GARY R. HERBERT
Governor
GREG BELL
Lieutenant Governor

State of Utah
DEPARTMENT OF NATURAL RESOURCES
MICHAEL R. STYLER
Executive Director
Division of Oil, Gas and Mining
JOHN R. BAZA
Division Director

Technical Analysis and Findings

Utah Coal Regulatory Program

November 22, 2016

PID:	**C0150015**
TaskID:	**5299**
Mine Name:	**EMERY DEEP MINE**
Title:	**PHASE II ADDITIONAL PERMIT BOUNDARY**

General Contents

Identification of Interest

Analysis:

Analysis:
The application does not meet the requirements of R645-300-112.800, statement of interest in lands contiguous to the permit application.

Deficiencies Details:

R645-300-112.800, Please provide a statement of all lands, interest in lands, options, or pending bids on interests held or made by the applicant for lands contiguous to the area described in the permit application. If requested, the information not on public file will be held in confidence by the Division as provided under R645-301-124.320.

pburton

Right of Entry

Analysis:

The amendment does not meet the State of Utah R645 requirements for Right of Entry.

Plate IV-2, UG Operations Plan depicts the proposed 5-year mining sequence for the mine expansion. Upon review of Plate IV-2, it's clear that mining activity will occur within Federal Lease U-5287. Based on conversations with Bureau of Land Management (BLM) personnel, the Permittee has not revised the Resource Recovery Preservation Plan (R2P2). A revised R2P2 is required by the BLM prior to mining activity (as depicted in Plate IV-2) occurring in Federal Lease U-5287.

R645-301-114 requires that the amendment contain a description of the documents upon which the applicant bases their legal right to enter and begin coal mining and reclamation operations. The description must identify the documents by type and date of execution, identify the specific lands to which the document pertains and explain the legal rights claimed by the applicant.

The Permittee must revise the amendment to comply with R645-301-114.

Deficiencies Details:

The amendment does not meet the State of Utah R645 requirements for Right of Entry. Prior to final approval the Permittee

must address the following deficiency:

R645-301-114: The Permittee must revise the amendment to comply with R645-301-114 which requires that the amendment contain a description of the documents upon which the applicant bases their legal right to enter and begin coal mining and reclamation operations. The description must identify the documents by type and date of execution, identify the specific lands to which the document pertains and explain the legal rights claimed by the applicant. Plate IV-2 depicts mining operations occurring within Federal Lease U-5287. Based on conversations between Division staff and the Bureau of Land Management (BLM), the Permittee has not revised the Resource Recovery Preservation Plan (R2P2). A revised R2P2 is required by the BLM prior to mining activity (as depicted in Plate IV-2) occurring in Federal Lease U-5287.

schriste

Legal Description

Analysis:

The amendment meets the State of Utah R645-300-121.120, requirements for providing a legal description of the permit and adjacent area. However, the Division recommends the legal description be more refined to clearly identify which "parts of" parcels are included in the permit.

The legal description of the permit and adjacent areas are located on Ch. 4 page 1. The legal description matches the permit boundaries identified on Plate III-9.

The Division recommends the Permittee make the following clarifications to the legal description to further define specific parcels of land included within the permit.

Adjacent Area:

Section 27:
Change: W/2, portion of NE/4. Change to: W/2, W/2NE/4, NE/4NE/4, part of SE/4NE/4

Section 23:
Change: Portions of the following SW/4NW/4, NW/4SW/4
Portions of the following: S/2, SW/4 and NE/4SW/4
Change to: S/2SW/4, portions of SW/4SW/4NW/4, NW/4SW/4, NE/4SW/4

Permit Area: Refine all descriptions as follows:

Section 27: SE/4NW/4, N/2NE/4SW/4, W/2SW/4NE/4, consisting of (? 23.9± acres)
Section 30: Part of the E/2NE/4 consisting of (? 9.8± acres)
Section 32: Part of the NW/4, NE/4, NW/4SE/4 consisting of (? 261.9± acres)
Section 33: Part of the NW/4, NE/4, N/2SW/4 consisting of (? 151.3± acres)

Deficiencies Details:

The Division recommends the Permittee make the following clarifications to the legal description to further define specific parcels of land included within the permit.

Adjacent Area:

Section 27:
Change: W/2, portion of NE/4. Change to: W/2, W/2NE/4, NE/4NE/4, part of SE/4NE/4

Section 23:
Change: Portions of the following SW/4NW/4, NW/4SW/4
Portions of the following: S/2, SW/4 and NE/4SW/4
Change to: S/2SW/4, portions of SW/4SW/4NW/4, NW/4SW/4, NE/4SW/4

Permit Area: Refine all descriptions as follows:

Section 27: SE/4NW/4, N/2NE/4SW/4, W/2SW/4NE/4, consisting of (? 23.9± acres)
Section 30: Part of the E/2NE/4 consisting of (? 9.8± acres)
Section 32: Part of the NW/4, NE/4, NWS/4SE/4 consisting of (? 261.9± acres)
Section 33: Part of the NW/4, NE/4, N/2SW/4 consisting of (? 151.3± acres)

lreinhart

Permit Application Format and Contents

Analysis:

The amendment does not meet the State of Utah R645 requirements for Permit Application Format and Contents. The Permittee must revise the Table of Contents pages for the respective chapters of the MRP to depict the accurate page numbers for the individual sections.

Deficiencies Details:

The amendment does not meet the State of Utah R645 requirements for Permit Application Format and Contents. The following deficiency must be addressed prior to final approval:

R645-301-120, -121.200: The Permittee must revise the Table of Contents pages for the respective chapters of the MRP to depict the accurate page numbers for the individual sections.

schriste

Reporting of Technical Data

Analysis:

Analysis:
On page 8c Chap IV, the application twice refers to Appendix IV-13 (Emery Expansion Civil Design Drawing - R & M Engineering Consultants). This appendix could not be found with the application.

Deficiencies Details:

R645-301-122, Please provide Appendix IV-13, Emery Expansion Civil Design Drawing - R & M Engineering Consultants, with the application.

pburton

Reporting of Technical Data

Analysis:

The amendment does not meet the State of Utah R645 requirements for Reporting of Technical Data.

R645-303-224.100 requires that an "increase in the size of the surface or subsurface disturbed area in an amount of 15%, or greater, than the disturbed area under the approved permit..." must be processed as a Significant Permit Revision. Based upon previous reviews/analyses of the disturbed acreage currently on-site at the Emery Deep Mine and the approved bonding calculations for the site, it was determined that the Permittee must determine must survey the disturbed acreage associated with the currently approved Emery Deep Mine facility in order to determine whether the proposed mine expansion must be processed as a Significant Revision.

The question as to the actual disturbed acreage at the mine site was raised upon review of currently approved language and acreages provided in the existing Mining and Reclamation Plan (MRP). For example, Table III-1, Surface Operations Area Pre- and Post-Mining Land Uses identified 375.8 acres as "potential surface operations area". This area was determined to be associated with a proposed wash plant area that was never constructed or bonded for. The Division determined that this acreage could not be utilized in determining whether or not the proposed mine expansion (and associated disturbed acreage) constituted a 15%, or greater, addition of disturbed acreage.

The Permittee has submitted revised calculations of disturbed acreage in Table III-1 as well as revising Plate III-9, Permit Boundaries and Bonding Map (Exhibit D).

The Permittee must provide the names of persons or organizations that collected and analyzed the data, dates of the collection and analysis of the data, and descriptions of the methodology used in determining the existing disturbed acreage as well as the disturbed acreage of the proposed expansion for inclusion into the Mining and Reclamation Plan (MRP).

Deficiencies Details:

The amendment does not meet the State of Utah R645 requirements for Reporting of Technical Data. The following deficiency must be addressed prior to final approval:

R645-301-130: The Permittee must provide the names of persons or organizations that collected and analyzed the data,

dates of the collection and analysis of the data, and descriptions of the methodology used in determining the existing disturbed acreage as well as the disturbed acreage of the proposed expansion for inclusion into the Mining and Reclamation Plan (MRP).

schriste

Maps and Plans

Analysis:

The amendment does not meet the State of Utah R645 requirements for Maps and Plans. The Permittee must revise all maps/plates that depict the permit boundary and/or disturbed area boundary to reflect the proposed mine expansion. Plate VI-3, Plate VI-9 and Plate II-1A must be revised to show the proposed mine expansion.

Deficiencies Details:

The amendment does not meet the State of Utah R645 requirements for Reporting of Technical Data. The following deficiency must be addressed prior to final approval:

R645-301-140, -142: The Permittee must revise all maps/plates that depict the permit boundary and/or disturbed area boundary to reflect the proposed mine expansion. For example Plate VI-3, Plate VI-9 and Plate II-1A must be revised to show the proposed mine expansion.

schriste

Environmental Resource Information

General

Analysis:

The amendment does not meet the State of Utah R645 requirements for General Operational Plan Requirements.

R645-301-731-751 requires compliance with the Clean Water Act (33 U.S.C. 1251 et seq.). The Permittee must provide documentation that the U.S. Corps of Engineers has reviewed and approved of the proposed mine expansion.

Deficiencies Details:

The amendment does not meet the State of Utah R645 requirements for General Information relative to hydrology. The following deficiency must be addressed prior to final approval:

R645-301-731, -751: The Permittee must provide documentation that the U.S. Army Corps of Engineers has found that the proposed mine expansion qualifies for a Programmatic General Permit 10 (PGP-10) permit.

schriste

Permit Area

Analysis:

Analysis:
The application does not meet the requirements of R645-301-521, General Operation Plan and the requirements of R645-301-121.200, Clear and Concise presentation of the disturbed area boundary and map reference.

The permit area is described as 444.8 acres as shown on Plate III-9, Permit Boundaries and Bonding Map. The proposed Emery 2 Expansion is 29 acres (MRP, Section UMC 782.17*). This surface expansion in T 22S, R6E Section 32 and 33 will allow access to fee coal on the West and North of the permit area, owned by Bronco (Surface and Coal Ownership Map, Plate 1-1), and to federal coal (Fed Lease U-5287) on the North West and North of the permit area, refer to Plate IV-2 Underground Operations.

A box cut and fill of an ephemeral channel is required for development of three new portals and a 700 ft long conveyor. The portals will be at the bottom of a ramp (10% grade) in a box cut. Two bypass culverts (UC1 and UC2) will collect undisturbed drainage past the site. Plate II-1 shows the surface facilities which include a 100,000 gal water tank, 16 ft diameter raise bore ventilation shaft, 4 boreholes (120 ft. deep) for water and power. 18 power poles to support the power line. Half of the conveyor length will be elevated on a metal framework.

The surface disturbance will encompass 10.3 acres (Table III-2). The disturbed area boundary must be shown on Plates IV-8 series a, b, c.

*The application references the UMC code from the Utah interim program, rather than the Utah Coal MIning R645 Rules which were implemented in 1987. These references should be updated with the corresponding R645 rules in each heading of the application.

Deficiencies Details:

R645-301-521 and R645-301-121.200, The surface disturbance will encompass 10.3 acres (Table III-2). The disturbed area boundary must be shown on Plates IV-8 series a, b, c.

R645-301-121.200, In Chap 1, p.8, Section UMC 782.17*, the application references Plate IV-1, which could not be found in the application or in the MRP. Please correct this reference accordingly.

pburton

Historic and Archeological Resource Information

Analysis:

This application meets the State of Utah R645 Coal Mining Rule requirements for Cultural and Historic Resources Information (R645-301-411.140 to R645-301-411.144).

The application contains maps and supporting narrative which describe the nature of cultural and historic resources listed or eligible for listing in the National Register of Historic Places and known archaeological sites within the permit and adjacent areas.

