fiber rolls (e.g., straw wattles) 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 cleared and/or graded before any clearing or grading takes place. They may also be placed along washes and arroyos, down-slope of exposed soil areas, and around temporary stockpiles. Because fiber rolls are typically only a few inches in diameter, they may be stacked in areas where height is needed for erosion control purposes. Once in place, they will be staked to anchor them in place.

*Ditches/swales***.** A drainage ditch or swale is a shaped and sloped depression constructed in the soil surface used to divert and convey runoffs to a desired location. These BMPs will be used, as necessary, in conjunction with earthen berms, which typically result from construction of the ditch or swale.

*Energy dissipaters***.** An energy (or velocity) dissipater is a physical device comprised of rock, grouted riprap, or concrete rubble that is placed over a fabric filter or mat at the outlet of a pipe or channel to prevent scour of the soil by concentrated flows. These devices will be used where appropriate. Anticipated depth of flow, gradient, side slopes, discharge rate, and velocity will be considered when designing the outlet.

*Slope drains***.** A slope drain is a pipe used to intercept and direct surface runoff or groundwater into a stabilized watercourse, trapping device, or stabilized area. Slope drains will be used with earth dikes and drainage ditches to intercept and direct surface flow away from slope areas to protect cut or fill slopes, as necessary. When used, the drain will be sized sufficiently for the area being drained to prevent clogging or overflow.

*Sediment traps***.** A sediment trap is an area where sediment-laden runoff is temporarily detained under quiescent conditions, allowing sediment to settle out before the runoff is discharged. They are most effective for drainage areas less than 5 acres. Sediment traps will be installed by excavating or constructing an earthen embankment across a waterway or low drainage area, as necessary.

Diversion channels. A diversion channel is a device constructed across a slope where runoff from areas of higher elevation may damage property, cause erosion, or interfere with the establishment of vegetation on lower areas or where slope length needs to be reduced to minimize soil loss. These devices will be constructed with supporting earthen berms on at least the lower side of the channel (both sides if necessary), and will be lined with rip rap or other material to prevent erosion of the channel. A check dam may be installed at the outlet from the diversion channel to reduce the velocity of concentrated storm water flow into the receiving drainage. Check dams can range from straw bales to loose rocks to gabions (cages made from heaving wire fence and filled with stones).

Detention basins. A detention basin is an area where excess storm water is temporarily stored and then slowly drained to a receiving channel. It is designed to allow large flows of water to enter but limit the outflow by having variable sized openings at different levels of a standpipe structure. Detention basins will be constructed to control the flow of run-on water diverted and captured so that it does not pass over or through the mine site and requires no treatment and/or monitoring. The locations of the detention basins are shown in Figures 4-1 and 4-2.

Evaporation ponds. An evaporation pond is a constructed pond designed with a surface area large enough to evaporate water by sunlight and ambient temperatures. Evaporation ponds store water on a longer-term basis for disposal through evaporation. Evaporation ponds may be lined or unlined, and may be constructed to employ leak detection. Several lined evaporation ponds will be constructed at the Roca Honda site. They will capture and store potentially contaminated water. These ponds will be constructed with leak detection (e.g., monitoring wells). The locations of the evaporation ponds at the Roca Honda mine are shown on Figures 4-1 and 4-2.

Stockpile management procedures and practices. These practices are designed to reduce or eliminate release of materials from stockpiles. Stockpiles will be appropriately sloped and designed with diversion ditches and/or fiber rolls to minimize storm water run-on and runoff during rainy periods.

Wind erosion control. Wind erosion control consists of applying water and/or other dust suppressants or topsoil and vegetation as necessary to prevent or reduce erosion by the forces of wind. Water spray may be applied to roads and to small, temporary soil piles during construction activities. Larger and/or inactive stockpiles may be covered with topsoil and revegetated to prevent blowing dust and erosion.

Coordination of BMPs with Site Activities

The following structural BMPs will be coordinated with site activities, such as clearing and grading, in advance of any construction so that the BMP is in place before these activities begin.

1. The temporary downgradient perimeter controls (i.e., fiber rolls) will be installed before any clearing and grading begins.

2. Once site preparation activities cease permanently in an area, that area will be stabilized (i.e., permanent seed and mulch, soil amendments, revegetation).

3. The temporary perimeter controls will not be removed until all site preparation activities at the site are complete and soils have been stabilized.

BMP Monitoring

As discussed previously in this section, several BMPs are planned to be implemented to control non-point source runoff, primarily water and sediments, from the Roca Honda permit area. These BMP controls will be monitored routinely to ensure that they are functioning as designed and are protective of downstream receiving waterways. Best Management Practices monitoring will be discussed in detail in the SWPPP and will generally be monitored as follows:

General

- Inspect, to the extent practicable, BMPs prior to forecast rain, daily during extended rain events and after rain events, weekly during the rainy season, and at two-week intervals during the non-rainy season.

Fiber rolls

- Repair or replace split, torn, unraveling, or slumping fiber rolls.
- If the fiber roll is used as a sediment capture device, or as an erosion control device to maintain sheet flows, sediment will be removed when accumulation reaches one-half the designated sediment storage depth, usually one-half the distance between the top of the fiber roll and the adjacent ground surface.

Ditches/swales

- Inspect ditches/swales and berms for washouts. Replace lost riprap, damaged linings or soil stabilizers as needed.
- Inspect linings, embankments, and beds of ditches/swales and berms for erosion and accumulation of debris and sediment. Remove debris and sediment and repair linings and embankments as needed.

Energy Dissipaters

- Inspect outlet area for displacement of the riprap and damage to the underlying fabric. Repair fabric and replace riprap that has washed away. Evaluate the use of larger riprap material, as necessary.
- Inspect for scour beneath the riprap and around the outlet. Repair damage to slopes or underlying filter fabric immediately.

Slope drains

- Inspect slope drain outlets for erosion and downstream scour. If eroded, repair damage and install additional energy dissipation measures.
- Insert inlet to slope drain if clogging or undercutting is occurring. Remove debris from inlet to maintain flows. Repair undercutting at inlet and if needed, install flared section or riprap around the inlet.
- Inspect drain pipes for leakage. Repair leaks and restore damaged slopes.
- Inspect slope drainage for accumulations of debris and sediment.
- Remove built up sediment from drain entrances and outlets as required. Flush drains if necessary; capture and settle out sediment from discharge.
- Prevent water from ponding onto inappropriate areas (e.g., active traffic lanes, material storage areas, etc.).
- Check pipe anchors to ensure that the pipe remains anchored to the slope. Install additional anchors as necessary.

Sediment traps

- Inspect outlet area for erosion and stabilize as necessary.
- Inspect trap banks for seepage and structural soundness, repair as needed.
- Inspect outlet structure and spillway for any damage or obstructions. Repair damage and remove obstructions as needed.
- Inspect fencing for damage and repair as needed.
- Inspect for areas of standing water. Take corrective measures if the BMP does not dewater completely in 72 hours or less to prevent vector (e.g. mosquitoes, flies, and rodents) production.
- Remove accumulated sediment when it reaches one-third of the trap capacity.

- Remove vegetation from the sediment trap as necessary to prevent pools of standing water and subsequent vector production.

Diversion channels

- Inspect berm(s) after storm events, as necessary, and at least once every two weeks.
- Repair damage to channel and lining promptly.
- Inspect check dam for damage and sediment accumulation after storm events, as necessary, and at least once every two weeks.
- Repair damage promptly. Remove sediment as needed when it accumulates.

Detention basins

- Inspect inlet and outlet pipes for crumbling, breaks or damage; repair or replace as needed.
- Inspect area around inlets and outlets for debris, obstructions and erosion; repair as needed.
- Inspect banks for erosion and debris; replace soil in eroded areas, if needed, and remove debris.

