FINAL TECHNICAL ANALYSIS

Western States Minerals Corporation
J. B. King Mine
INA/015/002, Emery County, Utah

August 9, 1985

UMC 817.11 Signs and Markers - PGL

Existing Environment and Applicant's Proposal

Volume 2 of the Mining and Reclamation Plan (MRP), Section 817.11, delineates the signs and markers posted by the applicant.

Compliance

The applicant has posted all signs required by law, including portal area, refuse disposal, topsoil storage, mine entrance, underground and at the preparation plant. The applicant will maintain the markers during the bond liability period. Perimeter markers will display the current business address and regulatory number during the reclamation activities (Volume 2, 817.11 section).

Applicant complies with this section.

Stipulations

None.

UMC 817.13-.15 Casing and Sealing of Exposed Underground Openings - RVS

Existing Environment and Applicant's Proposal

The applicant has committed to permanently closing all portal entries by installing concrete block seals a minimum of 25 feet inby the entryway (MRP, Volume 2, Section 817.13). Seals will be recessed 16 inches into the rib and 12 inches into floor. A pilaster will be located in the center of the seal and a two inch diameter check pipe will be installed through each seal. Check pipes will be capped on the external side of the seal (Drawing 4050-5-21). The area between the entryway and seal will be backfilled and compacted with sand and clay material, graded and revegetated.

Exploration boreholes have been cemented with three foot surface plugs. Six boreholes completed and developed for the purpose of accessing ground water resources remain open (Drawing 4050-5-1). The applicant states that these six boreholes will be completely plugged according to Utah Department of Natural Resources regulations during reclamation (MRP, Volume 2, Section 817.15).

Compliance

Permanent cessation of mining excludes temporary sealing of portals and boreholes (UMC 817.14). An assessment of UMC 817.14 is not applicable.

The applicant has provided adequate plans for permanently sealing portals, exploration boreholes and water wells as required by UMC 817.13 and 817.15.

The applicant is in compliance with this section.

Stipulations

None.

UMC 817.21-.25 Topsoil - EH

Existing Environment and Applicant's Proposal

The J. B. King Mine site is located in southern Castle Valley between the Fish Lake Mountains on the west and the San Rafael Swell on the east. Elevation of the permit area ranges from 5,800 feet to 6,600 feet above sea level.

Precipitation ranges from 8 to 12 inches annually with the frost-free days and mean annual air temperature ranging from 110 to 130 days and 50^{0} to 60^{0}, respectively.

Soils in the area have formed from the weathering of sandstone and shale under desert conditions giving rise to vegetation consisting mainly of pinyon-juniper and shadscale-snakeweed shrubland. Five soil map units have been identified within the permit area: Castle Valley extremely rocky very fine sandy loam; mine dump; Ravola loam; rock land; and, shaley colluvial land (Table 5).

The Castle Valley soil has been classified as a loamy mixed, mesic, Lithic Xerollic Haplargid, and the Ravola as a fine silty, mixed, calcareous mesic typic Torrifluvent. Erosion potential ranges from slight for the Castle Valley soil to high for the Ravola soil (Soil Survey, 783.19, MRP).

The initial disturbance at the J. B. King Mine site occurred prior to Public Law 95-87. Consequently, very little topsoil was salvaged for use at the time of final reclamation. A total of approximately 29 acres of surface disturbance has occurred with only 4,000 yd^3 of topsoil salvaged and stockpiled.

A large borrow area along with a portion of the in-place soil, have been identified as a source of topsoil substitute material (Drawing 4050-4-13-R). Samples of the topsoil substitute have been taken at locations indicated on Drawing 4050-4-13-R. Analyses and interpretations of these samples have been presented in Section 784.13 of the MRP. At the time of final reclamation, these borrow pits along with in-place soil material will be used as a source of seedbed material.

During final reclamation, selective removal and placement of the contaminated soils and high-clay content soils found in sample pits C, D, E and G is planned. These materials will be used as initial filler for the slurry ponds (page 2, 817.22, MRP). Both ponds are approximately eight feet deep. Therefore, there is room for at least four feet of material to fill these ponds before the four feet of uncontaminated topsoil substitute material is placed on top. This plan provides a means of handling approximately 1,900 cubic yards of contaminated material (page 2, 817.22, MRP).

A plan similar to that outlined above will be used for contaminated soils found in the sedimentation pond. Soils dug from the sedimentation pond which appear to be contaminated with coal or high in clay content will be selectively dug and placed in shallow areas around the base of the refuse pile. These materials will then be covered with four feet of uncontaminated substitute topsoil material (page 3, 817.22, MRP).

Samples of the site facilities area show that removal of the coal dust contaminated surface to depths of up to one foot and relocation of this material to the refuse pile area will leave a clean surface which can then be scarified and prepared for planting (page 13, 784.13, MRP).

A "worst case" toxic analysis of the refuse material has been assumed. According to 817.85(d), this then dictates the placement of a minimum of four feet of inert material covered. The refuse material will first be compacted in the pile to attain a 90 percent dry density according to AASHTO T99-79 (page 13, 784.13, MRP). To cover the coal refuse pile, exposed coal seam and slurry ponds with four feet of cover material will require approximately 84,000 yd^3. The portals will be covered with topsoil substitute from the portal bench borrow area, approximately 20,000 yd^3 is available (page 1, 784.13, MRP). The sediment pond embankment (approximately 1,500 yd^3) will be used as fill for the slurry pond areas. The coal refuse cover material will consist of 7,000 yd^3 from the dike bank surrounding the refuse pile and 57,000 yd^3 from the borrow pit area. The total volume of topsoil substitute material available is 87,500 yd^3. Including the 4,000 yd^3 of stockpiled topsoil, the plan allows for a surplus of 7,500 yd^3 (page 1, 784.13, MRP).