The application clearly details coordination undertaken with the State Historic Preservation Officer (SHPO), including clearances obtained through coordination with the Division of Oil, Gas and Mining and the SHPO.

The application clearly details efforts by the applicant to protect historic or archaeological properties listed on or eligible for listing on the National Register of Historic Places through appropriate mitigation and treatment measures.

jmontcalm

Vegetation Resource Information

Analysis:

The information in the application meets the State of Utah R645 requirements for Vegetation Resource Information.

The vegetation resource information can be found in Chapter VIII, Apppendix VIII-8, Figure 2 and plate VIII-1(Vegetation and Landuse Map) prepared by Mount Nebo Scientific titled Vegetation and Sensitive Species of the Emery 2 area. The new Emery 2 Area is shown on the USGS Walker Flat Quadrangle 7.5 series topographic map. The dominant plant community is Shadscale. On site field studies in the Emery 2 study area have been conducted in 2009, 2010 and 2016. The report focuses more on the 2016 permit area proposed disturbance, as results were available for a larger area from earlier studies, additional information has been included in the report to provide greater detail for vegetation and wildlife habitats adjacent to the new Emery 2 Area. Depending on the final mine plans, there are various plant communities that could be disturbed as a result of the proposed surface operations in the Emery 2 Area. Data has been collected in these plant communities in an attempt to accommodate any changes to the footprint of the current designed plans. These communities included: Pinyon/Juniper, Shadscale, Greasewood Upland, Greasewood Bottoms and Previously Disturbed Shadscale & Greasewood.

Table 28 of the application includes federally listed threatened, endangered and candidate plant and animal species for Emery County, Utah. No TES species were found within the new permit area boundary.

jhelfric

Fish and Wildlife Resource Information

Analysis:

The information in the application meets the State of Utah R645 requirements for Wildlife Resource Information.

Table 28 of the application includes federally listed threatened, endangered and candidate plant and animal species for Emery County, Utah. There are 4 species of endangered fish (Colorado pike minnow, Bonytail, Humpback chub and (Razorback sucker) in the Colorado River watershed that could potentially be affected by water depletions from the active mining operations at the Emery 2 expansion. Chapter II page 25a of the application includes calculations for the amount of water consumed in acre feet/year. Adding the approximate consumptive losses, equal 46.8 ac-ft/yr. by subtracting that amount from the estimated discharge of 141,000,000 gallons (432 ac-ft) of water per year, there is a net gain of 385.2 ac-ft. per year to the Colorado River Basin. Since this permitting action (under the Utah Coal Regulatory Program) is not a significant revision, new permit, permit renewal, 10% increase in consumption and there is a net gain to the Colorado River Basin no formal consultation is required, (personal conversation with George Weekly, USFWS fisheries biologist November 1, 2016).

Other species include the Southwest willow flycatcher, Black footed ferret, Yellow billed cuckoo, Canada Lynx and Mexican spotted owl. Collectively there will be no impacts to these species from mining in the study area. The application includes documentation for each species that supports a finding of no impact.

The electronic version of the application includes the updated wildlife maps (Figure 5 Rocky Mountain Elk, Figure 6 Mule Deer and Figure 7 Black Bear Habitat) for the Emery 2 expansion and corresponding narratives describing the species and their habitats. Studies were also conducted in 2009 and 2010 that include wildlife information.

jhelfric

Soils Resource Information

Analysis:

Analysis:
The application does not meet the requirements of R645-301-121.100, Current information in the Soil Survey, because the disturbed area boundary is not shown on Figure 3 of Appendix VII-5 and because Plate VII-1 Soil Map requires updated surface distrubance information in the legend..

The Emery 2 surface disturbance is above (at elevation 6,050ft.) and within an unnamed, ephmeral wash that drains 1/3 sq. mile and empties into Quitchupah Creek at elevation 5,900 ft. The surface is composed of bedrock (Ferron Sandstone) and talus slopes (App. VI-22). Of the 10.3 acres to be disturbed, approximately 1.7 acres are sandstone (Chap III, p. 21a).

The information provided for the 10.3 acres of Emery 2 disturbed/bonded area meets the requirements of R645-301-222 and R645-301-223, because a soil survey was conducted in the Fall of 2009 by Robert Long Associates. However Plate VII-1 Soil Map requires updated surface distrubance information in the legend.

The survey is found in Chap VII, Appendix VII-5. The Order II soil survey provides soils information for the 189.6 acre lease area of which, 29 acres will be added to the permit area, but only 10.3 will be disturbed by the Emery Phase 2 expansion. Only 8.2 acres wll have soil salvaged.

Appendix VII-5, Figure 3 is the soils map of the proposed disturbed area and surrounding lease area. Map Units are identified and described in the narrative. Soil profile descriptions are found in Appendix B. Laboratory analysis is found in Appendix C. Profile photographs are found in Appendix D and images of profile boxes are in Appendix E. The survey provides an estimate for the average soil salvage depth by map unit, taking into consideration the characteristics of each component of the map unit.

Table 17 of Appendix VII-5 describes eleven major soil types in the proposed Emery 2 Expansion disturbed area. The soil types are present to varying degrees in the ten mapped soil units shown on Figure 3 within the proposed disturbed boundary.

For each of the eleven soil types, Table 17 of Appendix VII-5 gives the typifying profile for each type for easy reference. The table provides the topsoil and subsoil salvage depths based on the typifying profile and its limitations.

Deficiencies Details:

R645-301-121.100, Plate VII-1 Soil Map requires updated surface distrubance information in the legend. Appendix VII-5 Figure 3 Emery 2 Mine Order II Soil Survey Map requires the disturbed area boundary.

pburton

Land Use Resource Information

Analysis:

The information in the application meets the State of Utah R645 requirements for Land Use Resource Information.

Chapter III, Page 2, Table III-1 includes the land use (Grazing Wildlife) and permit acreage (29 acres) for the Emery 2 expansion. Table III-2 includes the disturbed area acreage for the expansion (10.3 acres).

jhelfric

Hydro Baseline Information

Analysis:

The amendment meets the State of Utah R645 requirements for Baseline Information.

The proposed mine expansion is located within the currently approved area of hydrologic evaluation as shown on Plate VI-4, Ground Water Monitoring Well and Surface Water Monitoring Site Location Map. The proposed underground mine workings are contained within this area. As a result, the historic and current hydrologic monitoring data are applicable in characterizing the ground and surface water systems both within and adjacent to the proposed mine expansion.

The proposed mine expansion is located south of the existing underground mine workings with the associated surface facilities located approximately ¼ mile southwest of the current Emery Deep mine's surface facilities.

The Permittee has collected surface water monitoring data at locations both above and below the confluence of Christiansen Wash and Quitchupah Creek. Surface water monitoring location SWMS-3 is located below the confluence of these two drainages and has been monitored quarterly since 1989. Surface Water monitoring location SWMS-4 is located on Quitchupah Creek above the confluence with Christiansen Wash. Quarterly monitoring data has been collected at this site since 1989. Additionally, surface water monitoring location SWMS-5 (located on Christiansen Wash above the confluence with Quithupah Creek) has been monitored quarterly since 1989.

A small unnamed channel is located within the proposed surface disturbance. Approximately 1,500 linear feet of the channel will be covered by a constructed pad in the bottom of the canyon. The unnamed channel drains a watershed of approximately 1/3 of a square mile and is tributary to Quitchupah Creek. The unnamed channel enters Quitchupah Creek approximately 1,500 downstream of the confluence with Christiansen Wash. The amendment provides a characterization of the unnamed channel in Appendix VI-22, Baseline Investigation of Unnamed Ephemeral Wash Affected by Emery 2 Surface Facilities (drainage report). The drainage report was prepared by JBR Environmental Consultants Inc. (the consultants).

In evaluating the nature of the unnamed channel, the consultant evaluated topographic mapping, the local geology and groundwater information, aerial photography and the published soil survey of the area. Topographic mapping was utilized to delineate the contributing watershed area. The geologic and aforementioned groundwater data was utilized to evaluate the potential of surface and groundwater interaction. Aerial photography was utilized to evaluate the presence/absence of riparian vegetation. The soil survey was used to evaluate the potential presence of hydric soils. Additionally, the consultant performed a thorough field survey of the entire drainage.

The report documents that the unnamed channel "has no diversions, irrigation, or mining related flow contributions, or other channel modifications". Additionally, it was determined that the channel and associated watershed area does not contain water rights to either ground or surface water.

In 1979 and 1980, a comprehensive spring and seep survey was conducted within one mile of the currently approved Emery Deep Mine permit boundary (including the unnamed channel). No seeps and springs were identified during that survey within the unnamed channel or its contributing watershed. Groundwater data collected from monitoring well AA as well as the numerous other monitoring wells historically and actively monitored provides information as to the groundwater characteristics in the proposed mine expansion area as well as within the permit and adjacent area. Groundwater in the

Emery Deep Mine area is confined within three zones, known as the upper, middle and lower Ferron Sandstone. Historically, the potentiometric surface of these sandstone units has been above the ground surface over much of the area. However; the overlying Mancos Shale prevent the groundwater from discharging to the surface in the majority of the permit and adjacent area, including the proposed mine expansion. As indicated above, the lack of any identifiable springs and seeps in the area of the proposed mine expansion would indicate that the unnamed channel does not receive recharge from groundwater sources, but rather only produces flow during precipitation events and snow melt during the spring.

Additionally, the Natural Resources Conservation Service soil survey of 2009 indicates that the water table in and adjacent to the unnamed channel is more than 200 centimeters below ground surface and that there are no hydric soils present along the channel indicative of a groundwater source. The Permittee hired Long Resource Consultants in the fall of 2009 to conduct an Order II soil survey of the proposed mine expansion area. This detailed soil survey confirmed the absence of any hydric soils along the unnamed channel.

The vegetation present within and adjacent to the proposed mine expansion is typical of the general area of the Emery Deep Mine: pinyon-juniper and desert shrub communities. The density of these vegetative communities is sparse primarily due to the soil type, exposed bedrock and climate of the area. The climate in the area is characterized as semiarid to arid with an average annual precipitation rate of 7 to 8 inches. Variability of rainfall has been documented with years of much higher than average precipitation but also with periods of drought in which less than one inch of precipitation have been recorded.

The contributing watershed to the unnamed channel is small (less than 250 acres). With such a small contributing watershed and the semi-arid to arid climate, it's clear that sustained streamflow cannot be supported from direct precipitation/snow melt alone. Sustained flow would have to thus be supported by groundwater that is recharged from outside the watershed boundary.

The aforementioned data and reports strongly support the characterization of the unnamed channel as ephemeral in nature.

Ground water monitoring well AA provides abundant baseline information. Monitoring well AA has four completions with screened intervals within the Blue Gate Shale (AA-B), the Lower Ferron Sandston (AA-L), the Middle Ferron Sandstone (AA-M) and the Upper Ferron Sandstone (AA-U). Historical data from all four of these well completions dates back to 1980. The wells were monitored quarterly from 1993 until 2012. Monitoring of these wells was curtailed in 2012 due to lack of any mining activity. However; the numerous years of quarterly data provide ample baseline information to characterize the ground water systems in the aforementioned geologic units. The Permittee has again begun quarterly monitoring of these wells. Monitoring well AA is located directly above the proposed mine workings.

The data from monitoring well AA as well as from monitoring well Muddy #1 indicate that the water levels in the upper Ferron Sandstone has remained essentially unchanged for several years. The data from these two wells indicates that the potentiometric surface within the Upper Ferron Sandstone is located at approximately 5,890 feet at the location of the Emery No. 2 Mine portal. This elevation is approximately 40â€™ below the planned elevation of the mine floor at the portal.