Evaporation ponds

- Inspect inlets to pond for erosion and debris; repair soil in eroded areas, if needed, and remove debris.
- Inspect berms around pond perimeter for erosion; repair as needed.

Stockpile management

- Soil stockpiles will be covered or protected with soil stabilization measures as necessary and a perimeter sediment barrier at all times.
- Repair and/or replace covers (e.g., vegetative covers) as needed to keep them functioning properly.
- Repair or replace split, torn, unraveling, or slumping fiber rolls (e.g. straw wattles).

Sediment removed during maintenance may be incorporated into earthwork on the site or disposed of at an appropriate location.

5.2 Contemporaneous Reclamation (NMAC 19.10.6.603 B)

Contemporaneous reclamation, in the context of the Roca Honda mine, has limited application because it is an underground mine. As such, the surface disturbance will consist of the surface operational facilities, excavation material stockpiles, dewatering wells, construction, confirmation drilling, ventilation shaft mud pits and drill pads, roads, utility corridors, surface water flow channels (natural and manmade), and water impoundments. The majority of these areas must remain as constructed until mining operations cease and final site reclamation begins. However, because the RHR mining will be split between Section 16 and Section10, contemporaneous reclamation will begin in Section 16 on facilities and areas not required for the mining efforts in Section 10.

Contemporaneous reclamation will be initiated with topsoil stripping and continue through mine operations. This ongoing and/or early reclamation reduces erosion, isolates and protects material for later use, provides mitigation of potential impacts, and reduces the final reclamation work and costs. Adjunct to contemporaneous reclamation is avoidance of disturbance and the use of existing roads and access corridors whenever possible. For example, there are a number of previously disturbed areas within the permit area consisting of historic drill pads and existing dirt roads. Roca Honda Resources, LLC will improve some of these existing roads for its needs and locate ventilation holes and escape shafts on old drill pads whenever possible.

Candidate areas for contemporaneous reclamation include the mud pits, development drill pads and the excavated material stockpiles, which consist of: 1) topsoil, 2) subsoil, 3) sub-base rock, 4) shaft material, 5) non-ore material, and 6) ore-bearing material. Contemporaneous reclamation and design features for these areas are discussed below.

5.2.1 Mud Pits/Drill Pits

The construction of the ventilation holes and escape shafts on Sections 16, 10 and 9, as described in Section 3.5, will result in one drill pad and two drilling mud pits adjacent to each shaft. One pit will contain primarily drilling mud discharged during drilling operations. The mud consists of drill cuttings and water and will require drying prior to being stockpiled. Drying will be accomplished by removing the mud to a second pit (or area) and allowing the water to evaporate. The dried material will then be removed and placed in a designated stockpile. These pits will be contemporaneously reclaimed as soon as the shafts are completed and the material is dry. Similarly, the installation of the dewatering wells and confirmatory development drilling will also require drill pads and mud pits. These areas will also be contemporaneously reclaimed to the extent possible.

5.2.2 Topsoil Stockpile

Clearing of the disturbed areas will begin with the stripping of vegetation that is restricting construction before the topsoil is collected during the site grading process. The vegetation will be mulched and added to 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, segregated, and stored in a stockpile designated and labeled for topsoil only. There will be topsoil stockpiles in both Sections 16 and 10 within each facility’s footprint, as shown in Figures 4-1 and 4-2, and one in Section 9 adjacent to the ventilation holes, as shown in Figure 4-3. Topsoil removed from areas located remotely from the surface facility, such as roads, ventilation holes and escape shaft pads, and the water treatment facility area, will be transported to one of these stockpiles whenever practical. However, topsoil may also be stockpiled in localized areas where transport of the soil is impractical, such as remote drilling sites and ventilation shaft locations. The areas of disturbance within the Roca Honda permit area are also areas of topsoil removal (see Figures 4-1, 4-2, and 4-3). A more detailed discussion of the topsoil removal and handling is presented in Section 5.5.

The topsoil stockpiles will be located within the operational facility footprint but out of the traffic patterns and will be placed in an area cleared of vegetation. The slopes will be 4H:1V and at an estimated height of 25 ft. The 4:1 slopes will accommodate ease of access to work on the piles and reduce erosion loss. When a topsoil stockpile is completed, it will be seeded with an interim seed mix as recommended by BLM. 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 and/or fiber rolls installed to minimize runoff from the stockpile.

5.2.3 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 ventilation hole pads, and the roads. The grading plans are shown in Figures 4-5 through 4-7. The subsoil not used as fill to obtain the desired grade will be stockpiled and labeled. Subsoil stockpiles will be located within the facility areas in Sections 16 and 10. The topsoil from this area will be removed and added to the topsoil stockpile before the subsoil stockpile is placed. The subsoil stockpile slopes will be 3H:1V and at an estimated height of 25 ft. The 3:1 slope for subsoil stockpiles is considered sufficient to protect this resource while reducing the “footprint” to the extent possible. The subsoil will be seeded with mix recommended by BLM for a soil that is low in organics and nutrients. Diversion ditches will be constructed around the stockpiles where necessary to minimize storm water run-on erosion and/or fiber rolls installed to minimize runoff from the stockpile.

5.2.4 Sub-base Rock Stockpile

The excavated rock below the subsoil will be placed in a separate stockpile designated for sub-base rock in Sections 16 and 10, as indicated on Figures 4-1 and 4-2. During initial construction activities, excavated rock will be crushed and spread as road base for new roads and for improvements to existing roads and used as fill where appropriate. The remaining rock not used for road construction or improvement will then be stored in the sub-base rock stockpile. These stockpiles will not be covered with soil. Diversion ditches will be constructed around the stockpile to minimize storm water run-on erosion. Any runoff will be directed to the natural arroyos.

5.2.5 Shaft Excavation/Mine Development Material Stockpile

The production shafts and the ventilation holes and escape shafts will be excavated as described in Section 3.5. The excavated material is assumed to be barren dirt and rock that has no likelihood of containing uranium mineralization and is otherwise benign. This material extends from the surface to just above the ore zone. The topsoil from the shaft areas will be removed and placed in the topsoil stockpile. The excavated material from shaft construction will be placed in a separate designated stockpile, as shown in Figures 4-1 and 4-2. These shaft material stockpiles will be located as near the production shafts and the ventilation holes and escape shafts as possible to reduce the haulage and keep the material accessible for return to the shafts during reclamation. The side slopes of these stockpiles will be 3H:1V, and the height will be limited to approximately 25 ft to mitigate visual impact. After the finished grade of the stockpile is reached, a layer of stockpiled subsoil will be added as a cover, as appropriate. The stockpile will be seeded with a BLM-approved seed mix. Diversion ditches will be constructed around the stockpile where necessary to minimize storm water run-on erosion and to direct runoff to an evaporation pond.

5.2.6 Non-Ore Material Stockpile

The term “non-ore material” is used here to describe excavated material from the mineralized horizons in the mine that does not contain ore but may be mineralized with sufficient uranium that it requires separate stockpiling. The non-ore material will be brought to the surface and placed in a separate designated stockpile, as shown in Figures 4-1 and 4-2. The area for the non-ore material will be cleared of topsoil and lined.