After the disturbed areas have been backfilled and graded, they will be disked to lessen soil compaction and seeded in accordance with Section 817.111-.117, MRP.

Compliance

The applicant has provided the required information on the source, chemical analysis, volume and methods of handling of topsoil and topsoil substitute.

The applicant is in compliance with this section.

Stipulations

None.

UMC 817.41 Hydrologic Balance: General Requirements - RVS and TM

Existing Environment and Applicant's Proposal

Ground Water - RVS

The applicant describes shallow alluvial and colluvial aquifers and Ferron Sandstone aquifers as occurring within and adjacent to the permit area (MRP, Volume 1, Section 783.15). Recharge is attributed to direct infiltration of precipitation along streams and areas of outcropping sandstone.

Six boreholes were completed and developed for the purpose of accessing ground-water resources (Drawing 4050-5-1). An aquifer located approximately 200 feet below the Ferron "I" seam was identified (MRP, Volume 2, Section 783.13) and utilized by the applicant. Exploration boreholes drilled from above the workings did not encounter ground water (MRP, Volume 1, Section 783.15).

No springs are located within or adjacent to the permit area (MRP, Volume 1, Section 783.15) and mining did not encounter sufficient ground water to initiate discharge (MRP, Volume 2, Section 817.50).

Compliance

Underground mining activities were planned and conducted to minimize changes to the ground-water balance both within and adjacent to the mine plan area. Changes in ground-water quality and quantity and depth to ground water were minimized so that the postmining land use would not be affected.

The applicant is in compliance with this section.

Stipulations

None.

Surface Water - TM

The applicant proposes to use a combination of a borrow pit ditch and sediment pond to concentrate and collect disturbed area runoff during the reclamation phase. Since the mining area is planned for reclamation only, the applicant has committed to the necessary sediment controls (MRP, Sections 817.42, 817.52, 817.56). Temporary and permanent sediment controls (i.e., straw bales, contour furrows, riprap, vegetation) have been committed to be used during the reclamation phase to provide adequate protection from erosion (see UMC 817.56, pages 1 and 2 and UMC 817.45, pages 1-4).

Compliance

Underground mining activities were planned and conducted to minimize changes to the surface water balance both within and adjacent to the mine plan area. Reclamation practices are planned to prevent changes to the hydrologic balance and minimize water pollution.

Stipulations

None.

UMC 817.42 Hydrologic Balance: Water Quality Standards and Effluent Limitations - TM

Existing Environment and Applicant's Proposal

The existing sedimentation pond will be removed when encountered during the excavation of the substitute topsoil borrow pit. Since this action will eliminate sediment control during reclamation, a permanent sedimentation pond will be installed. It is proposed to use the north end of the borrow pit to act as a natural dam. The pond would be approximately 10 feet deep and be excavated in conjunction with the first removal of backfill. The pond would extend some 200 feet southeast at that depth. This pond will serve to capture all disturbed area runoff during the reclamation activities.

The natural dam will be retained to provide additional sediment control.

Compliance

The applicant meets the requirements of this regulation by providing adequate treatment of disturbed area waters. The location of the natural dam and subsequent reclaimed stream channel allows the applicant to capture all disturbed waters and provide adequate treatment. The plan meets the requirements of UMC 817.42.

Stipulations

None.

UMC 817.43 Hydrologic Balance: Diversions and Conveyance of Overland Flow, Shallow Ground Water Flow and Ephemeral Streams - TM

Existing Environment and Applicant's Proposal

The borrow pit ditch design used to route undisturbed and disturbed flows was designed using the worse case scenario for a 100-year reoccurrence storm event. This design criteria was used to insure that adequate drainage is provided to accommodate the intense nature of the thunderstorm runoff in the area. The actual borrow pit ditch design is outlined in UMC 817.56.

The sediment control measures to be taken are discussed in the sections of the MRP labeled " 784.16" and "817.45."

Compliance

The applicant is in compliance with this section. Both practical onsite considerations and theoretical calculations to support the requirements of the regulations have been incorporated.

Stipulations

None.

UMC 817.44 Hydrologic Balance: Stream Channel Diversions - TM

Existing Environment and Applicant's Proposal

The applicant proposes to establish a borrow pit drainage ditch and provide, as near as possible, the meandering shape and environmentally acceptable configuration of a naturally occurring stream. The gradient will be altered to form a profile that approximates a natural stream channel. Energy dissipators consisting of boulders and rock from the immediate area will be arranged to suggest natural placement. The side slopes of this

ditch and the entire area through which it passes will be revegetated in an attempt to create an approximation of the original topography and environment. Inlet ditches into the main borrow pit ditch will be installed where flow from the watershed is concentrated. A cross section and ditch profile have been provided on Figure 1 (Section 817.56, MRP, Volume 2).

Compliance

The applicant meets or exceeds the requirements spelled out under UMC 817.44. The requirements of (d)(1), (2) and (3) have been satisfied by using a design which will incorporate erosion protection for the reclaimed areas and also provides a means of safely routing flows through the reclaimed area in a natural meandering shape of an environmentally acceptable gradient.

