GARY R. HERBERT
Governor
SPENCER J. COX
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

September 4, 2015

Kirk Nicholes, Resident Agent
Alton Coal Development, LLC
463 North 100 West, Suite 1
Cedar City, Utah 84720

Subject: Application Review and Deficiencies, North Private Lease, Alton Coal Development, LLC, Coal Hollow Mine, C/025/0005, Task ID #4942

Dear Mr. Nicholes:

The Division has reviewed your application for the North Private Lease Permit Revision. A copy of our review is enclosed. The Division has identified deficiencies in addressing the Utah Coal Mining Rules. The deficiencies are listed and will need to be addressed before further processing can occur. The initials of the deficiencies author are provided so that your staff can communicate directly with that individual should questions arise.

The plans as submitted are incomplete. Please revise the application accordingly in order for us to complete the processing of your permit revision.

If you have any questions, please call me at (801) 538-5325.

Sincerely,

Daron R. Haddock
Coal Program Manager

DRH/sqs
Enclosure
O:\025005.COL\WG4942 North Private Lease\Deficiency.4942.doc

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UTAH DNR
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Technical Analysis and Findings

Utah Coal Regulatory Program

September 4, 2015

PID: C0250005
TaskID: 4942
Mine Name: COAL HOLLOW
Title: NORTH PRIVATE LEASE

General Contents

Identification of Interest

Analysis:

The minimum requirements of R645-301-112 were met.

The Division performed a cross check with the Applicant/Violator System. No errors in the ownership and control information were identified.

Appendix 1-10, Ownership and Control, of the MRP is current. No updates are required at this time.

ssteab

Violation Information

Analysis:

The minimum requirements for R645-301-113 were met.

An AVS evaluation was generated on 7/7/15. No suspensions, revocations or unabated violations were reported. An AVS evaluation was also provided with the application listing no suspensions, revocations or unabated violations of SMCRA dated 6/3/15.

An updated listing of violations within the last 3 years was also provided.

ssteab

Filing Fee

Analysis:

Not Applicable.

ssteab

Public Notice and Comment

Analysis:

The minimum requirements of R645-300-120 were met.

The application was determined administratively complete on July 15, 2015. A proposed public notice was provided with the application which contained all of the required information for publication.

The mine operator was notified to publicize for four consecutive weeks. A 30 day comment period will follow the last date of publication.

The mine operator will submit an affidavit of publication as soon as available.

ssteab

Permit Application Format and Contents

Analysis:

The minimum requirements of R645-301-120 were met.

The application to add the North Private Lease contained current information and was filed in a format required by the Division.

ssteab

Completeness

Analysis:

The minimum requirements of R645-301-150 were met.

The application for a permit to conduct coal mining and reclamation operations was determined administratively complete on July 15, 2015 and included the minimum information required under R645-301.

ssteab

Permit Application Format and Contents

Analysis:

The application's water monitoring table does not meet the minimum clear and concise requirements. The North Private lease water monitoring plan for wells, streams, and springs is organized in a new water monitoring table located in Table 5 of Appendix 7-16. This is the third water monitoring table proposed for the Coal Hollow mine. The two currently approved tables in the MRP are for the South Lease and underground mining water monitoring plans. It is unnecessary and unclear to have three separate water monitoring tables for one coal mine; therefore they should be combined into one table located in Chapter 7. In the consolidated table all monitoring sites that have been destroyed by mining and wells that will be destroyed by mining activity need to be symbolized or labeled in a footnote.

The Baseline Cumulative Impact Area Information in Chapter 7, pg 7-23, needs to clearly reference where the hydrologic and geologic information for the North Private lease can be located. This section only references Appendix 7-1 which is an analysis for the southern permit area of the mine.

The application includes a reference to Figure X in Appendix 7-16, page 21. This reference needs to be corrected.