Contemporaneous reclamation handling of this material consists of minimizing the amount to be hoisted to the surface for stockpiling by selectively mining the ore and placing non-ore into previously mined voids and, to the extent that it is brought to the surface, returning it to the mined out rooms when time permits and/or at the end of operations. The typical rule of thumb for ore production versus non-ore production is that every four (4) tons of ore mined also produces one (1) ton of non-ore. This ratio means that while initial non-ore material produced from early mining will have to be hoisted to the surface and stockpiled, as mine development matures, there will be sufficient previously mined "void spaces" where the non-ore material can and will be deposited. As such, the majority of the non-ore material produced by the mine will never be brought to the surface. In addition, there will be sufficient room in the mature mine so that the non-ore stockpile will be returned into the mine as part of final reclamation.

While the non-ore material, by RHR's definition, is material that does not contain uranium mineralization sufficient to be recognized as ore, i.e., material that will be transported to a processing facility, some yet unspecified amount of that non-ore material will likely be blended with ore material and transported. The amount of such material that is removed from the mine site will ultimately depend on the amount of mineralization it contains (i.e., the grade) and the economics of the uranium industry at the time of operation. Nonetheless, what is not transported offsite will be returned underground.

While the temporary non-ore material stockpile is on the surface, it will have 3H:1V slopes and an approximate height of 25 ft. After the finished grade of the stockpile is reached, a layer of subsoil from the stockpiled subsoil will be added as a cover, as appropriate. The stockpile will be seeded with a BLM-approved seed mix. Diversions will be constructed around the stockpile to prevent run-on erosion. Storm water runoff from the stockpile will be diverted to the evaporation pond.

5.3 Protection Assurance (NMAC 19.10.6.603 C.)

The operations and reclamation requirements described below will be established by RHR to protect human health and safety, the environment, wildlife and domestic animals.

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

Signs will be installed in and around the mine permit area to address various aspects of the mining operations to safeguard the public from unauthorized entry. Signs will be in English and Spanish where appropriate. Signs planned include, but are not limited to, those indicating RHR contact names and numbers on perimeter fences, public-to-private road crossings, traffic crossing warnings, wildlife crossings, explosives storage, and electrical hazards.

General traffic control signs will be placed along the mine entrance road(s) to make the traveling public aware of any hazards.

Signs will be placed beside the main road(s) near the mine entrance(s) noting the mine name, the mine owner, the permit number, the responsible party and emergency phone numbers.

Signs will be placed at the main gate(s) to the mine directing visitors to park in the visitor's parking lot and report to the mine receptionist. The mine receptionist will insure that the visitor has the required training to enter the mine area. The mine receptionist will then notify the appropriate department personnel.

Fences will be installed on both Sections 16 and 10 for both security and safety purposes, as shown in Figures 4-1, 4-2 and 4-3. The Section 16 mine total working area is approximately 100 acres. However, the layout of the surface facilities will require several perimeter fences to secure the various surface facilities. An 8-ft cyclone fence with angled 3-strand barbed wire or equivalent is planned to be installed around individual facilities or groups of facilities. The Section 10 mine working area is approximately 71 acres. The configuration of its facilities allows for installation of a single perimeter fence. Fences and locked gates will be placed at all secondary road entrances to the mine permit area.

The fence at the mine offices will exclude all unauthorized traffic. If a visitor requires entrance beyond the mine office, the mine personnel will accompany all visitors to their destination.

The property perimeter will be posted with signs attached to the fence or to posts warning of unauthorized entry and stating the appropriate hazard warning. An access point will be established at the entrance(s) to the mine site. They will be posted with the company name and contact names and telephones numbers and will serve as the main point of entry to the mine site for both mine employees and visitors.

All hazardous areas within the perimeter of the mine fence, such as ponds, electrical installations, power lines, reclaimed areas, explosives storage areas, etc, will be fenced and/or posted with appropriate warning signs.

All underground mine openings and ventilation fan installations will be fenced and posted against unauthorized entry.

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

Impacts to wildlife were considered in the location of the surface facilities/features in order to minimize or avoid adverse impacts to wildlife and important habitat. Additional mitigative measures planned include installing fences or collars around mine shafts and ventilation holes to keep wildlife out of these areas and posting signs along access roads to and around the permit area alerting drivers to the presence of wildlife onsite. Screens will be placed over ventilation openings to deter birds and bats. Feeding of wildlife will be prohibited. Power lines and associated equipment such as transformers and substations will be built raptor-safe.

To minimize harm to habitat, trees will be limbed, rather than felled, whenever possible. Pruned and felled trees will be scattered to provide cover, where appropriate. When trees are chipped, the mulch will be used as soil amendment.

When large pipelines are laid on the ground surface, wildlife "ramps" will be constructed across the pipeline at about 300-ft intervals. Trenches left open overnight will have ramps built into them to provide an exit out for animals that might enter. Culverts will be placed on grade wherever possible to allow animal passage. Gates will be installed where appropriate to deter public access to the mine site permit area. Maximum speed limit on the mine permit area will be posted at 15 miles per hour.

The Reclamation Plan for the permit area included in this application contains details of how reclamation will be conducted to minimize adverse impact to wildlife and achieve the approved post-mining land use of grazing.

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

As discussed in Section 1.1 of this Plan, potential impacts to existing cultural resources within the permit area were considered in the siting of the surface facilities/features in order to minimize or avoid impacts. These cultural sites, contained in the confidential package figures submitted separately, will be avoided to the maximum extent possible during construction of surface facilities and during mining operations. Cultural resources surveys conducted in 2006 identified cultural resources in the permit area that are listed or eligible for listing on the National Register of Historic Places and/or the State Register of Cultural Properties. Information regarding these resources, including location maps, is compiled in cultural resource survey reports. This information is considered CONFIDENTIAL, but can be reviewed upon request to the appropriate agency. No cemeteries or burial grounds were identified within the permit area.

The RHR mine facilities have been carefully located to avoid these sites wherever possible. Where they cannot be avoided, RHR will prepare mitigation plans in consultation with its archaeological consultant, who in turn, will coordinate its proposed mitigation measures with the appropriate State and Federal authorities to ensure that the cultural properties are properly mitigated. In addition, an archaeologist will be onsite during surface disturbances to issue clearances for construction activities prior to commencement of construction and to provide guidance and expertise to ensure the protection of cultural properties, including those not previously documented. The appropriate agency will be notified immediately if additional cultural sites are discovered during these activities. Mitigation strategies will be developed in consultation with the agency.

In addition to the cultural properties identified in the surveys conducted in support of this application by RHR consultants, in April 2008, the USFS determined that certain areas of Mt. Taylor and surrounding forest property, known commonly as the Mt. Taylor Traditional Cultural Property (TCP), were eligible for listing on the National Historic Register. Sections 9 and 10 of the permit area are mostly within the boundary of the USFS Mt. Taylor TCP. Also, in June 2009, the New Mexico Cultural Properties Review Committee (CPRC) placed a certain area of Mt. Taylor and surrounding property on the State Register of Cultural Properties. Sections 9 and 10 of the permit area are located within the boundary of the property identified as the Mt. Taylor TCP. As part of their designation, the CPRC exempted private property from the designation as "non-contributing" properties. RHR owns the minerals beneath the surface of Sections 9 and 10 and believes that the mineral estate is private property. The status of the private property mineral estate of these sections with respect to the TCP and the State designation remains unclear.

Nonetheless, in conformance with State and Federal requirements, RHR recognizes that certain consultation with Indian Tribes will be performed by the agencies regarding the Mt. Taylor TCP. RHR will assist the agencies to any extent desired by them to help facilitate those consultations. Mitigation strategies will be developed in coordination with the agencies.

5.3.4 Hydrologic Balance (NMAC 19.10.6.603 C.(4)(a, b, c, d))

Roca Honda Resources, LLC has designed and will operate its mining operations in such a manner to minimize change to the hydrologic balance in the permit area and potentially affected areas. As discussed in more detail in the Reclamation Plan, the resulting post-mining reclamation hydrologic balance is similar to the pre-mining hydrologic balance. The following discussion addresses the methods by which RHR will ensure this balance occurs.