Stipulations

None.

UMC 817.45 Hydrologic Balance: Sediment Control Measures - TM

Existing Environment and Applicant's Proposal

The applicant will complete the backfilling, grading and placement of topsoil during the initial reclamation phase and incorporate sediment control measures to ensure that no additional contributions of suspended sediments leave the site. The combined use of alternative sediment controls (i.e., contour furrowing, boulders and riprap), and a sediment pond will provide the necessary sediment control. The pond will allow any sediment transported by overland flow during reclamation processes to settle out without going off-site. The alternative sediment controls will help protect the borrow pit diversion ditch and will be constructed in the manner pointed out in the MRP under "817.45."

Compliance

The applicant meets the requirements of this regulation and agrees to prevent additional contributions of sediment to stream flow or to runoff outside the permit area by using the best technology currently available. The applicant will also implement alternative sediment controls in order to retain additional sediment within disturbed areas and prevent additional erosion of reclaimed areas.

Stipulations

None.

UMC 817.46 Hydrologic Balance: Sedimentation Ponds - TM

Existing Environment and Applicant's Proposal

Since the existing sedimentation pond is to be removed during the backfill reclamation phase of the MRP, a substitute pond has been proposed to serve the sedimentation control requirements (see Sections 784.16 and 817.42, MRP).

Upon completion of the restoration program, a permanent drainage ditch designed to control erosion and sediment discharge from the area will be constructed as described in "784.16" and "817.45" of the MRP. Upon removal of the temporary sedimentation pond and connection of the drainage ditch to the natural drainage pattern of the area, the affected area of the pond will be regraded and revegetated as part of the final phase of the reclamation activities.

Compliance

The design of the permanent sedimentation pond is discussed under Section 784.16, Volume 2, MRP. The pond is capable of holding runoff from the 10-year, 24-hour storm event for the 71.2 acres of disturbed and undisturbed area in addition to 4,550 yds^3 of sediment. The pond will be excavated into natural undisturbed material. The pond is designed to provide a minimum of one foot of embankment above the water surface. The actual depth of the pond will be 10.5 feet. The width of the embankment will be 20 feet versus 9.1 feet required by the regulations. This structure is, therefore, adequately designed (Volume 2, Section 784.16, MRP).

The applicant meets the requirements of this regulation.

Stipulations

None.

UMC 817.47 Discharge Structures - TM

Existing Environment and Applicant's Proposal

The spillway associated with the sediment pond is designed to pass the 100-year, 24-hour event. The spillway will be lined with riprap (one to six inch average diameter) and large boulders (1.5 foot average diameter) to control velocity and erosion. It will be constructed at the lower northwest end of the sedimentation pond. The spillway will provide a means whereby runoff volumes exceeding the capacity of the sedimentation pond can be channeled to the natural drainage (Section 784.16, MRP, Volume 2).

Compliance

The applicant has overdesigned the spillway with the intent that it will meet the requirements required by the Division for permanent impoundments. The applicant meets the requirements of this regulation.

Stipulations

None.

UMC 817.48 Hydrologic Balance: Acid-Forming and Toxic-Forming Materials - EH

Existing Environment and Applicant's Proposal

At the present time, no mining is being carried on. The main area of potential toxic material is the coal refuse pile. The applicant has committed to place all coal fines and contaminated material in the refuse pile and covering the entire 11 acres with four feet of nontoxic material from the borrow pits. The borrow material has been determined to be suitable as a plant growth medium. See Section 817.21-.25 in the MRP for details.

Compliance

The applicant's commitment to cover the 11 acres of refuse and coal fine material with four feet of nontoxic material is in compliance with this section. A one acre test plot area has been approved by the Division for the refuse area. (See UMC 817.103 for additional details.)

Stipulations

None.

UMC 817.49 Permanent and Temporary Impoundments - TM

Existing Environment and Applicant's Proposal

The applicant proposes a sediment pond structure to capture all runoff from the disturbed and undisturbed watershed areas above the mine site. Specific details on the design of this structure can be found in Section 784.16, Volume 2, MRP. This pond will serve as a catch basin for sediment control of the entire disturbed area during reclamation activities.

The applicant has proposed retaining the pond as a permanent impoundment for continuing sediment control in future years.

Compliance

The applicant meets all the requirements for permanent and temporary impoundments found under UMC 817.49. The design requirements for excavated ponds are contained in U. S. Soil Conservation Service Practice Standard 378, "Ponds," October 1978. The applicant has committed to construct side slopes not steeper than 2v:1h that will be stable. The inlet is protected against erosion. The excavated material taken from the pond will be used to reclaim the mine pad area. The impoundment is considered suitable for the proposed postmining land use.

The question of water rights for the impounded waters and the liability for the impoundment after bond release have been addressed. The applicant has contacted the Division of Water Rights, Office of Dam Safety, to address leaving the structure in place following reclamation. The applicant has also contacted the Division of Water Rights to secure water rights and was informed that for ponds constructed as erosion control structures, no formal water rights were required (MRP, UMC 817.49, page 1).

The applicant has met the requirements of this regulation.

Stipulations

None.