Numerical and analytical groundwater modeling was conducted in order to assess the probable hydrologic consequences of mining in the permit area, including the proposed mine expansion. A discussion of the modeling is provided in Section VI.2.8 of the MRP.

schriste

Probable Hydrologic Consequences Determination

Analysis:

The amendment does not meet the State of Utah R645 requirements for Probable Hydrologic Consequences Determination (PHC).

The Permittee has revised the Probable Hydrologic Consequences Determination section of the approved MRP (See Section VI.2.8.3). The mine plan for the expansion area does not anticipate full extraction of the coal accessed by the Emery 2 portal; therefore an evaluation of potential impacts to hydrologic resources as the result of planned subsidence is not applicable at this time. If and when the Permittee determines that secondary mining (i.e. planned subsidence) is to be conducted, a re-evaluation of the PHC will be required. The proposed mine expansion is located within the area that has previously been evaluated for hydrologic resources (See Plate VI-4, Ground Water Monitoring Well and Surface Water Monitoring Site Location Map).

Coal in the Emery Deep Mine and proposed expansion is located in the Ferron Sandstone Member (upper, middle and

lower units) of the Mancos Shale. As the mine encounters ground water, the flow patterns within the Ferron Sandstone are altered. Ongoing water monitoring has shown significant declines in several monitoring wells completed primarily within the Upper Ferron Sandstone. In order to evaluate the extent of drawdown as a result of mining activity in the Ferron Sandstone, the Permittee has performed several analyses including a mass balance approach model, MODFLO modeling analyses as was the Hantush equation which assumes the Ferron Sandstone aquifer to be homogenous, isotropic and pumped at a constant rate.

Based upon the hydrogeologic analyses and data presented in Chapter VI, it's clear that mining activity within the Ferron Sandstone produces a decline in water level and alters flow direction. However; the modeling results and supporting data provided indicate that post-mining water levels will gradually return to pre-mining conditions once pumping of the underground mine workings cease. It follows that as groundwater levels return to approximate pre-mining elevations, the pre-mining flow directions will also be re-established.

Impacts to surface water quantity and quality as a result of mining activity in the immediate area of the proposed expansion area are considered to be minimal. The nature of the unnamed wash in which the Emery No. 2 Mine facility is to be constructed is ephemeral and as such only flows sporadically in response to local, high-intensity precipitation events. The surface drainage system for the proposed expansion has been designed to prevent impacts to hydrologic resources by utilizing a storm water conveyance system that includes berms, catch basins, culverts, ditches, swales and sedimentation ponds. The diversion ditches will route runoff from the disturbed area to existing sedimentation pond 3. Pond 3 is permitted as an outfall under the State of Utah Division of Water Quality's Utah Pollutant Discharge Elimination System Permit (#UT0022616). Additionally, the drainage features of the conveyance system meet the design standards of the State of Utah R645 coal mining rules. The drainage system has been designed to prevent additional suspended solids from entering the downgradient undisturbed drainage.

On page VI-21 of the amendment, the Permittee discusses how until sufficient groundwater is encountered in the mine, "operational water will be obtained from a temporary right to divert water from Quitchupah Creek or by leasing water from a user with an existing right on Quitchupah Creek". In order to evaluate the potential for impacts to State-appropriated water supplies, the Permittee must provide documentation that water rights have been obtained to facilitate the mining operation.

Plate IV-2, UG Operations Plan depicts mining activity occurring in areas where alluvial valley floors (AVF) have been previously identified within the approved Mining and Reclamation Plan (MRP) in Chapter XI. The PHC must be revised to address whether the potential for the mining activity, as depicted on Plate IV-2, could interrupt, discontinue or preclude farming on the identified AVF's shown on Plate XI-1, Alluvial Valley Floor and in Chapter XI.

Deficiencies Details:

The amendment does not meet the State of Utah R645 requirements for Probable Hydrologic Consequences Determination. The following deficiencies must be addressed prior to final approval:

R645-301-728.350: The Permittee must provide documentation that sufficient water rights have been obtained to facilitate the mining operation during operation. Page VI-21 discusses how a temporary right to divert water from Quitchupah Creek or leasing water from a user with an existing right on Quitchupah Creek will be required in order to facilitate the initiation of mining operations. In order to evaluate the potential for impacts to State-appropriated water, the Division must confirm that sufficient water rights have been obtained for the mining operation prior to final approval of the amendment.

R645-301-728, -728.340: The PHC must be revised to address whether the mining activity, as depicted on Plate IV-2, could interrupt, discontinue or preclude farming on the identified AVF's shown on Plate XI-1, Alluvial Valley Floor and discussed in Chapter XI.

schriste

Maps Existing Structures and Facilities

Analysis:

The amendment meets the State of Utah R645 requirements for Existing Structures and Facilities Maps.

The amendment meets the requirements of R645-301-521.120 which require a map clearly showing the location of all buildings in and within a 1000 ft of the proposed permit area, along with identifying the current use of said building. The proposed additional 29 acres is located southwest of the current main facility operations and no new additional existing structures are located within the expanded buffer area.

cparker

Maps Existing Surface Configuration

Analysis:

The amendment meets the State of Utah R645 requirements for Existing Surface Configuration Maps.

The amendment meets the requirements of R645-301-521.150 as it includes a drawing or plate that clearly calls out the existing surface on Plate II-1. The majority of the construction takes place within a canyon with one road extending up out of the canyon to reach the existing substation above.

cparker

Maps Mine Working

Analysis:

The amendment meets the State of Utah R645 requirements for Mine Workings Maps.

The amendment meets the requirement of R645-301-521.140 which require maps that clearly show all mine plans. The Permittee provided an updated Plate IV-2 showing the proposed expanded underground mining operations.

cparker

Maps Surface and Subsurface Manmade Features

Analysis:

The amendment meets the State of Utah R645 requirements for preexisting Surface and Subsurface Manmade features maps.

The amendment meets the requirement of R645-301-521.122 as it includes a drawing or plate that clearly calls out the existing surface and subsurface man made features within, passing through, or passing over the permit area. R645-301-521.120 through-521.125 requires maps to clearly show existing surface and subsurface facilities. The proposed additional 29 acres is located southwest of the current main facility operations and no new additional existing structures are located within the expanded buffer area.

cparker

Operation Plan

Mining Operations and Facilities

Analysis:

The amendment meets all the State of Utah R645 requirements for Mining Operations and Facilities.

The amendment narrative in Chapter IV meets the requirements of R645-301-523, -526, and 528 by including anticipated annual and total production of coal by tonnage, method of coal mining, engineering techniques, and major equipment to be used for all aspects of those operations proposed to be conducted during the life in regards to Emery 2 within the narrative. The Emery 2 mine will consist of a 6 or 7 entry main system. The mine is planned to production 1.4 million tons per year with three continuous miner sections.

The amendment narrative in Chapter II pages 17d through 17i meets the requirements of R645-301-523, -526, and 528 by including a description of the mining operation. The amendment includes the phase II of the existing Emery operations that includes an additional 29 acres for the new portal area via a boxcut, road, and conveyor system. Of the new additional 29 acres the Permittee states that only 10.3 acres will be disturbed by mining operations. The amendment includes the addition of several mining operations facilities: Conveyor 2 expanded, Conveyor 1, Boxcut three entry portals, Undisturbed culvert UC-1, Undisturbed culvert UC-2, 100,000 gallon water tank, ventilation shaft, powerlines, and access roads. All facilities can be seen on Plate II-1. Support facilities such as the powerlines and water tanks are discussed in detail under Support Facilities Technical Analysis. Review of the conveyor system is located under the Other Transportation Technical Analysis.

The proposed Emery 2 box cut portals will be a three entry designed similar to the 4th East box cut portals. The majority of the fill excavated during the development of the box cut will be used as fill to establish grade for the support system for the conveyors and roads. Excess material from the boxcut will be stockpiled for reclamation, approximately 89,000 CY. Narrative details that the stockpile will be located at the site of the Coal Stockpile area on Plate II-1. The portals will be accessed by a ramp with a 10% grade from the surface. Each of the three entries will be eight feet high by 14 feet wide and driven on 45 foot centers. The undisturbed drainage will be diverted around and under the new facilities by culvert UC-1 and UC-2 for 1560 feet to Quitchupah Creek, map codes e10 and e11 respectively on Plate II-1. A 16 foot ventilation shaft developed through raise-bore, is proposed to be located west of the Emery 2 portals boxcut to be used for mine ventilation. The shaft will be approximately 120 feet in depth and have the previous 4th east portal ventilation fan and housing constructed over the shaft. Four 4-inc boreholes will be installed near the ventilation shaft to provide access for the water and power to the mine. Disturbed drained from around the facilities at the Emery 2 portal area will report to Pond 3.

cparker

Existing Structures

Analysis:

The amendment meets the State of Utah R645 requirements for Existing Structures.

The amendment meets the requirements of R645-301-526 by providing updated information to include the discussion of the existing buildings of in Chapter II. The existing structures amended within this amended includes expansions to Conveyor 2 for the phase I of the expanded operations. The condition of the existing structures used at the mine is up to date per the previous amendment to detail the condition of all buildings at the site.

cparker

Relocation or Use of Public Roads

Analysis:

The amendment meets the State of Utah R645 requirements for the Relocation or Use of Public Roads.

The amendment meets the requirements of R645-301-521.133 due to information detailing measure to be used such as a general mining method that will be employed under or within 100 ft of public roads to protect interest of the public. No public road relocations are proposed within the permit area, per Chapter 2 page 18.

cparker

Air Pollution Control Plan

Analysis:

The amendment does not meet the Air Pollution Control Plan requirements of the State of Utah R645 rules.

R645-301-420, -422 require that coal mining and reclamation operations will be conducted in compliance with the requirements of the Clean Air Act and any other applicable Utah or federal statutes and regulations containing air quality standards. Additionally, the amendment must contain a description of coordination and compliance efforts which have been undertaken by the applicant with the Utah Division of Air Quality.

Chapter X of the approved Mining and Reclamation Plan (MRP) contains the air quality information for the Emery Deep Mine. The amendment does not provide any information as to the revised Approval Order (AO) or the coordination/compliance efforts which have been undertaken.

The Permittee must update Chapter X, Part C: Air Quality to reflect the mine expansion. The update must include the revised Approval Order (AO) issued from the State of Utah Division of Air Quality as well as revisions to the supporting text/narrative found in Chapter X Part C relative to the mine expansion.

Deficiencies Details:

The amendment does not meet the State of Utah R645 requirements for Air Pollution Control Plan. The following deficiency must be addressed prior to final approval:

R645-301-420, -422: The Permittee must update Chapter X, Part C: Air Quality to reflect the mine expansion. The update must include the revised Approval Order (AO) issued from the State of Utah Division of Air Quality as well as revisions to the supporting text/narrative found in Chapter X Part C relative to the mine expansion.

schriste

Coal Recovery

Analysis:

The amendment does not meet the State of Utah R645 requirements for Coal Recovery.

The amendment does not meet the requirements of R645-301-522 due to a lack of Right of Entry for the Federal Coal leases in mining years three through five. The amendment did inlucde a discussion of the measures to be used to maximize the use and conservation of the coal resources in regards to the new mine workings associated with Emery 2. Chapter IV was amended to include the Emery 2 expansion to mine the same portion of the reserve that were intended to be mined from the Emery main portals and the 4th east portals. This narrative is an acceptable description of measures to be used to maximize the use and conservation of the coal resource. The description will assure that coal mining and reclamation operations are conducted so as to maximize the utilization and conservation of the coal, while utilizing the best technology currently available to maintain environmental integrity, so that re affecting the land in the future through coal mining and reclamation operations is minimized. The mine will utilize three continuous miners and has a planned production of 1.4 million tons per year. Approximately 8,500 tons of coal will be excavated from the portal area during portal development.