Non-Point Source Surface Flows. Excavated materials will be managed as described in Sections 4.2.5 and 5.2 of this Plan within the permit area in stockpiles. All stockpiles(except the sub-base rock) will be covered with soil and vegetated if appropriate, and will be designed to minimize mass movement and to direct the storm water runoff to constructed evaporation ponds with liners and leak detection monitoring wells. Other storm water that falls on the operations area will also be directed to these ponds. This water will be disposed of via evaporation. However, if the ponds approach an overflow level, the water will be pumped to the water treatment facility for treatment before it is discharged. Some water, if it meets discharge standards, will be used onsite, when necessary, for dust control or other onsite uses. The remainder will be discharged to an unnamed arroyo as shown in Figure 4-5.

Sediment Control. Sediment control will be achieved by the use of BMPs to stabilize the site and ensure that the permit area does not contribute suspended solids or other contaminants to intermittent and perennial streams in excess of regulatory standards. The following BMPs, discussed in detail in Section 5.1, will be designed, constructed and maintained in accordance with the requirements of NMDOT and the U.S. EPA (NMDOT 2009, US EPA 2009):

- Fiber rolls
- Ditches/swales
- Diversion channels
- Energy dissipaters
- Slope drains
- Sediment traps
- Detention basins
- Evaporation ponds

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. The SWPPP will be based on the final mine design. Mine employees will be trained to its requirements prior to commencement of construction and/or mining operations.

Armoring may be used in the arroyos within the permit area to prevent flow from cutting into operational areas and structures. Portions of the site facilities in Sections 16 and 10 will be protected from storm water run-on by construction of overland flow diversions. These diversions may be lined and/or armored and will divert run-on into detention basins to slow the water flow into the receiving drainages.

Material stockpiles will be protected from run-on by berms or diversion ditches. The stockpiles will be constructed with side slopes no steeper than 3H:1V (4V:1H for topsoil piles) and covered and vegetated to reduce erosion. Storm water runoff from the site area will be reduced by limiting the slope of the footprint to no greater than three percent and directing runoff to evaporation ponds. Roads will be constructed with a center crown to direct storm water to the side ditches. The ditches will have sediment control features such as water bars, fiber rolls or other traps to reduce sediment if the water enters an arroyo. These sediment control devices will be placed around construction or operational areas for temporary surface disturbance activities (see Section 5.1).

Background – Surface Water. The drainages leading into the Roca Honda permit area, which enter from Sections 9 and 10, are ephemeral. Therefore, obtaining surface water data for these drainages is problematic.

Surface water samples will be collected from drainages leading into the permit area as part of the baseline data collection effort prior to beginning operations. Samples will be collected following a storm event, as determined possible in the field. If background characterization efforts have been unsuccessful prior to commencing construction of the mine, water samples will be collected from two detention basins, shown on Figures 4-1and 4-2, during or immediately following the first storm event (or when sufficient water is available for sampling) after the basins are constructed. One basin will be located near the northern boundary of Section 16, just north of the material stockpile area. The second basin will be located in Section 10 at the north end of the surface facilities within the fenced area. This strategy will ensure that background levels for surface water are determined in compliance with the NMAC 19.10.6.603 C.(4)(c) regulations. Samples will be analyzed for major cations, major anions, other water quality parameters, and targeted constituents to allow comparison of the same constituents for receiving drainages.

Diversions of Overland Flow. Surface water flow diversions are planned for Sections 16 and 10. These diversions will be designed, constructed and maintained to minimize adverse impacts to the hydrologic balance of the permit area, and to assure the safety of the public downstream of the permit area.

Overland flow north of the stockpile area in Section 16 will be collected in a constructed detention basin; the basin will also detain the flow from a 79-acre watershed originating in Section 9 (see Figure 4-5). Release of the detained water will be controlled by the basin overflow structure. The discharge will flow southward in a constructed channel that will join an arroyo from the north and east and continue under the new haul road through culverts. A velocity dissipater after the culverts will create sheet flow until it enters the original arroyo channel. The arroyo on the east side of the operations area will be armored in segments where the water flow has the potential to erode the bank into the facility. Overland flow west of the facility area in Section 10 will be collected in a constructed swale (Figure 4-6) which drains southward to an existing arroyo. When no longer needed, all temporary diversions will be removed and the disturbed area reclaimed.

A conservative rational method hydrologic analysis was performed to size the detention basin and to verify that the flow in the temporary channel would safely pass the peak runoff from a 10-year, 24-hour precipitation event, as certified by a professional engineer registered in New Mexico. The more detailed flood hydrograph package (HEC-1) and water surface profile analysis (HEC-2) will be performed as detail engineering continues.

Material stockpiles will be designed with 3H:1V side slopes (4H:1V slopes for topsoil stockpiles) and runoff control ditches/swales with berms and/or fiber rolls around their base to control water run-on and runoff. Clean run-on will be directed to receiving arroyos. Potentially contaminated runoff will be directed to evaporation ponds for storage and possibly treatment in the water treatment plant. The evaporation ponds will be sized to handle runoff from a 100-year, 24-hour event with 2 feet of freeboard and will be dewatered during final reclamation via evaporation.

All cut slopes will be designed at 2H:1V; fill slopes will be 3H:1V. Runoff control ditches/swales and excavated sediment traps will be installed at the toe of cut slopes.

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

No stream diversions are planned for Sections 9 and 16. One small arroyo draining approximately 15 acres to the west of the Section 10 facility area will be directed into the arroyo that flows from north to south through the facility area (see Figure 4-6). The diversion will enter the constructed detention basin within the existing arroyo. This detention basin will control the release of storm water from the approximately 73 acre water shed. The arroyo below the detention basin will be improved with a straightened and armored channel to prevent erosion into the operational area. The improved channel will continue southward through culverts under the haul road and continues until it enters the existing arroyo. A preliminary hydrologic analysis was used to size the detention basin and the temporary channel improvement to safely pass the peak runoff from a 10-year, 24-hour precipitation event, as certified by a professional engineer registered in New Mexico.

As-built drawings will be prepared as soon as practical after construction of the diversions and kept onsite and available for inspection in conformance with NMAC 19.10.6.603 C.(5)(b) regulations. When no longer needed, the temporary stream channel will be reconstructed to be a permanent channel as discussed in the Reclamation Plan and in conformance with NMAC 19.10.6.603 C.(5)(b) regulations.

5.3.6 Impoundments (NMAC 19.10.6.603 C.(6))

Three types of impoundments will be constructed at the Roca Honda permit area: settling ponds and treated water ponds (for the water treatment facility), detention basins (to control run-on), and evaporation ponds (to capture and dispose of runoff). Details of the design of these impoundments will be provided as the design progresses.

The water treatment facility will have settling ponds to remove radium by precipitating with barium chloride and will have a treated water storage pond. The detention basins, discussed in Section 5.3.4 above, will be earthen structures designed to receive run-on to the permit area from storm events and slow its discharge into the receiving drainages. They are intended to temporarily detain water, releasing it in a controlled fashion. Evaporation ponds, also discussed previously, will be earthen structures designed to receive and retain run-on and runoff from various areas onsite and dispose of it through evaporation. Evaporation ponds will be lined. Detention basins and evaporation ponds will be designed, constructed and maintained to meet the requirements outlined in NMAC 19.10.6.603 C.(6)(a) and (b). All impoundments will be designed, constructed and maintained to minimize adverse impacts to the hydrologic balance of the permit area and the property that adjoins it, and to assure the safety of the public.