UMC 817.50 Hydrologic Balance: Underground Mine Entry and Access Discharges - RVS

Existing Environment and Applicant's Proposal

Rocks within the permit and adjacent area dip approximately 2.5 degrees to the west. Accordingly, the mine workings dip in a similar fashion and portals are approximately 100 feet lower than the easternmost mined area (Drawing 4050-5-5-R).

The applicant states that water was not encountered during mining or in exploration boreholes located above the workings (MRP, Volume 2, Section 817.50). One aquifer, approximately 200 feet below the Ferron "I" seam, has been identified in the mine plan and adjacent area (MRP, Volume 1, Section 783.13).

The applicant proposes to monitor any unplanned portal discharges in accordance with the water quality standards required by UMC 817.42 and other appropriate regulations. If necessary, water will be treated until bond release (MRP, Volume 2, Section 817.50).

Compliance

Portals were designed and constructed to control gravity discharge of water from the mine. Although inflow has not occurred in the past, the applicant has provided an adequate mitigation plan for potential mine inflow and unplanned portal discharge.

The applicant is in compliance with this section.

Stipulations

None.

UMC 817.52 Hydrologic Balance: Surface and Ground Water Monitoring - RVS and TM

Existing Environment and Applicant's Proposal

Ground Water - RVS

Permanent cessation of mining excludes operational ground-water monitoring. An assessment of UMC 817.52 is not applicable for ground-water monitoring.

Surface Water - TM

The applicant commits to the measurement of flows and the gathering of water samples for evaluation of postmining water quality during runoff from spring snowmelt or major rainfall events whenever possible during the bonding period following cessation of reclamation activities.

The field and chemical parameters recommended by the Division for water monitoring have been committed to by the operator (Section 817.52, Volume 2, MRP).

The surface monitoring points are delineated on Drawing 4050-4-13R (DOC) (Section 817.52, Volume 2, MRP).

Compliance

The applicant has adopted the measures in the Division's Surface Water Monitoring Guidelines and has committed to monitor surface water runoff for the extent of the bonding period. The applicant has met the requirements of this regulation.

Stipulations

None.

UMC 817.53 Hydrologic Balance: Transfer of Wells - RVS

Existing Environment and Applicant's Proposal

The applicant drilled and developed six boreholes to access ground-water resources within and adjacent to the permit area (Drawing 4050-5-1). Two of the wells are located within the permit area. One will be permanently abandoned and plugged according to UMC 817.15 (MRP, Volume 2, Section 817.53). Water well #1 will be retained based on the surface landowner request (letter from the Division of State Lands & Forestry [DSL&F], July 29, 1985).

The DSL&F will initiate the procedure to transfer the existing water right claim 94-295 from Western States Minerals to the DSL&F.

Compliance

The surface owner of the lands (State of Utah, DSL&F) has submitted a written request to the Division of Oil, Gas and Mining (DOGM) for well transfer approval. The applicant has yet to finalize written documentation of the transfer of well #1 to the surface landowner at the time of this TA. The applicant will be in compliance with this regulation when the following stipulation is met.

Stipulation 817.53-(1)-RVS

1. Within 180 days of permit approval, the applicant must submit to the Division written documentation of the transfer of water well #1 to the surface landowner. In the event that the well is not transferred, the applicant must plug and abandon the well in accordance with the approved plans in the MRP.

UMC 817.54 Hydrologic Balance: Water Rights and Replacement - RVS

Existing Environment and Applicant's Proposal

The applicant states that the water rights associated with mining consist of applications for and rights to use water from six boreholes drilled to access ground-water resources (MRP, Volume 2, Section 817.54). The applicant commits to replacing water supplies that have been adversely affected by mining activities.

Compliance

The applicant's proposal for mitigating adversely impacted water supplies adequately addresses the requirements of UMC 817.54.

The applicant is in compliance with this section.

Stipulations

None.

UMC 817.55 Hydrologic Balance: Discharge of Water Into an Underground Mine - RVS

Permanent cessation of mining and attendant permanent sealing of exposed underground openings excludes the discharge of water into an underground mine. An assessment of UMC 817.55 is not applicable.

UMC 817.56 Postmining Rehabilitation of Sedimentation Ponds, Diversions, Impoundments and Treatment Facilities - TM

Existing Environment and Applicant's Proposal

The applicant has noted that the sediment pond will be retained after reclamation as a permanent impoundment (MRP, 817.42 and 817.56). The details of this are discussed in Section UMC 817.49 of this Technical Analysis.

Compliance

The applicant has made a commitment to renovate at bond release the permanent impoundment to meet criteria in the detailed design plan.

The applicant is in compliance with this regulation.

Stipulations

None.

UMC 817.57 Hydrologic Balance: Stream Buffer Zone - TM

Existing Environment and Applicant's Proposal

No perennial or intermittent streams occur within or near the permit area. Therefore, mining activities will have no effect upon this type of water system (Section 817.57, Volume 2, MRP).

Compliance

The applicant complies with the requirements of this regulation.

Stipulations

None.

UMC 817.59 Coal Recovery - RVS

Existing Environment and Applicant's Proposal

Mining incorporated room and pillar methods with secondary pillaring to extract the Ferron "I" seam (MRP, Volume 1, Section 784.11). The underlying Ferron "F" seam was not accessed by the applicant. Approximately 160 feet of interburden separate the Ferron "I" seam and Ferron "F" seam (Volume 1, Section 784.11).