Deficiencies Details:

R645-301-522: The Permittee will address Technical deficiencies under Right of Entry regarding having an approved R2P2 plan in place for the projected mining within the permit term.

cparker

Subsidence Control Plan Renewable Resource

Analysis:

The amendment meets the State of Utah R645-301-525.130 requirements for Subsidence Control Plan with a renewable resources survey.

The requirements of R645-301-525.130 are met in the amendment as the Permittee presented a clear subsidence plan for protected areas in Chapter V Part B.

cparker

Subsidence Control Plan Subsidence

Analysis:

The amendment meets the State of Utah R645-301-525.400 requirements for Subsidence Control Plan.

The requirements of R645-301-525.400 are met in the amendment as the Permittee presented a clear subsidence plan for protected areas in Chapter V Part B. The underground pillar layout will be designed to provide buffer zones of at least 100 ftt on either side of Quitchupah Creek and Christiansen Wash.

cparker

Subsidence Control Plan Performance STD

Analysis:

The amendment meets the State of Utah R645-301-525.requirements for Performance Standards for Subsidence Control.

The amendment does not meet the requirements of R645-301-525.300 due to a no changes in the discussion that addresses the performance standards for subsidence in the subsidence control plan located in Chapter V part B.

cparker

Subsidence Control Plan Notification

Analysis:

The amendment meets the State of Utah R645-301-525.700 requirements for Public Notice of Proposed Mining.

The requirements of R645-301-525.700 are met in the amendment as the Permittee presented a clear subsidence plan for protected areas that includes the appropriate notification at least six months prior to mining.

cparker

Subsidence Control Plan Slides and Other Damage

Analysis:

The amendment meets the State of Utah R645 requirements for Slides and Other Damage.

The amendment meets the requirements of R645-301-515.100 with procedures already described within the existing MRP detailing the emergency contact procedures in the event of a slide. A licensed contractor will be secured for the construction blasting plan as detailed in Appendix IV-12.

cparker

Topsoil and Subsoil

Analysis:

Analysis:
The application does not meet the requirements of R645-301-230 Soils Operation Plan.

MRP Chap II p. 23 and Chapter VII describes soil handling prior to surface development. Please describe the method to be used to remove the topsoil from the disturbed area prior to blasting is not described and is difficult to envision for the extremely bouldery drainage.

Appendix VII-5 Tables 17, 18 and 20 (the Soil Survey) document the potential for salvaging 32,025 CY from 30.4 acres. Chap III, p. 21a describes subsoil volume of 7,628 CY and a topsoil volume of 10,869 CY from the 10 acre disturbed area. (Table 20 should support this estimation.) Topsoil will be stored in topsoil pile T-2 and will be bermed and seeded (Chap IV, p. 8c). the plan should describe the dimensions of the stockpile and reference the interim seed mix to be used.

Excess overburden cut from the box cut/conveyor construction (114,350 CY) will be stored at the Waste Rock Disposal Site (WRDS) during operations. Excess cut from the airshaft (893 bcy X 1.30 swell factor = 1,161 CY) will be stored at the WRDS too. Excess cut (topsoil and subsoil) from the Section 7 roadway (4,699 CY) will be stored in berms along the roadway (Chap IV p. 8c and Plate IV-8c). At the 4th East Portal, it is stated that all topsoil used as berms will be signed (Chap IV, p7a), similarly signs are required by R645-301-521.270 on topsoil used as berms at Emery 2. The plan should describe a method of stabilizing the spoil during operations.

Deficiencies Details:

Deficiencies:
R645-301-231.100, Please adjust Table 10 to estimate a salvage volume from the 10.3 acre disturbed area and show the disturbed area boundary on Figure 3 of Appendix VII-5.

R645-301-232.600, Describe the method to be used to salvage topsoil prior to blasting in the drainage. Describe the method to be used to remove the topsoil from the slopes and drainage from the 10 acre disturbed area.

R645-301-231.400 and R645-301-234, Provide a narrative of the construction and maintenance of topsoil storage areas (dimensions and slope) and berms (height, length, slope) and reference the seed mix to be used on the topsoil pile and berms.

R645-301-521.165, Provide cross-sections of the topsoil pile T-2.

R645-301-521.270 Signs are required on all topsoil piles, even topsoil stored in berms at Emery 2.

pburton

Road Systems Classification

Analysis:

The amendment meets the State of Utah R645 requirements for Road Systems and Other Transportation Facilities.

The amendment meets the requirements of R645-301-527.100 by classify each road as primary or ancillary. Three new primary roads will be associated with the Emery 2 portals. Section 5 is a primary access and haul road connecting Section 3 and Section 6 primary roads around the radial stacker. Section 6 is a primary access road connecting with Section 5 to provide access to the ramp down into the portal area. Section 7 is a primary road located behind the radial stacker for access above the portals and to the mine substation.

cparker

Road System Plans and Drawings

Analysis:

The amendment meets the State of Utah R645 requirements for Transportation Plans and Drawings.

The amendment meets the requirements of R645-301-534.100 by submitting plans and drawing for each road to be maintained within the permit area. Plate IV- 8 a/b and Plate IV-8 a/c contain the plan and profile views for the three new primary roads associated with Emery 2. The plans shows drainage to be controlled by ditches on either side of the roads and include cut fill volumes associated with the roads. As-built drawings will be provided upon completion of construction.

cparker

Road System Performance Standards

Analysis:

The amendment meets the State of Utah R645 requirements for Performance Standards of roads within the permit area.

The amendment meets the requirements of R645-301-534.150 by submitting plans and drawing for each road to be maintained within the permit area to prevent and control erosion. The reference drawings for the roads are shown on Plates IV-8 a/b and IV-8 a/c with a commitment to provide as built drawings and certification upon the completion of construction, Chapter III page 10b. All road drainage will be conveyed to Pond 3 for treatment before being discharged per IV-21 road drainage design. Dust suppressant will be utilized to control fugitive dust, refer to Appendix X.C-3 in Chapter X for more details.

cparker

Road System Certification

Analysis:

The amendment meets the State of Utah R645 requirements for Primary Road Certification

The amendment meets the requirements of R645-301-521.170 or R645-301527.200 by providing a detailed description of road Section 5 through 7 in Appendix IV-7-H. The narrative states the location of each road, use, and submitted plans and drawing for each road to be prepared by or under the direction of and certified by a qualified registered professional engineer. The expansion includes the addition of three new primary roads to access the Emery 2 portal site including: haul road, portal access road, and ventilation fan access road. The reference drawings for the roads are shown on Plates IV-8 a/b and IV-8 a/c with a commitment to provide as built drawings and certification upon the completion of construction, Chapter III page 10b. The provided drawings meet the requirements but the amendment is missing the detailed narrative. The roads will be constructed on either bedrock or granular material.

cparker

Road System Other Transportation Facilities

Analysis:

The amendment meets the State of Utah R645 requirements for Other Transportation Facilities.

The amendment meets the requirements of R645-301-521.170 by submitting plans and drawing for each road, conveyor, and rail system to be used within the proposed permit area. Conveyor 2 expansion includes a 315 feet section of 60 inch conveyor at grade and 365 feet portion elevation and supported on metal framework with two concrete pads. The entire 680 feet of conveyor 2 will be supported by various concrete foots totaling 216 CY of concrete, see Plate II-1 map code E7p2. Conveyor 1 is a 700 foot long 60 inch conveyor system to convey coal from the mine portals to Conveyor 2. A section of the conveyor is elevated and supported by a total of 146 CY of concrete piers/pads. The conveyor includes a covers and water sprays to control dust, as shown on Plate II-1.

cparker

Road System Other Transportation Facilities

Analysis:

The amendment meets the State of Utah R645 requirements for Road Systems and Other Transportation Facilities relative to hydrology.

The mine is accessed via public road that is owned and maintained by Emery County. Drainage from this road is the responsibility of Emery County. The roads and associated drainage within the disturbed areas is the responsibility of the Permittee. The design and drainage of these roads is presented in Chapter IV, Appendix IV-7 and Appendix VI-21.

The existing Section 3 Mine Yard Road is proposed to be extended as Sections 5 and 6 to facilitate access to the mine expansion area. The Section 5 and 6 portions of the road are identified in the amendment as primary roads. Plate IV-8a and Plate IV-8b provide the plan, profile and cross-sections for the Section 5 and Section 6 portions of the proposed mine expansion access road. A Section 7 road will also be a primary road that will be utilized to access the ventilation fan and water tank that will be located above the boxcut. Plate IV-8c provides the detailed plan, profile and cross-sectional view for the Section 7 road. The proposed road segments have been designed to control or minimize erosion. All storm water runoff generated from the proposed roads will report to existing Pond 3. The proposed road segments in the mine expansion will be reclaimed once coal mining activity has ended.

Plate VI-11B, Emery Drainage Details provides the design drawings for: riprap apron detail, typical cash basin, silt fence and wattle detail as well as the culvert inlet/outlet details.

schriste

Spoil Waste Disposals of Noncoal Mine Wastes

Analysis:

The amendment meets the State of Utah R645 requirements for Spoil and Waste Materials.

The amendment meets the standards or R645-301-528.330 due to not changes in the MRP text noncoal mine waste disposal located in the current MRP. All noncoal mine waste will be disposed of at the Emery county landfill, as described in the MRP Chapter II.

cparker

Spoil Waste Coal Mine Waste

Analysis:

The amendment meets the State of Utah R645 requirements for Coal Mine Waste.

The amendment meets the standards or R645-301-528.320 due to not changes in the MRP text. The Permittee has an approved coal mine wate pile north of the main facilities, shown on Plate II-1. The Permittee stated in Chapter IV page 8c that they anticipated very little refuse to be generated through the portal development and that there is no out of seam dilution expected to be generated.

cparker

Spoil Waste Burning and Burned Waste Utilization

Analysis:

The amendment meets the State of Utah R645-301-513.800 and R645-301-528.323 requirements due to no changes in the MRP text that no waste will be burned within the Permit area.

cparker

Spoil Waste Coal Processing Waste to Abandoned

Analysis:

The amendment meets the State of Utah R645 requirements for the approved return of coal development into abandoned underground workings.

The amendment meets the standards or R645-301-528.340 due to no changes in the MRP text. The Permittee stated in Chapter IV page 8c that they anticipated very little refuse to be generated through the portal development and that there is no out of seam dilution expected to be generated.

cparker

Spoil Waste Excess Spoil

Analysis:

The amendment does not meet the State of Utah R645 requirements for excess spoil.

The amendment does not meet the requirements of R645-301-512.210, R645-301-514.100, R645-301-521.143, R645-301-528, and R645-301-535.100 as there the MRP was amended to include engineered designs of the 114,350 CY of Excess spoil during operations and the final 44,000 CY at final Reclamation. The Permittee appears to reference Appendix IV-13 contains information but the appendix was not included within the amendment.

Deficiencies Details:

R645-301-512.210, R645-301-514.100, R645-301-521.143, R645-301-528, and R645-301-535.100: The Permittee will include engineered designs of the 114,350 CY of Excess spoil during operations and the final 44,000 CY at final Reclamation.

cparker

Hydrologic General

Analysis:

The amendment does not meet the State of Utah R645 General Hydrologic Information requirements.

Appendix VI-21, Emery 2 Surface Facility Hydrologic Design Calculations provides the design calculations and supporting narrative as to how the mine expansion will safely convey storm water runoff and prevent additional contributions of suspended solids to adjacent drainages.

The Permittee utilized HydroCAD version 10.0 to determine storm water discharge volumes for the area. Curve numbers were determined based on documented vegetation and soil conditions obtained from Mt. Nebo Scientific and Long Resource Consultants respectively. Design storm magnitudes were determined from the National Oceanic and Atmospheric Administration (NOAA) ATLAS 14, Point Precipitation Frequency Estimates web page. The resulting data is provided in Attachment A of Appendix XI-21.