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

All waste stockpiles will be designed, constructed and maintained to minimize mass movement from the stockpiles. Material stockpile design is discussed in detail in Sections 4.2 and 5.2 of this Plan.

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

There are no known riparian or wetland areas 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 dewatering water from the mine(s).

5.3.9 Roads (NMAC 19.10.6.603 C.(9))

New roads and improvements to existing roads are planned within the mine permit area for construction of the facilities and operation of the mine, as shown in Figure 1-3. Road construction and improvement activities include clearing/grubbing vegetation and performing cut and fill for new roads as needed, widening existing roads, surfacing with gravel, constructing drainage slopes and ditches, and installing arroyo crossings. Prior to final reclamation, the USFS, State of New Mexico, and the neighboring rancher will determine what roads will remain intact.

The surface disturbance area associated with road construction (new roads and improvements to existing roads) is estimated for the following sections:

Section 9 – 5 acres
Section 10 – 13 acres
Section 16 – 18 acres
Section 11 – 8 acres

New roads will be constructed to access surface facilities and vent shafts in Sections 9, 10, and 16. Improvements to existing dirt roads will be made in Section 11 to access the surface facilities in Section 10, and in Section 17 to access Section 16. The improvements on Sections 11 and 17 are not part of the permit area. Prior to final reclamation, the USFS and the private landowner will be consulted to determine the disposition of these roads.

Storm water best management practices including run-on and runoff controls, and drainage control structures will be used as necessary to prevent and minimize erosion, sedimentation and flooding. Drainage facilities will be installed as road construction progresses and will be capable of safely passing a 10-year, 24-hour precipitation event. Culverts and drainage pipes will be constructed and maintained to avoid plugging, collapsing, or erosion.

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

Underground mining activities at Roca Honda will be planned and constructed in a manner to prevent subsidence and damage to structures and/or property not owned by the operator.

The target ore zone of the Roca Honda mine is contained within sandstones of the Westwater Canyon Member of the Morrison Formation at a depth of approximately 1650 to 2600 ft below ground surface at the mine site. Between the Westwater Canyon Member and land surface are approximately 2,000 ft of primarily shale with thinner sandstone layers. Mining will occur only within sandstones of the Westwater Canyon Member, and lateral drifts will be restricted to that geologic unit. The vertical depth to the mining area from the surface makes it highly unlikely that mining activities will cause surface subsidence to occur.

In 1994, Rio Grande Resources Corporation (RGRC) submitted to NM MMD, in support of its permit application, an evaluation of potential subsidence. The evaluation indicated that "under the most extreme conditions that could reasonably occur in the underground workings, … the maximum height of subsidence propagating upward from the (Mt. Taylor) mine workings should be less than 300 feet." The RGRC evaluation postulated very large mine openings for this analysis and acknowledged that actual subsidence would be expected to be even less than calculated because the actual dimensions of the underground workings would be smaller and the geologic units overlying the mine are very thick with significant potential to swell. The conditions at the Roca Honda mine, while not as deep as the Mt. Taylor mine, are relatively the same. Therefore, the RGRC evaluation is consistent with what would be expected at the Roca Honda mine.

Protection of Public Water Supply Aquifers. The Roca Honda mining activities will be conducted so as to avoid disruption of aquifers and exchange of ground water between the aquifer and other strata. The Roca Honda mine shaft, ventilation holes, and dewatering wells will pass through three saturated geologic units which function as aquifers in parts of the San Juan Basin. From highest to lowest in the geologic section, these units are the Gallup Sandstone, the Dakota Sandstone, and the Westwater Canyon Member of the Morrison Formation. Ground water within all three of these units is expected to occur under artesian conditions.

Although the wells drilled in the Dakota Sandstone and the Westwater Canyon Formation supply domestic wells in some areas around the southern and western edges of the San Juan structural basin where the rocks are close to the surface and may contribute minor amounts of water to public water supplies, only the Gallup Sandstone is relied on by public water supply systems within a radius which could potentially be impacted by the Roca Honda mine. In general, the Westwater Canyon Formation is too deep and the ground water of the Dakota Sandstone is of poor quality and limited quantity. There are no public water supply users near the mine that are likely to be impacted. The City of Gallup, Chaco Canyon Cultural Center, and some of the wells of the Navajo Nation pump from the Gallup Sandstone at locations between 20 and 40 miles north and west of the proposed Roca Honda mine. The Gallup Sandstone will be dewatered in the area of the Roca Honda mine shaft and ventilation holes for a short period of time, long enough to allow the shaft and ventilation holes to be constructed through the formation and the rocks grouted off. Therefore, there will be no impact on this public water supply aquifer.

Mine dewatering is regulated by the New Mexico State Engineer under the Mine Dewatering section of the New Mexico Statutes Annotated §72.12A.1 through §72.12A.13 (NMSA 1978), which was developed to balance the rights of existing water users with maximum economic development of mineral resources. RHR will obtain a dewatering permit from the NM OSE, possibly an approved Plan of Replacement, and also a Permit to Appropriate Underground Water. The potential impacts on existing water users, including public water systems, of dewatering the aquifers within the mine area, will be assessed under these statutes and §72.12.1 through §72.12.38, which regulate appropriation of ground water. Roca Honda Resources, LLC will perform hydrologic studies as described in the SAP in support of these NM OSE-required permits to assess impacts on existing water uses.

Additionally, State law requires that the waters of artesian aquifers be prevented from moving into another aquifer or geologic unit. The NM OSE will require that RHR dewatering wells be constructed according to 19.27.4 NMAC regulations, in particular, 19.27.4.31.A NMAC, which regulates construction of artesian wells. The provisions of 19.27.4.31.A NMAC were written to prevent inter-formational movement of ground water, and state: "No artesian well shall be constructed that allows ground water to flow uncontrolled to the land surface or move appreciably between geologic units." Casing and coupling requirements, annular space requirements, acceptable grouting techniques, and acceptable formation sealing tests are specified in the regulation. Roca Honda Resources, LLC will comply with 19.27.4 NMAC regulations and will employ licensed drillers or shaft constructors who will work with the NM OSE representatives to ensure that the dewatering wells and shafts are constructed properly.

The NM OSE also has drill hole abandonment requirements designed to protect aquifers. The RHR development drill holes will be plugged and abandoned in accordance with NM OSE requirements.

Protection of Perennial Streams, Water Bodies and Associated Structures. The Roca Honda mine is not located beneath or adjacent to a perennial stream or water body. The closest intermittent stream, San Mateo Creek, is located two miles to the south of the mine area. The sources of the creek waters are runoff from precipitation of Mt. Taylor and spring flow. The springs, which augment surface runoff, get their source of water from the volcanics of Mt. Taylor in the headwater area of the creek and springs which source further down along the creek near the contact of the Menefee Formation and Point Look out Sandstone of the Mesa Verde Group. Neither of these geologic units is saturated within the mine area, and both are separated vertically from the ore zone in Westwater Canyon Member by over 1,500 ft. of shales and sandstones. Mining within the Roca Honda permit area will not cause subsidence such that material damage would occur to streams, water bodies and/or associated structures.

5.3.11 Explosives (NMAC 19.10.6.603 C.(11))

The majority of the blasting at the Roca Honda mine will take place as part of the ongoing mining operations deep inside the mine, approximately 2,000 feet below the surface. As such, there is no likelihood that such blasting activity will cause injury to persons or damage to property not owned or under the control of RHR.