Compliance

The method of room and pillar mining with secondary pillaring complies with maximum utilization and conservation of the coal resource. The mining sequence employed by the applicant will allow additional development of the Ferron "F" seam.

Stipulations

None.

UMC 817.61-.68 Use of Explosives - PGL

Existing Environment and Applicant's Proposal

The applicant will not use explosives during the reclamation phase. During operations, the continuous miner eliminated the need for explosives. The cap and powder magazines will be removed during reclamation (Volume 2, 817.61-.68 section).

Compliance

Applicant complies with this section.

Stipulations

None.

UMC 817.71-.74 Disposal of Underground Development Waste and Excess Spoil: General Requirements - PGL

Since no mining will take place, these sections are not applicable.

UMC 817.81-.88 Coal Processing Waste Banks: General Requirements - PGL

Existing Environment and Applicant's Proposal

The coal processing waste banks were designed and constructed under the direction of a registered professional engineer. Refuse will be covered by a minimum of four (4) feet of nontoxic and

noncombustible material during final reclamation. After final grading, topsoil will be evenly distributed and planted with an appropriate seed mixture. The long-term static safety factor was determined to be greater than 1.5. No coal processing waste was returned to underground workings (MRP, Section 817.81-.88).

Compliance

The applicant's proposal adequately addresses the requirements of this regulation.

Stipulations

None.

UMC 817.89 Disposal of Noncoal Wastes - PGL

Existing Environment and Applicant's Proposal

The noncoal waste disposal area is designated on Drawing 4050-5-14 and described in Volume 2, UMC 817.89. The plan notes care will be taken in the deposition of materials such as lubricants, flammable liquids, etc. During reclamation, this disposal site will be covered with four feet of soil cover and revegetated per the reclamation plan.

Compliance

This site is without springs or watercourses and is not located within a drainage channel.

The applicant's proposal to cover the disposal area with four feet of soil material and revegetate the area complies with this section.

Stipulations

None.

UMC 817.91-.93 Coal Processing Waste: Dams and Embankments - PGL

There are no dams or embankments constructed of coal processing waste at the J. B. King, therefore, this section is not applicable.

UMC 817.95 Air Resources Protection - PGL

Existing Environment and Applicant's Proposal

The applicant indicates that a water truck will be used for dust suppression during the reclamation period. Water spraying will occur as often as needed.

Compliance

The applicant has committed to adequate dust suppression techniques during the reclamation phase. The applicant is in compliance with this section.

Stipulations

None.

UMC 817.97 Fish and Wildlife - SC

Existing Environment and Applicant's Proposal

The J. B. King Mine site is located within the San Rafael Swell-San Rafael Desert biogeographic area as described by the Utah Division of Wildlife Resources (UDWR) (Section 817.97, Appendix A). Economically important and high interest species found in the area include mule deer, mountain lion, golden eagle, cottontail rabbit, bobcat and a variety of raptors.

The endangered northern bald eagle and the American peregrine falcon are known to migrate to the region, although no active eyries have been identified. Historical range of the endangered black-footed ferret and Utah prairie dog have been included in the region; however, recent studies revealed no sitings of potential habitat in the area. No threatened or endangered fish, reptiles or amphibians are known to occur in the region (MRP, Section 817.97).

Two locations of Sclerocactus spp., were observed on the permit area during vegetation surveys (MRP, Section UMC 783.19). It is unknown if the populations are Sclerocactus wrightii, an endangered species listed by the U. S. Fish & Wildlife Service (USFWS), or Sclerocactus whipplei, another species which occurs in the area but cannot be easily distinguished from the former. The populations are not in areas which could be disturbed during final reclamation (MRP, Section 817.97).

No springs, streams, lakes or other wetlands exist within the immediate vicinity of the mine site and no other habitats of high value to wildlife were affected by mining activities (MRP, Section 817.97).

The proposed permanent seed mixture contains a diversity of native species which are of value as food and cover for wildlife (MRP, Section 783.19). Containerized shrub seedlings will be planted in clumps of 1/4- to 1/2-acre size to maximize edge effect and cover and to provide benefit to wildlife species which inhabit the area.

Compliance

Since the status of the J. B. King Mine is in a termination and final reclamation phase, no further disturbance of surface areas or disruption of wildlife will occur. A final plan for revegetation of the site has been detailed in Sections 783.19 and 817.111-.117 of the MRP. Implementation of the plan will improve wildlife habitat on the permit area and provide a positive benefit to all wildlife species in the area.

One possible endangered plant species, Sclerocactus wrightii, is found on the permit area. However, no disturbance to this species will occur as a result of final reclamation.

Species to be used for final reclamation have been selected for their adaptability to climatic conditions on the site, and their value as cover and food to wildlife species. Containerized shrub seedlings will be planted in clumps to maximize cover and edge effect.

The applicant complies with this section.

Stipulations

None.

UMC 817.99 Slides and Other Damage - PGL

Existing Environment and Applicant's Proposal

The applicant commits to notification of the Division by the fastest available means of any slides or other damage which may have potential adverse effects on public property, health, safety or the environment in Section 817.99 of the MRP and to comply with any remedial measures required by the Division.

Compliance

The applicant commits to notification of the Division in the event of a slide and compliance with any remedial measures required by the Division. The applicant is in compliance with this section.

Stipulations

None.