Upon review of the drainage design information, it's unclear as to how some of the proposed hydrologic features are routed/connected. Discrepancies between Plate XI-10E, Plate II-1 and the routing diagram provided in Appendix XI-21 make it difficult to readily discern the proposed drainage plan.

The Permittee must revise discrepancies between Plates XI-10E, Plate II-1 and the proposed routing diagram provided in

Appendix XI-21. Upon review of the drainage design information, it's unclear as to how some of the proposed hydrologic features are routed/connected. Discrepancies between Plate XI-10E, Plate II-1 and the routing diagram provided in Appendix XI-21 make it difficult to readily discern the proposed drainage plan.
For example, the routing diagram depicts disturbed drainage ditch DD-1 as reporting to a sump that then reports to disturbed ditch DD-2 and then to Pond 3. How the water is collected from DD-1 and then routed to the sump is not depicted on Plate XI-10E or discussed in Appendix XI-21. Catch basin 4 (CB-4) does not appear to be depicted on Plate XI-10E. Another example that requires clarification is the routing of UB-1 to the catch basin and how the catch basin is then tied into UC-1. Plate XI-10E does not appear to show this routing. A more simplified figure that depicts all of the proposed drainage features is needed. The Permittee must depict flow arrows on the various ditches, berms, culverts etc. in order to provide a clear and concise presentation as to the surface drainage conveyance system proposed for the mine expansion. Additionally, the Permittee must revise Appendix XI-21 with a comprehensive narrative that describes the routing of the surface drainage system. The references in the narrative must correspond to Plate II-1 and Plate VI-10E.

Deficiencies Details:

The amendment does not meet the State of Utah R645 requirements for Hydrologic Information. The following deficiencies must be addressed prior to final approval:

R645-301-731: The Permittee must revise discrepancies between Plates XI-10E, Plate II-1 and the proposed routing diagram provided in Appendix XI-21. Upon review of the drainage design information, it's unclear as to how some of the proposed hydrologic features are routed/connected. Discrepancies between Plate XI-10E, Plate II-1 and the routing diagram provided in Appendix XI-21 make it difficult to readily discern the proposed drainage plan. For example, the routing diagram depicts disturbed drainage ditch DD-1 as reporting to a sump that then reports to disturbed ditch DD-2 and then to Pond 3. How the water is collected from DD-1 and then routed to the sump is not depicted on Plate XI-10E or discussed in Appendix XI-21. Catch basin 4 (CB-4) does not appear to be depicted on Plate XI-10E. A more simplified figure that depicts all of the proposed drainage features is needed. The Permittee must depict flow arrows on the various ditches, berms, culverts etc. in order to provide a clear and concise presentation as to the surface drainage conveyance system proposed for the mine expansion. Additionally, the Permittee must revise Appendix XI-21 with a comprehensive narrative that describes the routing of the surface drainage system. The references in the narrative must correspond to Plate II-1 and Plate VI-10E.

schriste

Hydrologic Ground Water Monitoring

Analysis:

The amendment does not meet the State of Utah R645 requirements for Groundwater Monitoring.

Table VI-17 must be revised to show that monitoring will be conducted in all four completions of monitoring well AA. Table VI-17 shows that monitoring well "AA" will be monitored quarterly for water level. However; there are four completions within monitoring well AA that must be monitored (e.g. AA-B, AA-U, AA-M and AA-L). The Permittee must revise Table VI-17 to show that quarterly monitoring will be conducted in all four completions within monitoring well AA (i.e. AA-B, AA-U, AA-M and AA-L). The completions within the Bluegate Shale (AA-B), Upper Ferron Sandstone (AA-U), Middle Ferron Sandstone (AA-M) and Lower Ferron Sandstone (AA-L) must be monitored quarterly.

Deficiencies Details:

The amendment does not meet the State of Utah R645 requirements for Hydrologic Information. The following deficiencies must be addressed prior to final approval:

R645-301-731.210: The Permittee must revise Table VI-17 to show that quarterly monitoring will be conducted in all four completions within monitoring well AA (i.e. AA-B, AA-U, AA-M and AA-L). The four completions within the Bluegate Shale (AA-B), Upper Ferron Sandstone (AA-U), Middle Ferron Sandstone (AA-M) and Lower Ferron Sandstone (AA-L) must be monitored quarterly.

schriste

Hydro Surface Water Monitoring

Analysis:

The amendment does not meet the State of Utah R645 requirements for Groundwater Monitoring.

The Permittee must revise Table VI-17 to identify the two additional surface water monitoring points on the unnamed channel within the proposed expansion area. Surface water monitoring sites SWMS-11 and SWMS-12 are depicted on Plate VI-4; however, they are not identified in Table VI-17. Quarterly monitoring of these two surface water sites (above and below the proposed expansion) is required.

Deficiencies Details:

The amendment does not meet the State of Utah R645 requirements for Hydrologic Information. The following deficiencies must be addressed prior to final approval:

R645-301-731.220: The Permittee must revise Table VI-17 to identify the two additional surface water monitoring points on the unnamed channel within the proposed expansion area. Surface water monitoring sites SWMS-11 and SWMS-12 are depicted on Plate VI-4; however, they are not identified in Table VI-17. Quarterly monitoring of these two surface water sites (above and below the proposed expansion) is required.

schriste

Hydrologic Water Quality Standards

Analysis:

The amendment meets the State of Utah R645 requirements for Water-Quality Standards and Effluent Limitations. The proposed drainage system for the mine expansion utilizes existing sedimentation Pond 003. Pond 003 is currently permitted under a Utah Division of Water Quality Utah Pollution Discharge Elimination System permit (UPDES #UT0022616).

schriste

Hydrologic Diversion Perennial and Intermitten

Analysis:

The amendment meets the State of Utah R645 requirements for Diversions: Perennial and Intermittent Streams.

Based on the design information and supporting calculations provided in Appendix VI-21, all diversions have been designed comply with R645-301-742.323. The disturbed berms (DB-1 thru DB-3), disturbed culvert (DC-1), disturbed drainage ditches (DD-1 thru DD-5) have been designed to safely convey the storm water runoff generated from a 10-year, 6-hour event.

Appendix VI-22, Baseline Investigation of Unnamed Ephemeral Wash Affected by Emery 2 Surface Facilities characterizes the unnamed drainage that lies within the proposed mine expansion area as ephemeral and draining an area less than one mile. However; the culverts that will route undisturbed drainage around the mine expansion (UC-1 and UC-2) have been designed to safely convey the runoff generated from a 100-year, 6-hour event, which exceeds the required design storm standard. Additionally, undisturbed berms have been designed to safely convey a 100-year, 6-hour precipitation event. In both instances, the required performance standard for these types of diversions has been exceeded.

schriste

Hydrologic Diversion Misc. Flows

Analysis:

The amendment does not meet the State of Utah R645 requirements for Diversions: Miscellaneous Flows.

The amendment proposes to utilize a swale to route disturbed storm water runoff to Pond 3. Upon review of the amendment, it does not appear that a design drawing has been provided as to how the swale will be constructed. The swale (identified as DS-1) was designed utilizing a 10-year, 6-hour precipitation event which exceeds the required design storm event of a 2-year, 6-hour event per R645-301-742.333.

The Permittee must revise the amendment with a detailed design drawing for how the proposed swale located in the north-east portion of the mine expansion will be constructed.

Deficiencies Details:

The amendment does not meet the State of Utah R645 requirements for Hydrologic Information. The following deficiencies must be addressed prior to final approval:

R645-301-731, -742.330: The Permittee must revise the amendment with a detailed design drawing for how the proposed swale located in the north-east portion of the mine expansion will be constructed.

schriste

Hydrologic Siltation General

Analysis:

The amendment does not meet the State of Utah R645 requirements for siltation structures.

On page VI-42 of the amendment, the Permittee discusses the utilization of siltation structures. The amendment states, "Temporary siltation structures such as silt fences and straw wattles will be installed during construction activities in areas that do not drain to an existing siltation structure...". R645-301-742.212 requires that siltation structures for an area will be "constructed before beginning any coal mining and reclamation operations...". The Permittee must provide a commitment in Sections VI.3.2.1 and VI.4.2.2 that siltation structures for areas that do not report to an existing siltation structure (i.e. sediment pond) will be installed prior to beginning construction of the mine expansion.

Deficiencies Details:

The amendment does not meet the State of Utah R645 requirements for Hydrologic Information. The following deficiencies must be addressed prior to final approval:

R645-301-742.212: The Permittee must provide a commitment in Sections VI.3.2.1 and VI.4.2.2 that siltation structures for areas that do not report to an existing siltation structure (i.e. sediment pond) will be installed prior to beginning construction of the mine expansion.

schriste

Hydrologic Siltation Sedimentation

Analysis:

The amendment does not meet the State of Utah R645 requirements for Siltation Structures: Sedimentation Ponds.

The drainage conveyance system will route and/or pump all disturbed drainage to existing Sediment Pond 3. Sediment Pond 3 was originally designed and approved to contain the runoff resulting from a 100-year, 6-hour event from a smaller drainage area that what will not contribute to the pond following the mine expansion. The Permittee has re-designed Pond 3 to contain and safely treat the runoff generated from a 10-year, 24-hour precipitation event as required per R645-301-742.220, and 221.33. As Pond 3 currently collects runoff only from the coal stockpile area, the pond will be enlarged to collect and treat runoff from the mine expansion area.

The stage-storage capacity for Pond 3 is provided in Table 3 of Appendix VI-21. On page 5 of Appendix VI-21, the Permittee states, "Sediment will be removed when 60% of the design sediment capacity (11,380 cubic feet) has accumulated (an elevation of approximately 5,905.15'). The Permittee must revise the design information of Sediment Pond 3 to include the installation of a sediment marker within the pond. Plate VI-15B, Pond 3 Modifications must be revised to show a sediment clean-out marker to be installed that will identify the 60% design sediment capacity. The sediment marker will facilitate the determination of when cleaning operations of Sediment Pond 3 must be initiated.

The amendment provides the design drawing of Sediment Pond 3 (Pond 3) on Plate VI-15B, Pond 3 Modifications. Upon review of the Plate VI-15B, the Permittee is proposing to utilize a single 42" CMP with an open top to serve as the spillway/discharge structure for Pond 3. R645-301-743.130 and -743.131 do not allow for the utilization of a single pipe to serve as both a primary and secondary spillway. R645-301-743.131 contemplates that the Division may approve a single spillway provided that it is an open channel of non-erodible construction. As such the proposed design for Pond 3 is found to be deficient.

Deficiencies Details:

The amendment does not meet the State of Utah R645 requirements for Siltation Structures: Sedimentation Ponds. The following deficiencies must be addressed prior to final approval:

R645-301-742.220, -742.221.36, -; The Permittee must revise the design information of Sediment Pond 3 to include the installation of a sediment marker within the pond. Plate VI-15B, Pond 3 Modifications must be revised to show a sediment clean-out marker to be installed that will identify the 60% design sediment capacity. The sediment marker will facilitate the determination of when cleaning operations of Sediment Pond 3 must be initiated.

R645-301-743.130, -743.131: The Permittee must revise the design information for Sediment Pond 3 to provide for the installation of a principal and emergency spillway or a single-open channel spill that meets the requirements of R645-301-743.131. Upon review of the Plate VI-15B, the Permittee is proposing to utilize a single 42" CMP with an open top to serve as the spillway/discharge structure for Pond 3. R645-301-743.130 and -743.131 do not allow for the utilization of a single pipe to serve as both a primary and secondary spillway. R645-301-743.131 contemplates that the Division may approve a single spillway provided that it is an open channel of non-erodible construction.

schriste

Support Facilites and Utility Installations

Analysis:

The amendment meets the State of Utah R645 requirements for Support Facilities and Utility Installations.