A limited amount of surface and near-surface blasting may occur. Preparation of the surface site may require some blasting of rock in order to accommodate placement of the shaft, head frame and associated buildings, and other surface facilities, should the rock prove too hard to rip using typical earthmoving equipment. Blasting will also occur as part of the sequence of excavating and constructing the production shafts. An experienced and certified contractor will do all of the blasting at the site. The contractor will be prepared to limit the amount of fly rock that can be produced by any one blast. In all instances, fly rock will be confined to the permit area.

The explosives storage magazines will be located at the surface within the controlled perimeter fence. One magazine will contain explosives the other blasting caps. The magazines will be constructed to meet all Bureau of Alcohol Tobacco and Firearms (BATF) standards. Each magazine will be secured with two locks. A typical magazine is shown in Figure 5-1.

The magazines will be situated away from occupied buildings in compliance with the BATF Standard Table of Distances for the Storage of Explosives. The BATF distances are based on the quantity of explosives stored per month. Therefore, the final placement of the storage area and the distances between the magazines will be finalized with the completion of facility design. The powder magazine and the blasting cap magazine will be separated by an earthen berm. A berm will also be placed around the perimeter of the magazine area. These berms will be, at a minimum, two feet higher than the tallest magazine. A fence with a locked gate will then be placed on the outside of the berm. Appropriate warning signs will be placed on the fence in such a way that a bullet passing through the sign will not strike the magazines.

An inventory will be kept of all explosives received in to and distributed out of the surface magazines. All explosives taken from the surface magazines to the underground mine will be inventoried into the underground magazines. An inventory will also be kept of all explosives used in the underground mine.

All transportation of explosives, on the surface and in the underground mine; will meet all Mine Safety and Health Administration (MSHA) and State requirements.

All employees, who handle explosives on the surface and in the underground mine, will meet all BATF, MSHA and State qualification and certification requirements.

5.4 Site Stabilization and Configuration (NMAC 19.10.6.603 D.)

This section addresses the requirements for stabilization and configuration of the project site after final reclamation in order to minimize impact to the environment and protect air and water resources. The current surface land use of the permit area is grazing. The final surface configuration of the disturbed area upon final reclamation at the Roca Honda permit area will be suitable for achieving the approved post-mining land use of grazing. Coincident with stabilization and configuration is minimizing the size of the area to be disturbed within the permit area, which consists of three sections of land. The disturbed area will be limited to approximately 183 acres within the 1,920 acre permit area. A variety of contemporaneous reclamation activities will be implemented that will have a positive impact on site stabilization, configuration, and final reclamation. Contemporaneous reclamation is discussed in more detail in Section 5.2 of this Plan.

The Reclamation Plan, submitted as part of the mine permit application, contains a more detailed discussion of the steps to be taken to stabilize and configure the site so as to achieve the approved grazing post-mining land use. These steps are summarized below for the purposes of addressing the requirements of NMAC 19.10.6.603.D regulations.

1. The final slopes and drainage configuration of the recontoured and reclaimed areas will be designed to blend into the natural topography, approximating the surrounding undisturbed area to be compatible and promote future grazing land use.

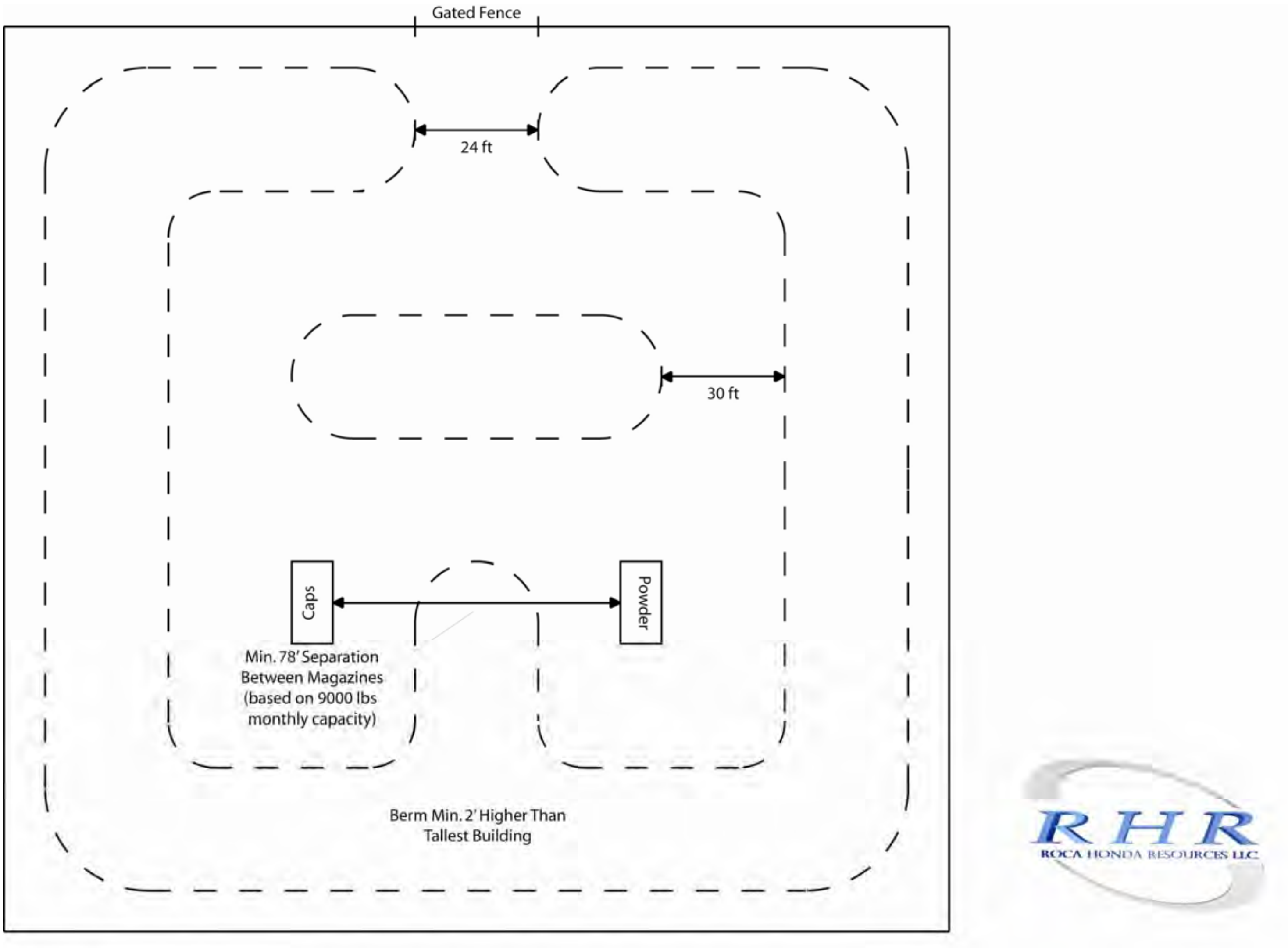


Figure 5-1. Typical Explosives Magazine

2. The ponds and detention basins constructed at the site will be backfilled with embankment materials and recontoured and reclaimed to blend into the natural topography. In addition, as discussed in Sections 4.0 and 4.2.5 of this Plan, non-ore material stockpiled on the surface during operation of the mine will be returned to the mine and/or removed offsite, further helping to ensure that reclamation achieves the approved post-mining land use.

3. All reconstructed slopes, embankments and roads will be recontoured such that they blend into and match the natural surrounding topography. Upon reclamation, these features will not require maintenance and not be subject to mass movement.

4. All materials will be reclaimed in such a manner, either through contemporaneous reclamation (Section 5.2), returned to the mine, or offsite removal, that no toxic drainage in excess of Federal or State standards is released.