UMC 817.101 Backfilling and Grading - PGL

Existing Environment and Applicant's Proposal

The applicant proposes in Volume 2, Section 817.101 to blend the eastern portion of the permit area into the steep topography of the perimeter and the western portion of the permit area into the gently undulating rangeland immediately adjacent to the mine site.

The backfilling will entail the portal area, slurry ponds and subsurface foundation areas. Any significant depressions in the topography will be backfilled. Grading will take into consideration the proper contouring necessary to limit erosion, allow proper retention of water and assure stabilization of all slopes.

The applicant proposes to leave 1h:2v slopes in competent rock only and 1h:1v slopes in less competent materials such as soil and colluvium.

Compliance

The applicant proposes adequate backfilling and grading operations for the disturbed area. The applicant included calculations insuring a minimum static safety factor of 1.5.

The applicant will not retain any man-made highwalls. The applicant is in compliance with this section.

Stipulations

None.

UMC 817.103 Backfilling and Grading: Covering Coal and Acid- and Toxic-Forming Materials - EH

Existing Environment and Applicant's Proposal

The J. B. King Mine during mining operations operated a coal wash plant for removing sandstone and shale from the coal. This washing process produced approximately 11 acres of coal refuse. The applicant has assumed a worst case condition and committed to covering the entire coal refuse pile with four feet of soil material. The volume of nontoxic soil material required to accomplish this is 64,000 yd^3. A 7.4 acre borrow pit has been identified, sampled and found to be suitable as a cover material and plant growth medium (see Applicant's Proposal under UMC 817.21-.25 for specific information). Along with the commitment to cover the refuse pile with four feet of soil material, a set of test plots will be constructed on the refuse pile. The total test plot area will be approximately one acre in size and evaluate different soil depths used for reclamation of coal refuse (Section 817.111-.117, MRP).

The coal refuse pile will be compacted and graded to a final configuration as indicated on Drawing 4050-5-12. The four feet of nontoxic cover material will be hauled from the borrow pit by a self-propelled scraper, graded, disked and seeded in accordance with Section 817.111-.117, MRP.

Compliance

The applicant has committed to covering the coal refuse pile with four feet of nontoxic material, therefore, the applicant is in compliance.

The one acre test plot area is being installed at the request of the Division. The Division hereby relieves the applicant of the revegetation success liability for the one acre test plot area. Should reseeding of this area be necessary, it will be at Division expense. To assure no confusion exists as to the area of the test plots, it is requested that Map 4050-5-14 be revised to show the test plot area, and that this area not be included in the applicant's contour furrowing process.

Stipulation 817.103-(1)-EH

1. The applicant shall, within 30 days of permit approval, submit a revised Map 4050-5-14 depicting the test plot area.

UMC 817.106 Regrading or Stabilizing Rills and Gullies - PGL

Existing Environment and Applicant's Proposal

The applicant commits in Volume 2, Section 817.101, page 3 to fill, regrade or otherwise stabilitze any rills or gullies deeper than nine (9) inches which form in areas which have been regraded and topsoiled. The areas adjacent to any rills or gullies which have been filled, regraded or otherwise stabilized will be reseeded or stabilized accordingly.

Compliance

The applicant's proposal adequately addresses all requirements of this section.

Stipulations

None.

UMC 817.111-.117 Revegetation - SC

Existing Environment and Applicant's Proposal

The J. B. King Mine lies on the east central perimeter of the Emery coal field, located in Southern Castle Valley between the Fish Lake Mountains on the west and the San Rafael Swell on the east.

The Emery coal field consists of shallow saline soils and sparse precipitation. Two vegetation types dominate the mine area. They are the pinyon-juniper woodland and shadscale-snakeweed shrubland. Disturbance has occurred primarily on the latter type (Exhibit 3, Section 783.19, MRP).

As described under Section 783.19(A) of the MRP, a 3.9 acre section of the shadscale-snakeweed shrubland was selected as a reference area. The reference area is similar in elevation, topography, aspect and soil type to the disturbed area. The reference area was sampled for vegetation cover and woody plant density. Productivity was estimated by the Soil Conservation Service (SCS). The condition of the reference area was good (Attachment I).

The revegetation plan for the disturbed areas is outlined in the MRP under Sections 784.13 and 817.111-.117. It describes the seed mixture to be used, timing of planting, mulching techniques and measures to be used to determine success of revegetation.

Compliance

UMC 817.112 Revegetation: Use of Introduced Species

Only one introduced species, yellow sweetclover (Melilotus officinalis) is proposed for use in final reclamation. This species is acceptable due to its drought tolerance, resistance to heavy grazing, value to wildlife and a nitrogen-fixing ability. It is not considered to be competitive to native species.

The applicant complies with this section.

UMC 817.113 Revegetation: Timing

Seeding will be accomplished in the fall between September 15 and November 15 of each year in which reclamation is to occur (MRP, Section 784.13). This is the normal period for favorable seeding of the species being used in final reclamation. Containerized shrubs will be planted in the spring to take advantage of higher soil moisture and cooler temperatures (MRP, Section 817.113). This is also the normal period for favorable planting of shrub species.

In the event that a spring seeding becomes necessary, all revegetation will be conducted between March 1 and April 15 (MRP, Section 784.13). This will help ensure that there is adequate soil moisture for germination and seedling survival. In addition, an irrigation plan will be developed and approved by the regulatory authority prior to initiation of spring seeding (MRP, Section 784.13).

The applicant complies with this section.