The amendment meets the requirements of R645-301-521.180 and -526 the require the description, plans, and drawing for each support facility to be constructed, used, or maintained within the proposed permit area. The amendment includes the addition of several mining operations facilities: a 100,000 gallon water tank, ventilation shaft, powerlines, and access roads. A 100,000 gallon water tank was disassembled from the 4th East Protal area and reassembled at the current location above the mine entrance portal wet of the boxcut. The tank measures 25 feet high by 26 feet in diameter. The tank rests on concrete footer with the interior of the tank resting on sand. Surface drainage around the tank reports to Pond 3 for treatment. An additional overhead power line, map code e14 on Plate II-1, will extend from the mine substation along the conveyor belt to the Emery 2 Portals and towards the ventilation fan. The powerline will be 3600 feet in length and have 18 power poles associated with it.

cparker

Signs and Markers

Analysis:

The amendment meets the State of Utah R645 requirements for Signs and Markers.

The amendment meets the requirements of R645-301-521.200 by the general discussion of signs to be placed around the entire Permit Boundary. Chapter IV page 8d states the perimeter berms are proposed to be constructed along the disturbance boundary in most areas. The berm will protect against disturbed runoff leaving the site prior to treatment.

cparker

Explosives General

Analysis:

The amendment meets all of the State of Utah R645 requirements for general Use of Explosives.

The amendment meets the requirements of R645-301-524 by updating the blasting plan of the MRP within the amendment in Appendix IV-12. The appendix includes a directly copy of the R645-301-524 blasting regulations along with the Permittee's response as to how the regulation will be met.

The R645-301-524.100 are met as the Permittee details how the certified blaster will comply with all blaster certification requirements. The Permittee committed to having a copy of the blaster's certification on file at the mine.

The R645-301-524.200 are met as the Permittee details that the a site specific blast design was attached to the MRP and included the required sketch of the drill pattern, delay periods, type and amount of explosives and location of any structures to be protected.

The R645-301-524.600 regulations are met as the Permittee details that the nearest dwelling is 1.7 miles away from the blast site and calculated that the maximum weight of any explosion will be no exceed 19,069 lbs. The Permittee committed

to comply with measured ground vibrations in the event the Division required such documentation. The Division does not anticipate that any measure will need to be documented at this time due to the remote location of the site. In the event any concern is expressed by the public the Division will require more detailed monitoring.

cparker

Explosives Preblasting Survey

Analysis:

The amendment does not meet the State of Utah R645 requirements for a Preblasting Survey.

The amendment does not meet the requirements of R645-301-524.300 by not including copies of waivers of landowners within one half mine of the permit area. The appendix should include copies of the notifications sent to the residents as well as the signed waivers of preblast surveys so that the Division has readily available copies. The Consol blasting plan did not meet the R645-301-524 regulations and does not exclude the current operations from meeting all R645-301-524.320 through R645-301-524.350. In addition the blasting is proposed within a new permit area that the original Consol may not have considered.

Deficiencies Details:

R645-301-524.300: The Permittee must provide a map showing the one half mile buffer area from the Permit Boundary, provide a copy of pre-blasting survey notifications, and provide copies of described waivers within the blasting plan.

cparker

Explosives General Performance Standards

Analysis:

The amendment meets the State of Utah R645 requirements for establishing General Performance Standards.

The R645-301-524.400 regulations are met met as the permittee details that the blasting schedule will be posted at the Emery Deep mine and copies sent weekly to local governments. The schedule is to blast Monday through Sunday between 8 am and 6 pm.

cparker

Explosives Blasting Signs Warnings Access Control

Analysis:

The amendment meets the State of Utah R645 requirements for Blasting Signs and Warnings

The amendment meets the requirements of R645-301-524.460 and -524.530 by detailing the how blasting signs will be conspicuously placed along the edge of the blasting area and all accessible entrance to the blasting area will be controlled within the blasting plan of the MRP.

cparker

Explosvies Control of Adverse Effects

Analysis:

The amendment meets the State of Utah R645 requirements for Blasting: Control of Adverse Effects

The amendment meets the requirements of R645-301-524.600 by detail the performance standards to prevent injury or damage to public or private property outside the permit area. The blast plan details that the nearest private building to the blast site is approximately 1.7 miles away and that no air blast impact is expected at the residence.

cparker

Explosives Records of Blasting Operations

Analysis:

The amendment meets the State of Utah R645 requirements for Records of Blasting Operations

The amendment meets the requirements of R645-301-524.700 by updating the narrative to describe the blasting record to be kept on site at the mine for three years and be made available upon request. A copy of the blasting records was included within the amendment.

cparker

Maps Affected Area

Analysis:

The amendment does not meet the State of Utah R645-301-521.100 requirements for Affected Area Maps.

The amendment does not meet the requirements of R645-301-521.100 through-521.130 by not updating all the relevant maps for the entire area shown on the mine plan as detailed on Plate II-1A Proposed Structures and Facilities Main Portal Area, Plate III-4 Main Portal Disturbance Areas, Plate III-8 Main Portal Area Post mining Topography, Plate V-1 Pres-subsidence Survey Structures and utilities, Plate V-2 Pres-subsidence Survey roadways, Plate V-3 Pres-subsidence Survey hydrology, Plate V-4 Pres-subsidence Survey veg, Plate V-5 Subsidence monitoring points and buffer zones, and Plate VI-6 Historic and Plan mining sequence.

Deficiencies Details:

R645-301-521.100: The Permittee will update the permit area on the following plates: Plate II-1A Proposed Structures and Facilities Main Portal Area, Plate III-4 Main Portal Disturbance Areas, Plate III-8 Main Portal Area Post mining Topography, Plate V-1 Pres-subsidence Survey Structures and utilities, Plate V-2 Pres-subsidence Survey roadways, Plate V-3 Pres-subsidence Survey hydrology, Plate V-4 Pres-subsidence Survey veg, Plate V-5 Subsidence monitoring points and buffer zones, and Plate VI-6 Historic and Plan mining sequence.

cparker

Maps Facilities

Analysis:

The amendment does not meet the State of Utah R645 requirements Mining Facilities Maps.

The amendment does not meet the requirements of R645-301-521.120 through-521.125 which require maps to clearly show existing surface and subsurface facilities. The amendment is missing a plate showing operations plan view and cross sections for new box cut portals similar to Plate IV-3b-1 and Plate IV-3b-2. The volumes describe in Table IV-1A can not be verified without a said cross sectional plate. The narrative mentions an appendix IV-13 that was not included within the amendment and could therefore not be considered for review.

Deficiencies Details:

R645-301-521.120 through-521.125: The Permittee shows projected mine workings beyond the approved Fee coal. The Permittee must address the deficiency in Right of Entry. The Permittee must also provide a plate showing operations plan view and cross sections for new box cut portals similar to Plate IV-3b-1 and Plate IV-3b-2. The Permittee will include the referenced Appendix IV-13.

cparker

Maps Facilities

Analysis:

The amendment does not meet the State of Utah R645 requirements for Mining Facilities Maps.

On Plate II-1, Structures and Facilities Main Portal Area, a 'Sediment Basin No. 1' is depicted in the southern portion of the boxcut. Plate XI-10, Surface Drainage Control Map does not depict 'Sediment Basin No. 1'. Additionally, Plate XI-10 depicts a 'Sump Discharge Location'. It's unclear as to what these two drainage features are. Upon discussions with the Permittee, the drainage plan will utilize a sump and/or catch basin to collect runoff that reports to the boxcut before pumping the captured flow into Pond 3. The Permittee must rectify the discrepancies between Plate II-1 and Plate XI-10 as to the

location and nature of the hydrologic feature that is intended for collection of storm water runoff that reports to the boxcut prior to it being pumped to Pond 3. Plate II-1 depicts a 'Sediment Basin No. 1' whereas Plate VI-10 depicts a 'Sump Discharge Location' in two different locations within the mine expansion area.

The Permittee must rectify discrepancies between Plate II-1 and Plate XI-10. In addition to the 'Sediment Basin No. 1' and 'Sump Discharge Location' discrepancy, it appears there are other discrepancies between the two plates. For example Plate II-1 does not appear to depict the extent of undisturbed berms that are depicted on Plate XI-10. The Permittee must reconcile these two maps to be consistent

The Permittee must revise Plate XI-10 to clearly depict the drainage control measures to be implemented. Due to the scale of the map, in several instances it's difficult to discern the extent/location of some of the proposed drainage features. For example, undisturbed berms UB-1, UB-2 and UB-3 do not appear to be delineated with a solid brown line. It's unclear as to the extent of disturbed drainage ditch five (DD-5). Does it run the entire extent of the NW extent of the proposed disturbed area boundary? Disturbed drainage ditch DD-4 does not appear to be depicted with a hatched blue line. It may be necessary to produce revise Plate XI-10 with fewer layers (e.g. remove the disturbed area boundary) and/or produce a separate watershed map so as to make it easier to review the distinct hydrologic design features.

Deficiencies Details:

The amendment does not meet the State of Utah R645 requirements for Mining Facilities Maps. The following deficiency must be addressed prior to final approval:

R645-301-731, -743.130 The Permittee must rectify the discrepancies between Plate II-1 and Plate XI-10 as to the location and nature of the hydrologic feature that is intended for collection of storm water runoff that reports to the boxcut prior to it being pumped to Pond 3. Plate II-1 depicts a 'Sediment Basin No. 1' whereas Plate VI-10 depicts a 'Sump Discharge Location' in two different locations within the mine expansion area.

R645-301-731, -743.130 The Permittee must rectify discrepancies between Plate II-1 and Plate XI-10. In addition to the 'Sediment Basin No. 1' and 'Sump Discharge Location' discrepancy, it appears there are other discrepancies between the two plates. For example Plate II-1 does not appear to depict the extent of undisturbed berms that are depicted on Plate XI-10E. Based on subsequent information provided by Permittee, hydrologic conveyance structures are missing from Plate XI-10E (e.g. CB-4). The Permittee must reconcile these two maps to be consistent with each other.

R645-301-731, -743.130 The Permittee must revise Plate XI-10 to clearly depict the drainage control measures to be implemented. Due to the scale of the map, in several instances it's difficult to discern the extent/location of some of the proposed drainage features. For example, undisturbed berms UB-1, UB-2 and UB-3 do not appear to be delineated with a solid brown line. It's unclear as to the extent of disturbed drainage ditch five (DD-5). Does it run the entire extent of the NW extent of the proposed disturbed area boundary? Disturbed drainage ditch DD-4 does not appear to be depicted with a hatched blue line. It may be necessary to produce revise Plate XI-10 with fewer layers (e.g. remove the disturbed area boundary) and/or produce a separate watershed map so as to make it easier to review the distinct hydrologic design features.

schriste

Maps Mine Workings

Analysis:

The amendment meets the State of Utah R645-301-521.140 requirements for Mine Workings Maps.

The amendment meets the requirements of R645-301-521.140 which requires maps that clearly show all mine plans. Plate IV-2 was updated to show the expanded mine workings related to the proposed Emery 2 box cut portals.

cparker

Maps Certification Requirements

Analysis:

The amendment does not meet the State of Utah R645-301-512 Certification Requirements.

R645-301-512 requirements are not met as the Permittee must provide hard copies with the certification stamp. The amendment includes all drawing with a digital PE stamp for Richard B White but Division does not currently accept digital PE stamps. All mine drawings and plates will be stamped by a Utah certified professional engineer with experience in

underground mining operations.

Deficiencies Details:

R645-301-512: All clean copies of the amendment will be stamped by a Utah certified professional engineer with experience in underground mining operations.

cparker

Reclamation Plan

General Requirements

Analysis:

The amendment meets the State of Utah R645 requirements for Reclamation Activities.