Deficiencies Details:

301-121.200: Combine all water monitoring sites for the Coal Hollow mine (South Lease, underground, and proposed North Private lease) into a single clear and concise water monitoring table. Symbolize or label all monitoring sites that have been destroyed by mining and sites that will be destroyed by mining activity in a footnote.

301-121.200: The Baseline Cumulative Impact Area Information in Chapter 7, pg 7-23, needs to clearly reference where hydrologic and geologic information can be found for the North Private lease area.

301-121.200: The application includes a reference to Figure X in Appendix 7-16, page 21. This reference needs to be corrected.

301-121.200: Drawing 5-62: is referenced in Appendix 7-16, but is not provided with the application.

kstorrar

Reporting of Technical Data

Analysis:

The application does not meet the minimum requirement of properly reporting technical data. In Appendix 7-16, Appendix B the application provides drilling logs labeled Hole and only gives a vague well log of the well depth and lithologies/stratigraphies. Drill Hole or Well Completion Reports need to be provided for all drilling logs. This raw field data needs to also include dates of the collection and descriptions of the methodology used to collect and analyze the data.

The application only provides a discussion on the well slug-test (falling/rising head) conducted by UII in the 1980's. Additional information on this test is required, including the raw field data and methodology used to collect and analyze these results (tables and/or graphs) must be included in the application.

All appropriate baseline flow graphs (vertical axes in the thousands) of data in Figure 10, Appendix 7-16 will be graphed in logarithmic scale to clearly present the data.
The water monitoring point Kanab at CR has not been accurately measuring the baseflow of Kanab Creek. An ultrasonic mounted from ceiling has been used to measure the flow depth within the culvert. However, the width of Kanab Creek flowing at baseflow through the culvert is too narrow for the ultrasonic to accurately detect the flow depth. The application must provide the raw measurements of baseline data recorded for the water monitoring point Kanab at CR.

Deficiencies Details:

R645-301-130. Drill Hole or Well Completion Reports need to be provided for all drilling logs. This raw field data needs to include but is not limited to, the dates of collection and descriptions of the methodology used to collect and analyze the data.

Additional information on the slug-test conducted by UII is required, including the raw field data and methodology used to collect and analyze these results (tables and/or graphs) must be included in the application.

All appropriate baseline flow graphs (vertical axes in the thousands) of data in Figure 10, Appendix 7-16 will be graphed in logarithmic scale to clearly present the data.

In order to verify the data collected by the ultrasonic at the surface water monitoring point Kanab at CR, the application must provide the raw measurements of data recorded here.

kstorrar

Environmental Resource Information

General

Analysis:

The application meets the minimum requirements of R645-301-521 due to updating the relate permit footprints and information stated Chapter 5, Section 521 and Section 523 detail the extent of the mining operations footprint within the existing Coal Hollow Permit area as well as the proposed North Lease. Drawings 5-9 through 5-17 detail the coal and overburden removal for the current Coal Hollow permit area while drawings 5-50 through 5-55 detail the coal and overburden removal for the proposed North Lease.

Deficiencies Details:

The application meets the minimum requirements of R645-301-521 , however, there is a typo in Chapter 5 footer as the month and date were updated but the year was not. The footer should be updated to the correct year if the month and date are being updated. The Chapter 8 footer needs to be updated as well.

cparker

Permit Area

Analysis:

The application meets the minimum requirements of R645-301-521.140 due detailing the lands subject to surface coal mining operations over the estimate life of the mining operations in Chapter 5 Section 523 and drawing 5-9 through 5-17 for the existing Coal Hollow southern area and the propose North lease in drawings 5-50 thorough 5-55.

cparker

Historic and Archeological Resource Information

Analysis:

The application does not meet the State of Utah R645 Coal Mining Rule requirements for Historic and Archaeological Resource information.

On page 4.7-4.8, the application references both the currently approved permit area and the proposed North Lease Expansion area (See Section R645-301-121.200). The document appears to discuss material referencing both the south and the north lease parcels, yet no header/marking/differentiation is made in the discussion. For clarity, identification and reporting efforts for each area must be discussed individually. Subheadings must also be included to clarify what reporting was undertaken for each area (i.e. the currently approved permit area versus proposed North Lease Expansion area).