The Emery coal field consists of shallow saline soils and sparse precipitation. Two vegetation types dominate the mine area. They are the pinyon-juniper woodland and shadscale-snakeweed shrubland. Disturbance has occurred primarily on the latter type (Exhibit 3, Section 783.19, MRP).

As described under Section 783.19(A) of the MRP, a 3.9 acre section of the shadscale-snakeweed shrubland was selected as a reference area. The reference area is similar in elevation, topography, aspect and soil type to the disturbed area. The reference area was sampled for vegetation cover and woody plant density. Productivity was estimated by the Soil Conservation Service (SCS). The condition of the reference area was good (Attachment I).

The revegetation plan for the disturbed areas is outlined in the MRP under Sections 784.13 and 817.111-.117. It describes the seed mixture to be used, timing of planting, mulching techniques and measures to be used to determine success of revegetation.

Compliance

UMC 817.112 Revegetation: Use of Introduced Species

Only one introduced species, yellow sweetclover (Melilotus officinalis) is proposed for use in final reclamation. This species is acceptable due to its drought tolerance, resistance to heavy grazing, value to wildlife and a nitrogen-fixing ability. It is not considered to be competitive to native species.

The applicant complies with this section.

UMC 817.113 Revegetation: Timing

Seeding will be accomplished in the fall between September 15 and November 15 of each year in which reclamation is to occur (MRP, Section 784.13). This is the normal period for favorable seeding of the species being used in final reclamation. Containerized shrubs will be planted in the spring to take advantage of higher soil moisture and cooler temperatures (MRP, Section 817.113). This is also the normal period for favorable planting of shrub species.

In the event that a spring seeding becomes necessary, all revegetation will be conducted between March 1 and April 15 (MRP, Section 784.13). This will help ensure that there is adequate soil moisture for germination and seedling survival. In addition, an irrigation plan will be developed and approved by the regulatory authority prior to initiation of spring seeding (MRP, Section 784.13).

The applicant complies with this section.

UMC 817.114 Revegetation: Mulching

All areas to be seeded or planted will be mulched with weed-free native hay at a rate of 1.5 tons per acre. The mulch will be crimped into the soil to help assure protection of soil (MRP, Section 784.13).

The applicant complies with this section.

UMC 817.116 Revegetation: Standards for Success

Vegetative cover (total and by species) will be monitored on all revegetated areas during the third and fifth years after planting. The same sampling methods will be used for cover monitoring as were used during the baseline inventory. Sample adequacy for cover will be determined through the use of the standard DOGM formula, with t (two-tailed) = 1.0 and d = 0.1. Spot seeding on areas that experienced revegetation failure will be undertaken after identification of the problems leading to the failure (MRP, Section 784.13).

The revegetation success standards for cover and production will be obtained from the shadscale-snakeweed reference area at the time of bond release testing. Vegetation cover and production on the reclaimed areas will equal or exceed 90 percent of the cover and production on the reference area, with an 80 percent confidence level (MRP, Section 784.13).

The applicant complies with this section.

UMC 817.117 Revegetation: Tree and Shrub Stocking

The applicant has proposed a shrub density standard of 500 stems per acre for the reclaimed areas. This is substantially lower than the reference area density of 23,806 stems per acre, however, it is felt that the proposed rate is more consistent with the major postmine land uses of cattle grazing.

This is an acceptable proposal since the majority of shrubs (70 percent) are broom snakeweed (Xanthocephalum sarothrae). This shrub has a low use for grazing and is of minimal value to most wildlife. It will be replaced by fewer but much more palatable shrub species and a wide variety of grasses and forbs (Table 12). This will enhance both livestock grazing and wildlife habitat.

Woody plant densities will be monitored during the first, third and fifth years following initiation of reclamation. Sampling methods will be the same as those used during the baseline inventory. Sample adequacy will be determined through the use of the standard DOGM formula.

The applicant complies with this section.

Feasibility of Reclamation

The J. B. King Mine site receives approximately 8-12 inches of precipitation annually. This amount is sufficient for establishment of the species to be used in final reclamation. Reclaimed areas will be mulched to help protect against erosion and retain soil moisture. Fall seeding and spring planting are planned. These are the normal periods for seeding and planting of the species to be used.

Stipulations

None.

UMC 817.121-.126 Subsidence Control - RVS

Existing Environment and Applicant's Proposal

Room and pillar methods with secondary pillaring were employed to extract the Ferron "I" seam (MRP, Volume 1, Section 784.11). Overburden ranged from 80 to 135 feet (Drawing 4050-5-5-R) and the Ferron "I" seam averaged 13 feet in thickness.

Maximum subsidence was projected to be seven feet (MRP, Volume 2, Section 784.20, page 5) and subsidence monitoring data indicate up to seven feet of subsidence has occurred in the southern portion of the mined area (Drawing 4050-5-36). Moreover, annual monitoring data show the rate of vertical movement is decreasing and suggest the maximum value for subsidence is being approached (Drawing 4050-5-36). The major subsided area depicted on Drawing 4050-5-36 trends north and northeast and encompasses a small depression that may pond surface runoff.

Tensional cracks related to subsidence occur in areas adjacent to and over barrier pillars located along the southern margins of the permit area (Drawing 4050-5-36). DOGM technical staff conducted a site inspection on February 27, 1985 and observed surface tension cracks to be a maximum of five to eight inches wide and several hundred feet long. Crack depth was not accurately determined, however, technical staff concurred that cracks extend several tens of feet below the ground surface.