The requirements of R645-301-540 are met within the amendment as the amendment includes an updated Chapter III reclamation time table and detailed narrative showing the removal of all mining related roads, structures, and fills. The reclamation plan includes the restoration of the ephemeral channel to be filled in to access the Emery 2 portal area. A total of 10.3 acres will be reclaimed in relation to the emery 2 expansion.

cparker

Approximate Original Contour Restoration

Analysis:

The amendment meets the State of Utah R645 requirements for Approximate Original Contour Restoration.

The amendment meets the R645-301-512.200 ,-553.110 through -553.150, and -302-270 due to the proposed post mining land use change that would not require a variance from approximate original contour (AOC).

AOC as defined by R645-301-553.100 through -553.150 is achieved when the final grade closely resembles the general surface configuration of the land prior to mining activities and provides a subsurface foundation for vegetative cover capable of stabilizing the surface from erosion.

The amendment meets the R645-301-512.200 and -553.110 as there is no change in the MRP and all grading will be place back to approximate original contours.

A variance from AOC can be granted when the Permittee demonstrates all of the following items are met of R645-302-271 with the retention of the operational footprint:
• -271.100 Support approved post mining land use
• -271.200 all applicable state program requirements
• -271.300 an equal or better economic or public use
• -271.400 Federal and State agencies approval
• -271.500 Will be stable and Site grading minimizes off site effects
• -271.600 surface landowner has knowingly requested, in writing, that a variance be granted
• -271.700 The watershed of land within the permit and adjacent areas will be improved in measures detail with R645-302-271.710 through -271.720.
• -271.800 The design will be certified by UT PE with the removal of highwalls and static factor of safety at least 1.3
• -271.900 The watershed of the permit and adjacent areas is shown to be improved

cparker

Approximate Original Contour Restoration

Analysis:

The amendment meets the State of Utah R645 requirements for Approximate Original Contour Restoration relative to hydrology.

In Appendix VI-21, Emery 2 Surface Facility Hydrologic Design Calculations, the Permittee commits to removing all temporary hydrologic structures (i.e. sedimentation ponds, diversions) and restoring the natural drainage pattern of the

proposed expansion area to its pre-mining condition.

schriste

Backfill and Grading General

Analysis:

The amendment does not meet the State of Utah R645 requirements for Backfill and Grading.

The amendment does not meet the general requirements of R645-301-553 by detailing a general backfill and grading plan that details how disturbed areas will be backfilled and graded to achieve the approximate original contour, eliminate all highwalls, spoil piles, and depressions, and achieve a postmining slope that does not exceed either the angle of repose or such lesser slope as is necessary to achieve a long term static safety factor of 1.3 and to prevent slides, minimize erosion and water pollution both on and off the site, and support the approved postmining land use. Specific The ephemeral channel will be reconstructed in its approximate original location and grade. The portion of the reconstructed channel running over the backfilled boxcut area (channel RD-1) will be backfilled to the appropriate grade and lined with a rubber or other impervious liner placed within the channel to reduce the likely hood of catastrophic failure. Riprap will be installed in the channel as shown on Plate III-11. Channel RD-2 will be constructed with a filter layer underlying riprap as shown on Plate III-10. The switch back section of Primary haul road will be graded to AOC meeting the Chapter III E.1 and III F.1, and Chapter VII appendix VII-5 standards. This narrative is insufficient to show the reclamation will be stable and successful in removing all highwalls to meet R645-301-553.120 and -553.130.

Deficiencies Details:

R645-301-534, R645-301-553.120, -553.130: The Permittee must provide a more detailed reclamation of the switch back due to the steep nature and highly erosive nature due to the steep slope to show the reclamation will be stable and successful in removing all highwalls to meet R645-301-553.120 and -553.130.

cparker

Mine Openings

Analysis:

The amendment meets the State of Utah R645 requirements for Mine Openings.

The requirements of R645-301-513.500, R645-301-529, and R645-301-551 are met within the amendment as there is updated narrative detailing the sealing of the Emery 2 portals and associated ventilation shaft and boreholes at the time of final reclamation in Chapter III page 15d.

cparker

Topsoil and Subsoil

Analysis:

Analysis:
The application does not meet the requirements of R645-301-231.300 Testing plan for evaluating the results of topsoil handling and reclamation procedures. The application does not meet the requirements of R645-301-232.500 Subsoil segregation, because excess spoil could potentially be used to create deeper subsoil pockets or could be used to cover the trapezoidal channel where it meets the Quitchupah floodplain.

The reclamation plan for the emphemeral channel is described in Chap III, p. 21 a. Subsoil will be replaced over 8.2 acres to a depth of 6.96 inches and topsoil to a depth of 9.8 inches. [Please correct a clerical error on p. 21 a where subsoil is referred to as topsoil in the final subsoil calculation.]

Chapter III page 4a provides a timetable for reclamation which includes respreading berm material and respreading and roughening topsoil and the seeding/mulching of topsoil in the temporary diversion. Use of large rock in the reclaimed ephemeral stream is described in Chap III, p. 15d.

Successful reclamation of sodic soils has not been easily accomplished and is under investigation (Chap III p. 4a). Since SAR values are very high in soils proposed for salvage and since revegetation of stockpiles has been limited, the Division

would like to confirm the details of the testing plan desccribed on Chap III, p. 20. The plan should specify the increments of sampling and the frequency of sampling. Treatment of sodic soils (affected by extremely high pH values and high Exchangeable Sodium Percentage) must be stated.

Chap III, pg. 15d provides information on portal closure and backfill. Table III-1a p. 15g and 15h provide the cut fill calculations, which indicate that 44,700 CY excess spoil will remain at the Waste Rock Disposal site. A final reclamation plan for the excess spoil (44,700 CY) remaining at final reclamation must be described. If found suitable, this material might be used to create pockets of deeper subsoil that are described on Chap III, p. 21b.

Appendix VI-21 provides the reclamation design for the channel. Table 2 describes the trapezoidal design of RD-1 and RD-2. Maximum velocity of the channels is 6.34 fps and 8.07 fps, respectively. RD-1 will be 2 ft deep X 4 ft wide with riprap d50 = 6 inches above an impermeable liner. RD-2 will have the same dimensions with riprap d50 = 12 inches above a geotextile liner. The plan does not describe cover of the rip rap with soil or seeding the channel or embankments as required by Stream Alteration Permit 16-94-02SA.

Best Management Practices for stabilizing ephemeral channels is to replace soil over riprap and seed these channels. If the 44,000 CY excess spoil is found suitable, it could be used for this purpose. This approach has been successful at Des Bee Dove, School House Canyon and several other locations.

Deficiencies Details:

R645-301-121.200, Please correct a clerical error in the middle of Chap III p. 21a, where subsoil is referred to as topsoil in the final subsoil calculation.

R645-301-232.500,Table III-1a p. 15g and 15h provide the cut fill calculations, which indicate that 44,700 CY excess spoil will remain at the Waste Rock Disposal site. A final reclamation plan for the excess spoil (44,700 CY) remaining at final reclamation must be described. If found suitable, this material might be used to create pockets of deeper subsoil that are described on Chap III, p. 21b, or a six inch layer could be placed over the trapezoidal channel (at its lowest gradients) prior to seeding. This approach has been successful at Des Bee Dove, School House Canyon and several other locations.

R645-301-231.300 and R645-301-243, Since SAR values are very high in soils proposed for salvage and since revegetation of stockpiles has been limited, the Division would like to confirm the details of the testing plan desccribed on Chap III, p. 20. The plan should specify the increments of sampling and the frequency of sampling. Treatment of sodic soils (affected by extremely high pH values and high Exchangeable Sodium Percentage) must be stated.

pburton

Road System Reclamation

Analysis:

The amendment meets the State of Utah R645 requirements for Reclamation of Roads.

The requirements of R645-301-534 are met within the amendment as there is no change to the existing MRP reclamation of roads throughout the permitted area.

cparker

Road System Retention

Analysis:

The amendment meets the State of Utah R645 requirements for Retention of Roadway Facilities.

The requirements of R645-301-534 and -552 are met within the amendment as there is no change to the existing MRP reclamation of roads that 5.8 acres of roads will be retailed at the end of mining that exist throughout the permitted area, see Plates III-5 through III-11.

cparker

Hydrological Information Reclamation Plan

Analysis:

The amendment does not meet the State of Utah R645 requirements for Hydrologic Reclamation Plan.

Appendix VI-21, Emery 2 Surface Facility Hydrologic Design Calculations provides a detailed discussion of the reclamation plan relative to hydrology in Chapter 4. Sedimentation pond 3, as well as all berms, catch basins, culverts, ditches and swales associated with the drainage control system of the proposed mine expansion will be removed during reclamation. The Permittee states on page 6 of Chapter 4 of Appendix VI-21, "Natural Drainage patterns will be restored to their approximate original configuration during reclamation."

The peak flow calculations utilized to design the reclaimed channels associated with the mine expansion are provided in Attachment C and summarized in Table 2 of Appendix VI-21. Plate III-11, Emery 2 Reclamation Hydrology depicts the re-established reclaimed channels following final reclamation. The final reclaimed runoff conveyance system is comprised of two open channels (RD-1 and RD-2). The riprap sizing calculations for these channels is provided in Attachment C and summarized in Table 2 of Appendix VI-21.

The Permittee proposes that both reclaimed channels will be designed with a bottom width of four feet, a depth of two feet and side slopes of 2H: 1V. The median riprap diameter will be six inches in channel RD-1 and twelve inches in channel RD-2. RD-2 is located in a steeper portion of the canyon.

The Permittee proposes to install an impermeable liner beneath the riprap in the RD-1 channel to prevent seepage into the deep fill that will be placed in the portal box cut. The riprap in channel RD-2 will be underlain with a non-woven geotextile fabric.

The Permittee must provide a profile map of the proposed re-establishment of the un-named drainage. The profile is needed in order to evaluate how the reclaimed drainage will be tied into Quitchupah Creek and further evaluate if additional measures may be needed to insure stability of the reclaimed channel.

Deficiencies Details:

The amendment does not meet the State of Utah R645 requirements for Hydrologic Reclamation Plan. The following deficiency must be addressed prior to final approval:

R645-301-731, -762.100: The Permittee must provide a profile map of the proposed re-reclamation/re-establishment of the un-named drainage. The profile is needed in order to evaluate how the reclaimed drainage will be tied into Quitchupah Creek and further evaluate if additional measures may be needed to insure stability of the reclaimed channel.

schriste

Revegetation General Requirements

Analysis:

The information in the application meets the State of Utah R645 requirements for Revegetation General Requirements.

Revegetation seed mixtures (Table A1, Pinyon Juniper, Shadscale and Previously Disturbed Shadscale and Greasewood, Table A2, Greasewood Uplands and Greasewood Bottomlands) for the Emery 2 expansion area are included in Appendix VIII-8. The timing and sequence of reclamation for the expansion area are described in Chapter III, Section III.A.2 of the application including methods and materials to be used in reclamation. Reclamation is anticipated to begin upon final removal of underground machinery.

jhelfric

Revegetation Standards for Success

Analysis:

The information in the application meets the State of Utah R645 requirements for Revegetation Standards for Success.

The vegetative communities of the proposed location of the portals and conveyor system include Pinyon/Juniper, Shadscale, Greasewood upland, Greasewood Bottoms and Previously Disturbed Shadscale & Greasewood. The

corresponding proposed reference areas for these communities were visited on October 5th, 2016 by the applicant's consultant (Patrick Collins, Mount Nebo Scientific) and (Joe Helfrich, DOGM). The Division concurred with the proposed locations of the reference areas as depicted in Chapter VIII, Appendix VIII-8, Figure 2.