5. See Item 4 above.

5.5 Topsoil (NMAC 19.10.6.603 E.)

As presented in Section 6, Topsoil, of the Baseline Data Report, RHR 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 Resources Conservation Service (NRCS) in cooperation with BLM, the Bureau of Indian Affairs, and the New Mexico Agricultural Experiment Station (NRCS 2006). 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. In addition, Section 6.0 of the SAP describes a soil survey and analyses program will be conducted by RHR to determine variations in topsoil depth and suitability and characterize in more detail the availability of topsoil in the disturbed areas of the site.

Suitable topsoil in the permit area is limited. Therefore, efforts will be made to carefully strip, stockpile and improve the growth material available on site. 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, 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 the vent/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.

The topsoil stockpiles will be constructed with slopes of 4H:1V and heights up to 25 ft. 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.

5.6 Erosion Control (NMAC 19.10.6.603 F.)

Reclamation of the Roca Honda permit area following completion of mining activities will be designed to control erosion across the site during reclamation and ultimately result in site conditions that control erosion long-term. The following steps are planned to achieve these goals.

A SWPPP will be developed for the Roca Honda mine permit area which outlines the measures to control storm water runoff from disturbed areas and control erosion during reclamation activities. These measures may include the installation of temporary silt fences, fiber rolls (e.g., straw wattles, straw bales), 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 successful revegetation of disturbed areas and completion of post-mining reclamation.

The disturbed areas will be cleared of all structures and equipment, and graded and contoured in accordance with the final grading plan, as discussed in the Reclamation Plan. The grading plan is designed to return the permit area to contours similar to those of the pre-mining condition. Although the contours may not be identical to the original contours, they will complement and enhance the natural contours of the site and minimize erosion from the area.

The cut and fill procedure for leveling the operational area will be reversed, and the previously stockpiled material will be used as fill. The excavated sub-base rock will be used as initial fill or as rip-rap. Subsoil material will then be placed in one foot lifts and compacted to 90% standard proctor. These lifts will be placed until the subsoil material blends with the surrounding area. 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 ensure the presence of at least 18 inches of minimally compacted soil to be seeded. Slopes will be a maximum of 4H:1V. Where necessary, slopes will be flatter to reduce potential erosion.

Several arroyos that begin in the northern mesas and flow to the south toward San Mateo Creek cross the permit area. The final grading plan will divert runoff to these same arroyos without creating new drainages. Arroyos that were armored or lined and straightened during mining operations will be returned to pre-mining condition during site reclamation, unless the land owners prefer it be left as altered. Portions of the natural arroyos needing channel protection or improvements as a result of impacts caused by the mining operation will be modified.

All reclaimed areas will be revegetated with the approved seed mix, as described in the following section, and protected with mulches and/or fiber rolls until vegetation becomes established. The reclaimed areas will be monitored for erosion until stabilization and revegetation has been achieved. Areas of major erosion discovered during this monitoring will be repaired, stabilized, and revegetated.

5.7 Revegetation (NMAC 19.10.6.603 G.)

A revegetation plan designed to return the disturbed area to a grazing land use will be a part of the RHR Reclamation Plan. The current land use for the Roca Honda permit area is grazing with leases from the USFS and the State of New Mexico. The revegetation requirements in NMAC 19.10.6.603.G (3) relate to the final reclamation of the site or portions of the site to obtain release of financial assurance. During mining operations, some of the areas will undergo contemporaneous reclamation, including vegetation to control erosion. Section 5.2 discusses that the various material stockpiles will be protected, covered, and vegetated with a temporary seed mix during mine operations. These stockpiles will be removed during site reclamation and the areas regraded for final revegetation. Other disturbed areas that have been reclaimed and vegetated, such as the mud pits for vent/escape shaft excavation, will be over-seeded with the final seed mix. The revegetation plan will include these and other details of RHR‘s approach to final revegetation.

Extensive vegetation surveys, as discussed in the BDR, produced data to include vegetative cover, density and productivity for the various vegetation types described on the site. A reference area to the north of the permit area was also sampled. These data, summarized in the BDR, will be used as benchmarks for establishing revegetation success criteria.

A recommended all-native seed mix is included in Table 5-3. This mix is based on a BLM-approved mix. Species will be 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 5-3. 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

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The seeding will take place immediately after placement of the cover material. In the event that seeding is delayed, the cover may require scarification, which would be tilled to a depth of approximately 12 inches. The seeding methods may vary according to the topography, soil conditions, and seed mix. The techniques will include broadcast, drilling, and hydroseeding. Some areas may require seed protection with mulch, matting or netting. 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). Some short-term irrigation may be required to promote establishment.

The success of the revegetation will be determined through comparison of ground cover, productivity and diversity of the reclaimed areas with reference areas. Technical guidance for these comparisons is published by the U.S. Department of Agriculture. Observations will be conducted once per year at approximately the same time each year. If the growth in the reclaimed areas does not meet the standards, steps will be considered to improve the results. The revegetation plan will discuss in more detail the comparison of reclaimed areas versus reference areas for the grazing land use goals.

5.8 Perpetual Care

The Roca Honda mine will be reclaimed in conformance with the Reclamation Plan, submitted as part of this mine permit application. The Plan is designed to meet all of the applicable environmental requirements of the Act, 19.10.6 NMAC and other laws following closure.

6.0 USFS Requirements

6.1 Scenic Values

Visual Resource Management is a tool used to assess aesthetic value as a resource. The scenic value component of the RHR mining proposal merits evaluation among the various environmental impacts that may occur as a result of constructing and operating the Roca Honda mine. As a general matter, the location of the project within sight of Mt. Taylor requires that scenic values be considered. The area has recently been designated as a TCP and there exists significant interest in protecting resources, such as scenic values. As such, the evaluation of scenic values at the permit area will be addressed to protect them.

Scenic values in and around the permit area will be protected by minimizing visual exposure by the general public to the various surface facilities of the mine complex. The natural topographic location of the permit area in Section 16 is at an elevation such that the general public would not normally see from State Route 605. Roca Honda Resources, LLC has taken advantage of these topographic features to protect scenic values. The facility on Section 16 has been located such that it is largely hidden from view from the public road to the south. The visual angle from Route 605, north to the mesa tops, will prevent many of the activities and facilities construction from being seen from Route 605. Some structures such as the top of the head frame and the top of some buildings may be visible. Additional protection will be utilized such as screening and berming soil with vegetation as a visual barrier and painting structures to blend with surrounding landscape colors. All exterior colors will be selected from a list of colors approved by BLM or USFS.

At Section 10, scenic values will be protected by utilizing the existing vegetation as a visual break between the facility and the public road. The Section 10 facility, located in the southeastern corner of the section, will be situated in a relatively low-lying area protected by pinõn-juniper tree stands. While the surface facilities will be more visible that those on Section 16, RHR has endeavored to develop Section 16 as the main facility, placing most of the facilities where they would be the most protective of scenic values. The combination of use of existing vegetation, berming of soil wherever possible, vegetation of exposed stockpiles and selection of appropriate use of color schemes for the facilities will all aid in mitigating impact to scenic values.

Timely reclamation in the permit area will include contemporaneous reclamation techniques to establish revegetation as soon as possible. Avoiding site disturbance where possible and minimizing the area when it must be disturbed, using existing roads and old drill pads where possible, removing, segregating, and stockpiling topsoil and subsoil, and returning non-ore stockpiles below ground will also be used as mitigation techniques for scenic value protection. Early reclamation reduces erosion, isolates and protects material for later use, provides mitigation of potential impacts, and reduces the amount of final reclamation work required. Timely and contemporaneous reclamation will commence before mining begins and continue concurrently with mining activities until final reclamation begins.