On page 4-7 of the approved Mining and Reclamation Plan (MRP), cultural resources that were identified and reported for the currently approved mine plan are discussed (See Section R645-301-411.140) It is unclear which parcel (north or south) is being addressed. Paragraph two indicates a total of 15 cultural sites were identified, five of which require data recovery. Paragraph four indicates an inventory of the area identified two sites scheduled to be impacted by mining activities. The Permittee must revise this section and provide clarification as to which sites are located within the currently approved permit area and those sites that are located within the proposed North Lease Expansion.

On page 4.7, paragraph five indicates that Appendix 4-1 contains the *Cultural Resource Inventory of Alton Coal Development's Sink Valley-Alton Amphitheater Project Area, Kane County, Utah*, but does not indicate whether this report addresses the existing permit area or the North Lease Expansion area. It needs to clearly state to which parcel (north or south) it pertains.

On page 4-7, paragraph six references the *Cultural Resources Discovery Plan for the Alton Coal LLC, Coal Hollow Project in Kane County*." As with the previous report, it is not clear whether this pertains to the existing permit area or the North Lease Expansion area, nor does it provide a reference location for this document. It needs to clearly state to which parcel (north or south) it pertains, and where it is located.

Section R645-301-411.141 Cultural and Historic Resources Maps refers the reader to Appendix 4-1 for project maps addressing cultural and historic resources. The maps provided in Appendix 4-1 pertain to the existing permit area and do not address the North Lease Expansion area, for which no maps are provided in Appendix 4-1. Maps showing previously conducted cultural resource inventory work, identified cultural resource locations, and any other areas of concern outlined in 411.141.1 – 411.141.3 (public parks, cemeteries, National System of Trails, Wild and Scenic Rivers Systems, etc.) for the North Lease Expansion area are missing from the appendices.

In section R645-301-411.141.1, the heading of "Boundaries of Public Parks," is not appropriate as this section addresses map requirements for the permit. A cultural resource inventory report included in Appendix 4-1 is referenced; however, the title of the report is not provided, nor is it made clear if this pertains to the existing permit area or the North Lease Expansion area. If

the report is the location of maps required for both the existing permit and the North Lease Expansion area under this section, then that needs to be made clear in the text.

Section R645-301-411.142 Coordination with the State Historic Preservation Officer (SHPO) does not provide documented evidence that coordination with SHPO has taken place with regard to the existing permit area (summary documentation regarding coordination efforts) or the three sites (42KA3077, 42KA3097, and 42KA6080) associated with the North Lease Expansion area, specifically SHPO concurrence with Adverse Effects to Eligible Historic Properties for sites 42KS3077 and 42KA3097. It is in this section where a discussion of coordination with SHPO and the final determination of Adverse Effect to sites 42KA3077 and 42KA3097 and No Adverse Effect to 42KA6088 must be discussed.

The narrative presented in the permit application on page 4-8 under Section R645-301-411.142.1 does not address proposed plans to "prevent adverse impacts." For the purpose of Section R645-301-411.142.1, two cultural sites Eligible for the National Register of Historic Places have been identified within the North Lease Expansion area and one site Eligible for the National Register of Historic Places was identified on lands immediately adjacent to the North Lease Expansion area. Mining activities have been determined to have an Adverse Effect to both of the sites within the expansion area through SHPO consultation. Documentation of SHPO concurrence with determinations of Eligibility and Effects is required as the basis for developing appropriate strategies to mitigate adverse effects to sites and avoid impacts to those sites adjacent to the North Lease Expansion area. It is in this section where a discussion of proposed mitigation measures or reference to treatment plans is necessary.