The applicant has proposed Wildlife and Grazing as a Post-mining Land-use for the reclamation of the disturbed area. As such the Division is required to obtain a recommendation from The Division of Wildlife Resources (DWR) for the number of (Woody Species) stems per acre as a standard for success in reclamation. The Division of Wildlife Resources (DWR) will be recommending a woody species density in stems per acre as a success standard to achieve the proposed post-mining land-use. That figure will be incorporated into Chapter VIII of the application prior to final approval of the Emery 2 Expansion.

jhelfric

Stabilization of Surface Areas

Analysis:

Analysis:
The application does not meet the requirements for R645-301-244 Soil stabilization, because the type of mulch to be used on steep reclaimed areas (such as the section 7 road) is not clear and stabilization of the excess spoil pile during operations is not described.

The site will be surface roughened, seeded and mulched. The final reclamation mixed desert shrub and annual forb community seed mix is provided in Chapter VIII, C, 4.

Mulch is described in VIII.C.7 and Chap III p. 22. In VIII.C.7 several possibilities are stated for mulch, one of which is the use of rock as mulch to armor the soil surface on slopes steeper than 5h:1v. Road section 7 is one such area. Might rock be used in combination with hyrdromulch on these steep sections?

Deficiencies Details:

R645-301-121.200, Section V.C.7 is incorrectly referenced on Chap III, p. 21b. Please correct this reference to VIII.C.7.

R645-301-244.100, Please describe stabilization plans for the excess spoil pile.

R645-301-244.200, In Section VIII.C.7 several possibilities are stated for mulch, one of which is the use of rock as mulch to armor the soil surface on slopes steeper than 5h:1v. Road section 7 is one such area. Please specify whether rock might be used in combination with hydromulch on these steep sections.

pburton

Cessation of Operations

Analysis:

The amendment meets the State of Utah R645 requirements for Cessation of Operations

The requirements of R645-301-515 and -541 are met within the amendment as there is no change to the existing MRP plan of communication with the appropriate parties in the event of the cessation of operations and final reclamation.

cparker

Maps Bonded Area

Analysis:

The amendment meets the State of Utah R645 requirements for Bonded Area.

The requirements of R645-301-800are meet within the amendment as the bonded area map was updated on Plate III-9.

cparker

Maps Reclamation BackFilling and Grading

Analysis:

The amendment meets the State of Utah R645 requirements for Reclamation Backfilling and Grading Maps.

The requirements of R645-301-542 are met within the amendment as there is no change to the existing MRP plan of backfilling and grading areas or volumes.

cparker

Maps Reclamation Facilities

Analysis:

The amendment meets the State of Utah R645 requirements for Reclamation Facilities Maps

The requirements of R645-301-542 are met within the amendment as Plate III-11 was added to show the reclamation of the facilities associated with the Emery 2 portal area.

cparker

Maps Reclamation Final Surface Configuration

Analysis:

The amendment meets the State of Utah R645 requirements for Final Surface Configuration Maps.

The requirements of R645-301-542 are met within the amendment as there is no change to the existing MRP plan of the estimated final surface configuration back to AOC for Plate III-5 through III-9 and Plates III-10 and Plate III-11 were updated to show the reclamation of the Emery 2 portal areas and 4th east portals.

cparker

Maps Reclamation Final Surface Configuration

Analysis:

schriste

Bonding Determination of Amount

Analysis:

Emery Deep Mine does not meet the State of Utah R645 requirements for Determination of Bond Amount. The bond amount is deficient. In accordance with the requirements of R645 the Permittee is responsibile to provide detailed estimated cost sheets to support the reclamation cost estimate. The following is an analysis of the bonding detailed estimated cost sheets provided to DOGM by the permittee.

Demo:
The permittee provided images of electronic pages from 2016, 2nd Quarter RS Means that they used to support the cost estimates for Demo costs (they were very difficult to read and some were not legible). For any cost estimates that were not supported with support documentation DOGM used the 2016 30th annual addition of RS Means book.

-The permittee included a 30% "reduction due to no interior walls" on Steel Bld. Large for the listed three sheets- FormanBathHouse06, WarehouseOfficeBld11 and Bathhouses12. I removed the 30% Reduction due to no interior walls because these building should have interior walls so no reduction should be applied.

-Permittee provided a "confidential bid" cost for Seal Shafts, and Seal Portals. No documentation was found to support the cost. DOGM left those cost and ask for documentation be provided.

-Permittee provide Nevada Mine Cost with 2015 date I kept it as effective for 2016 as provided.

-On e2 Mine Substation e1 and ExistingMineSubstation42 - 300HP (D8) was removed by the permittee. Why was this

removed? We need to have explanation and verification showing why it should be removed.

-Is the plan to put an explosive storage building on site? If so don't we need a reclamation amount on ExplosivesStorageBld29?

-Sheet CMPCulvert_4E22 . Machine Excavation ¾ CY list 14 LF but should have 14 BCY. The calculations look OK.

-CMPCulvert_4E23 had a summing error. Permittee has $143.00 and calculation is $173.00

-e2_WaterTank_e12 Volumes are hard coded in. unsure if they are correct. Permittee needs to verify that the volumes and Quantity are correct and fix them as needed.

-E2_VentFan_e13 Steal bld. Large CF and CY volumes and Quantity look wrong. They need to be verified and recalculated. Is 29167 CY or is it CF? Is 756 CY. If so it didn't come from 29167. Verify what these numbers represent. And update sheet.

Reveg.:
Permittee provided RS Means cost that didn't match 2016 RS Means book or the 2015, and didn't provide support documentation. I'm unsure where this cost came from. For any cost estimates that were not supported with support documentation DOGM used the 2016 30th annual addition of RS Means book.

Earth:
Permittee provided $51.10 Foreman Average Outside cost for each Equipment hourly operating costs and the FAO should have been $51.90 per hour. They also provided $37.90 CLAB cost for each applicable hourly operating cost which was correct. Then a separate line was added for CLAB and Foreman Average, Outside that had the correct dollar amount for each sheet, but it didn't need to be added a second time to each Earthwork sheet. I removed these extra costs so that they didn't get added again. Permittee needs to verify if this is correct and update sheets to be correct. Every sheet including the new sheets will need this correction if it is correct. Explain why it needs to be in if that is what you believe should be there.

Total:
Permittee escalated the escalation for 2 years at 0.007 but the escalation is to stay frozen between midterms. The escalation amount will remain at $52,763 until 2018 midterm. The total bond amount will need to be increased and will be determined when all the numbers have been worked.

Deficiencies Details:

Emery Deep Mine does not meet the State of Utah R645 requirements for Determination of Bond Amount. The bond amount is deficient. In accordance with the requirements of R645 the Permittee is responsibile to provide detailed estimated cost sheets to support the reclamation cost estimate. The following is an analysis of the bonding detailed estimated cost sheets provided to DOGM by the permittee.

Demo:
The permittee provided images of electronic pages from 2016, 2nd Quarter RS Means that they used to support the cost estimates for Demo costs (they were very difficult to read and some were not legible). For any cost estimates that were not supported with support documentation DOGM used the 2016 30th annual addition of RS Means book.

-The permittee included a 30% "reduction due to no interior walls" on Steel Bld. Large for the listed three sheets- FormanBathHouse06, WarehouseOfficeBld11 and Bathhouses12. The permittee must removed the 30% Reduction due to no interior walls because these building should have interior walls so no reduction should be applied.

-Permittee provided a "confidential bid" cost for Seal Shafts, and Seal Portals. No documentation was found to support the cost. The Permittee must provide support documents for sealing shafts and sealing portals.

-On e2 Mine Substation e1 and ExistingMineSubstation42 - 300HP (D8) was removed by the permittee. The permittee must provide answers to why this was removed and verification showing why it should be removed.

-Is the plan to put an explosive storage building on site? The permittee must provide reclamation cost for explosive storage building or anything that would need to be reclaimed from explosive storage and use, giving a reclamation amount on ExplosivesStorageBld29?

-Sheet CMPCulvert_4E22 . Machine Excavation ¾ CY list 14 LF but should have 14 BCY. The calculations look OK. Permittee must provide correct Units and Volumes.

-CMPCulvert_4E23 had a summing error. Permittee has $143.00 and calculation is $173.00. Permittee must update and verify all calculations for bonding sheets.

-e2_WaterTank_e12 Volumes are hard coded in. unsure if they are correct. Permittee needs to verify that the volumes and Quantity are correct and fix them as needed. Permittee must update and verify all calculations for bonding sheets including volumes and units and totals.

-E2_VentFan_e13 Steal bld. Large CF and CY volumes and Quantity look wrong. They need to be verified and recalculated. Is 29167 CY or is it CF? Is 756 CY. If so it didn't come from 29167. Permittee must verify what these numbers represent. And update sheet.

Reveg.:
Permittee provided RS Means cost that didn't match 2016 RS Means book or the 2015, and didn't provide support documentation. I'm unsure where this cost came from. For any cost estimates that were not supported with support documentation DOGM used the 2016 30th annual addition of RS Means book.

Earth:
Permittee provided $51.10 Foreman Average Outside cost for each Equipment hourly operating costs and the FAO should have been $51.90 per hour. They also provided $37.90 CLAB cost for each applicable hourly operating cost which was correct. Then a separate line was added for CLAB and Foreman Average, Outside that had the correct dollar amount for each sheet, but it didn't need to be added a second time to each Earthwork sheet. I removed these extra costs so that they didn't get added again. Permittee needs to verify if this is correct and update sheets to be correct. Every sheet including the new sheets will need this correction if it is correct. Explain why it needs to be in if that is what you believe should be there.

Total:
Permittee escalated the escalation for 2 years at 0.007 but the escalation is to stay frozen between midterms. The escalation amount will remain at $52,763 until 2018 midterm. The total bond amount will need to be increased and will be determined when all the numbers have been worked.

bwiser

Special Categories

Operations Alluvial Protectioin of Agricultural

Analysis:

Analysis:
The application does not meet the requirements of R645-302-322.350 mining beneath an Alluvial Valley Floor, because the applicant has not shown how the operations will avoid interruption, discontinuance or preclusion of farming on the alluvial valey floors and will not materially damage the quantity or quality of the water in surface and groundwater systems that supply alluvial floors.

Panel development is shown on Plate IV-2, Underground Operations Plan. This map shows panel development under Alluvial Valley Floor Areas 2 & 3 shown on Chap XI, Plate XI-1, Alluvial Valley Floor Along Upper Quitchupah Creek. AVF Areas 2 & 3 were determined to be subject to the protection requirements of an alluvial valley floor (R645-302-322.350). These AVF Areas are also designated Prime Farmland by the State Soil Survey Staff and are mapped as such in Utah Agricultural Experiment Station Research Report No. 76, "Important Farmlands of Parts of Carbon, Emery Grand, and Sevier Counties."

Mining in years 2 & 3 shown on Plate IV-2 runs through the buffer zones shown on Plate V-5. Plate V-5 does not include buffer zones for AVF Area 2 that is West of Hwy 10.

Chap II pg. 25a states that 141,000,000 gpy will be pumped from the mine to Quitchupah Creek during the permit term.

Deficiencies Details:

R645-302-322.350, Provide plans showing how the operations will avoid, during mining and reclamation, interuption, discontinuance or preclusion of farming on the alluvial valley floors and will not materially damage the quantity or quality of water in surface and groundwater systems that supply alluvil valley floors.

R645-302-322.360, Update Chapter XI with maps and statements of the type and quantity of agricultural activity performed

in Areas 2 & 3 illustrated on Chap XI, Plate XI-1.

R645-301-121.200, Update Plate V-5 showing a buffer zone for the designated AVF West of Hwy 10.

pburton