6.2 Hazardous Substances

The use of hazardous materials and toxic substances at the Roca Honda mine will be minimal. Such materials will be inventoried and used in small quantities that require minimal handling and storage. All such substances will be used, stored, and disposed in accordance with applicable regulations.

The following hazardous materials may be present onsite from time to time in the approximated quantities during site construction and mining operations in the form of vehicle/equipment fluids, cleaning solvents and water treatment system process chemicals.

- Antifreeze (>500 gallons) – or ethylene glycol, is a colorless or colored, oily liquid used as an antifreeze coolant for equipment.
- Cleaning solvents (>50 gallons) - generally colorless, blue, or yellow-green liquids used for cleaning equipment. Constituents include perchloroethylene, methylene, chloride, trichloroethylene, and petroleum distillate.
- Diesel fuel (>25,000 gallons) - a clear, blue-green, or yellow liquid used as a fuel for generators, trucks, and heavy equipment. Constituents include petroleum distillates, oil and grease, naphthalene, and xylene.
- Gasoline (>6,000 gallons) - a colorless, pale brown or pink liquid used as fuel for cars and trucks. Constituents include petroleum hydrocarbon, benzene, ethyl benzene, toluene, xylene, and methyl tertiary-butyl ether.
- Petroleum based grease (>50 gallons) - a reddish colored, semi-solid gel used as a lubricant.
- Hydraulic fluid (>1,000 gallons) – a brown, oily petroleum hydrocarbon used in hydraulic devices. Constituents include mineral oil.
- Oil (>1,000 gallons) - a brown or dark brown liquid used as a lubricant. Constituents include petroleum hydrocarbon.
- Barium chloride (three 55 gallon drums) – reagent used in the water treatment process to precipitate radium out of the liquid.
- Hydrochloric or sulfuric acid (five 55 gallon drums) – reagent used in the water treatment process to adjust pH.
- Sodium hydroxide (two 55 gallon drums) – reagent used in the water treatment process to adjust pH.

Handling and storage of hazardous substances will follow guidance and preventative measures from the onsite Material Safety Data Sheets and the RHR Site Safety Officer instructions. A SPCC Plan will be developed before construction of the mining facilities begins. The SPCC Plan will be used to train workers and employees on handling hazardous substances, prevention of spills, cleaning up spills, emergency or accidental releases, and the notifications and reporting requirements.

6.3 Solid Waste

Municipal solid waste will be generated during construction and mining operations at the Roca Honda site from sources such as the packaging for equipment and supplies, office paper, plastic and paper cups, paper towels, sanitary wipes, and Kleenex-type tissue. Any non-contact solid waste will be considered municipal solid waste and will be disposed of at an appropriate municipal waste disposal facility.

Resource Conservation and Recovery Act-regulated waste may be generated from cleanup of leaks or spills, including materials such as soil, sorbent pads, etc. Personal protective equipment used in cleanup of such spills, sampling waste and any hazardous waste will be containerized and disposed of at an appropriate disposal facility.

Waste in the form of diesel fuel, oil, or hydraulic fluid leaks or spills may be generated during construction and operation activities. Such waste, designated as New Mexico Special Waste, will be containerized and disposed of at an appropriate disposal facility.

6.4 Equipment and Vehicles

The following types of equipment and vehicles are anticipated to be used during site construction and mining operations activities at the Roca Honda site. Specific details of equipment and vehicles will be provided as the project design progresses.

Surface Equipment

Generator Set – Provide emergency, standby, prime, and continuous power to the mine operations. Anticipated to be used on an as-needed basis.

Air Compressors – Used to power equipment.

Switchgear – Provides single standby/load management or multi-unit utility paralleling when integrated with the generator set at the facility. Daily use is anticipated.

Bulldozers (various sizes) – Primarily used for road construction and cut-and-fill leveling for large areas. Daily use is anticipated during site preparation.

Graders (various sizes) – Primarily used for leveling large areas. Daily use anticipated during site preparation.

Excavators (wheel and track) – Primarily used for digging, material handling, lifting heavy objects, general grading and landscaping. Daily use anticipated during site preparation.

Scrapers – Primarily used for earth-moving and cut-and-fill operations. Anticipated to be used on an as-needed basis.

Hydraulic Hammer – Primarily used for breaking rock or concrete. Anticipated to be used on an as-needed basis.

Backhoe – Primarily used for digging and backfilling. Anticipated to be used on an as needed basis.

Vibratory Roller – Primarily used for compacting materials such as road base. Anticipated to be used on an as-needed basis.

Crane – Primarily used for constructing or lifting heavy objects such as a head frame. Anticipated to be used on an as-needed basis.

Loaders (various sizes) - Primarily used to load material (asphalt, demolition debris, dirt, gravel, raw minerals, rock, etc.) into or onto another type of machinery (e.g. dump truck, conveyor belt, etc.). Daily use is anticipated.

Tractors – Used for reclamation.

Drill Rigs – Used for constructing wells, development drilling, and vent shafts.

Forklifts – Industrial truck with metal forks used to lift and transport materials. Daily use is anticipated.

Winch Truck (2 ton) – Truck with a winch attached to pull in, let out or otherwise adjust the tension of a cable. Anticipated to be used on an as-needed basis.

Dump Trucks – Primarily used to move and stockpile excavated material. Daily use is anticipated.

Haul Trucks – Used to transport ore from the mine site to the mill. The type of truck will be determined when the mill location is selected.

Concrete Batch Plant – Primarily used for mixing concrete to be used at various locations. Anticipated to be used on an as-needed basis.

Water truck (4,000 gallon) – Primarily used to haul water for dust suppression on roads and disturbed areas. Daily use anticipated.

Pickup Trucks – Pickup trucks will be used for various support activities. Daily use anticipated.

Mine Rescue Ambulance – Primarily used in mine rescue emergencies to administer medical assistance and to transport injured personnel to hospital/medical facilities. Anticipated to be used on an as needed basis.

Underground Equipment

ST-1 ½ LHDs – Standard 1 ½ cubic yard load/haul/dump used to move mined material. Daily use anticipated during mining operations.

ST-3 ½ LHDs – Standard 3 ½ cubic yard load/haul/dump used to move mined material. Daily use anticipated during mining operations.

Haul Trucks – Standard 12 cubic yard trucks used to transport ore from the LHD work area to the production shaft. Daily use during mining operations.

Skid-Steer Loader – Compact loading equipment used to access confined areas, capable of handling a variety of small loading operations. Daily use anticipated during operations.

Single Boom Jumbos – Drill used for efficient drilling of headings and capable of handling face, bench, and roof bolt drilling requirements in underground mining operations. Daily use anticipated during mining operations.

Longhole Drills – Used to drill ore pass blast holes from the cross cut or from a cubby from the bottom up. Also used for the drilling of drain and cable holes and traveling ways. Daily use anticipated during mining operations.

Fletcher Bolters – Machine used for the installation of roof bolts. Daily use anticipated during mining operations.

Shotcrete Machines – Machine used to spray concrete (e.g. to strengthen tunnels). Anticipated to be used on an as-needed basis.

UG Communications – Leaker feeder cables (a radio frequency cable with weak shielding which allows radio signals to enter or leave the cable at any point), VHF system, UHF system (minimizes the impairment of radio wave transmission in curves, branches, and other spatial limitations inside of a mine), intrinsically safe system (allows for system use in mines or other hazardous areas where explosions are possible as a result of the surrounding environment), tagging and tracking (locates personnel in an emergency situation). Daily use anticipated.

Compressors, Slushers & Jacklegs/Drills - Equipment used to drill holes for blasting and then collect the blasted material for loading at the shaft hoist. Daily use anticipated during mining operations.

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