Sites Eligible for the National Register were also identified on the currently approved permit area, where it was similarly determined that mining activity would adversely impact those sites. Previous efforts undertaken to prevent or mitigate adverse impacts within that area must also be summarized in this section. For clarity, mitigation efforts for each area must be discussed individually. Subheadings must also be included to clarify what reporting was undertaken for each area (i.e. the currently approved permit area versus proposed North Lease Expansion area).

In section R645-301-411.142.2, the narrative presented does not address the fact one site identified in the draft *Archaeological Monitoring & Historical Properties Treatment Plan for the Alton Coal Northern Project Lease Area, Kane County, Utah* presented in Appendix 4-7 is on land under the jurisdiction of the BLM. Efforts outlined in the draft treatment plan seek to ensure no project-related impacts occur to site 42KA6088.

Generally speaking, section R645-301-411.143 discusses steps and additional effort the Division may require with regard to the identification and evaluation of historic and archaeological resources, at its discretion. Discussion presented in the permit application is not relevant to decisions that may be made by the Division, and should be removed from the document.

In section R645-301-411.143 Mining on Historical Resources the Permitte states "there will be no significant effects of mining on historical resources." The statement is contradictory to previous statements made in 411.140, wherein two cultural sites Eligible for the National Register of Historic Places have been identified within the North Lease Expansion area. Mining activities have been determined to have an Adverse Effect to both of the sites through SHPO consultation (see R645-301-411.142). Sites Eligible for the National Register were also identified on the approved permit area, where it was similarly determined that mining activity

would adversely impact those sites. As previously mentioned, this section addresses decisions made by the Division, and should not be included in this document unless specific direction from the Division has previously been provided. A discussion of the determination of Eligibility and Effects with concurrence from SHPO is to be included in R645-301-411.142.

In section R645-301-411.143.1 Collection of Additional Information the Permittee indicates that a map showing the inventory area covered for the purposes of identifying cultural resources is included in Appendix 4-1. Section R645-301-411.143 is for discussion of Division decisions regarding level of effort. The present narrative needs to be removed from the document. As the Division has determined additional information will be required to mitigate Adverse Effects to two Eligible cultural sites, language discussing the Division determination may be included. The requirements for this additional work must be developed through Division/SHPO consultation and review of the draft *Archaeological Monitoring & Historical Properties Treatment Plan for the Alton Coal Northern Project Lease Area, Kane County, Utah* presented in Appendix 4-7.

R645-301-411.144: as proposed mining activities in the North Lease area have been determined to adversely affect cultural resource sites Eligible for the National Register of Historic Places, appropriate treatment and mitigation measures will be required for sites 42KA3077, 42KA3097, and 42KA6088. This step is usually taken after a determination of Eligibility and Effect has been made by the Division, and concurrence with said determination is received from SHPO. In this case, the proposed treatment and mitigation plan was drafted prior to Division coordination with SHPO regarding Eligibility and Effects to cultural resource sites. Appropriate treatment and mitigation measures will be decided by the Division in consultation with SHPO. Additional information will be required by the Division (as discussed in R645-301-411.143). The requirements for this additional work must be developed through Division/SHPO consultation and review of the draft *Archaeological Monitoring & Historical Properties Treatment Plan for the Alton Coal Northern Project Lease Area, Kane County, Utah* presented in Appendix 4-7.

The draft *Archaeological Monitoring & Historical Properties Treatment Plan for the Alton Coal Northern Project Lease Area, Kane County, Utah* presented in Appendix 4-7 will be utilized by the Division for this purpose. Division comments and edits to said treatment plan will be provided to the archaeological contractor and must be addressed. Once the draft treatment plan meets the Division's standards and expectations, it will be submitted to SHPO for review.

Historic and Archeological Resource Information

Analysis:

The application does not meet the State of Utah R645 Coal Mining Rule requirements for Historic and Archaeological Resource information.