The applicant proposes to fill tension cracks where possible with either dirt or timbers and fence and post tension cracks that cannot be filled (drawing entitled Tension Crack Safety Barriers). Protection barriers will be installed within 90 days of permit approval (Volume 2, Section 817.124, page 4).

Annual subsidence monitoring will continue until bond release and results will be submitted to the Division.

Compliance

The applicant has provided information about mining methods and overburden thickness to indicate mining activities were planned and conducted in order to prevent subsidence from causing material damage to the surface (UMC 817.121).

An assessment of regulatory compliance with UMC 817.122 is not applicable due to permanent cessation of mining. The mine plan and adjacent area contain neither perennial streams, impoundments, aquifers significant to public water supplies or public buildings. The applicant is in compliance with UMC 817.126.

The applicant will achieve compliance with UMC 817.124 when the following stipulation is met.

Stipulation 817.121-.126-(1)-RVS

1. The applicant must, within 90 days of permit approval, commit to inspecting subsidence barriers during the annual subsidence monitoring program. Barriers or fencing shall remain in place until the Division determines (prior to bond release) that surface tension cracks no longer pose a hazard to cattle grazing.

UMC 817.131 Cessation of Operations: Temporary - PGL

Existing Environment and Applicant's Proposal

This section is not applicable due to the permanent cessation of mining activities.

UMC 817.132 Cessation of Operations: Permanent - PGL

Existing Environment and Applicant's Proposal

The applicant proposes to reclaim the disturbed site according to an approved reclamation plan after a permit has been issued in Section 817.132 of the MRP.

Compliance

The applicant complies with this section.

Stipulations

None.

UMC 817.133 Postmining Land Use - SC

Existing Environment and Applicant's Proposal

The J. B. King Mine was opened in 1939 and was intermittently mined until January 1981 when operations ceased. Approximately 1.5 million tons of coal have been removed using the room and pillar method of mining.

The land use on the permit and surrounding areas has been and continues to be primarily cattle grazing and wildlife habitat. The lands surrounding the permit area are administered by the Bureau of Land Management (BLM).

The applicant will return the site to the premining uses of livestock grazing and wildlife habitat. Disturbed areas will be regraded, topsoiled, planted and monitored to achieve the appropriate success standards as discussed under UMC 817.111-.117 of this document.

Compliance

The disturbed areas will be returned to conditions that are capable of supporting premining land uses.

The applicant complies with this section.

Stipulations

None.

UMC 817.150-.156 Roads: Class I - PGL

Existing Environment and Applicant's Proposal

The county road from the junction at I-70 to the J. B. King guard house is designated as a public road (Emery County maintains the road from I-70 to the mine guard shack) (see Drawing 4050-5-9 and letter from Emery County Commissioner dated March 18, 1985).

Within the permit area, 600 feet of road from the guard shack to the mine yard is designated as a Class I haul road. The road will be removed and then reclaimed as outlined on Drawing 4050-5-13-R. The area will be covered with topsoil and seeded.

Compliance

The applicant's permanent reclamation measures for the Class I road comply with this section.

Stipulations

None.

UMC 817.160-.166 Roads: Class II - PGL

There are no Class II roads on the property, therefore, this section is not applicable.

UMC 817.170-.176 Roads: Class III - PGL

Existing Environment and Applicant's Proposal

The Class III road beginning at the refuse pile and extending about 700 feet southwest across the mine yard will be eliminated and reclaimed. The section which climbs to the microwave tower and beyond for a total distance of 415 feet will be ripped, scarified and shaped to conform to the original topography as outlined in Section 817.170-.176 of the MRP.

The balance of the road (2,000 feet) from the microwave tower to the public road will be reclaimed by ripping, scarifying and natural drainages restored. Sand "ricks" at the side of the road as the result of blading will be returned to the roadbed for revegetation as stated in Section 817.170-.176, MRP.

Compliance

The applicant's proposal to reclaim the road is in compliance with this section.

Stipulations

None.

UMC 817.180 Transportation Facilities - PGL

Existing Environment and Applicant's Proposal

The applicant states that the conveyor system from the "F" portal is the only transportation facilities at the J. B. King Mine site. This conveyor system will be dismantled and transported from the property during Phase I of the reclamation program in Section 817.180, MRP.

Compliance

There are no springs, streams, lakes or other wetlands in the area which could be affected by the dismantling and reclamation activities. The area of the conveyor system will be prepared for reseeding as outlined in the reclamation plan.

Applicant complies with this section.

Stipulations

None.

UMC 817.181 Support Facilities and Utility Installations - PGL

Existing Environment and Applicant's Proposal

The applicant outlines in Section 784.12 of the MRP the surface buildings and structures: coal preparation plant; crusher station; material handling structures; coal loadout; shop and warehouse; substations (2); office change house and safety trailer; fuel storage; and microwave system. Electric power is supplied to the mine site by Utah Power & Light Company. There are six wells at the mine site. All waste water from lavatory and shower facilities is disposed of through a self-contained septic tank absorption field system.

The applicant describes in the reclamation plan how the support facilities will be disassembled and removed. The applicant states that "they have been constructed and located to prevent damage to public or private property" in Section 817.181, MRP

Compliance

The applicant will reclaim the support facilities and utility installations in accordance with this section.

Stipulations

None.