Measures taken to address the following rules are found to be deficient:
R645-301-121.200
R645-301-411.140
R645-301-411.141
R645-301-411.141.1
R645-301-411.142
R645-301-411.142.1
R645-301-411.142.2
R645-301-411.143
R645-301-411.143.1
R645-301-411.144

A detailed analysis of each rule is attached.

Deficiencies Details:

R645-301-121.200: The Permittee must differentiate between identification efforts undertaken for the currently approved permit area and the proposed North Lease Expansion area. For clarity, identification and reporting efforts for each area must be discussed individually. Subheadings must also be included to clarify what reporting was undertaken for each area (i.e. the currently approved permit area versus proposed North Lease Expansion area). This applies to all discussions under R645-301-411.140 to R645-301-411.144.

R645-301-411.140: The Permittee must provide additional information/clarification so as to differentiate between the nature of archaeological and cultural resources located within the currently approved permit area and the proposed North Lease expansion area. The Permittee must describe efforts undertaken to identify archaeological and cultural resources within the permit boundaries including:
1. Describe previous identification efforts with regard to cultural resources in the both the South and North Private Lease areas, and each area must be addressed under the appropriate subheading. The discussion must include report titles, state project identification numbers, dates of inventory, results of each inventory (number of cultural resource sites Eligible for the National Register of Historic Places identified within the survey area), etc. If a report is referenced in this narrative, it needs to be included in the appropriate Appendix and referenced in the narrative

2. Language in this section needs to clearly state how many of the cultural resource sites identified in the appropriate report are located within the permit boundaries, as well as others immediately adjacent to the permit boundaries that will be monitored/avoided as part of Operational Plans/compliance with R645-301-411.142.1 (preventing Adverse Effects to Eligible cultural sites).

3. Provide Report U-05-MQ1568bp. It appears that this report addresses cultural resource inventory work associated with the North Lease area and is referenced in the application; however, it is not included in either Appendix 4-1 or Appendix 4-7.

4. The data recovery treatment plan developed for the North Lease area is cited as being included in Appendix 4-1; however, it is provided in Appendix 4-7. This needs to be corrected in the application.

5. The data recovery treatment plan for the proposed North Lease area addresses three sites (42KA3077, 42KA3097, and 42KA6088). While only 42KA3067 and 42KA3097 are being recommended for treatment/data recovery, it must be noted site 42KA6088 will be barricaded and monitored during construction/mining related activities to ensure No Adverse Effects to this site.

6. A reference location (Appendix number) for the "Cultural Resources Discovery Plan for the Alton Coal LLC, Coal Hollow Project in Kane County" must be provided, and it must be made clear to which parcel (north or south) this plan pertains.

R645-301.411.141: The Permittee must provide maps for the North Private Lease area either in Appendix 4-1 or Appendix 4-7. The narrative presented indicates cultural resource and historic maps are included in Appendix 4-1. The maps

provided in Appendix 4-1 address the currently approved permit area only. The Permittee must also provide the title of the cultural resource inventory report containing said maps and provided in Appendix 4-1. For clarification, the report title must be included as well as a clear indication as to whether the report addresses the currently approved permit area or the proposed North Lease expansion area.

R645-301-411.141.1: The heading of "Boundaries of Public Parks," is not appropriate as this section addresses map requirements for the permit. If the maps described under R645-301-411.141.1 are included and referenced under R645-301-411.141, then this section is not needed in the document.

R645-301-411.142: The Permittee must describe coordination efforts with and present evidence of clearances by the SHPO. This includes documentation that coordination with SHPO (dates of letters sent/received) has taken place with regard with regard to the existing permit area (summary documentation regarding coordination efforts), as well as the three sites (42KA3077, 42KA3097, and 42KA6080), specifically concurrence with Adverse Effects to Eligible Historic Properties. The Division initiated Eligibility and Effects consultation with SHPO in a letter dated July 23, 2015. On July 28, 2015, SHPO provided their concurrence with the Division's determination of Adverse Effects to sites 42KA3077 and 42KA3097 in conjunction with proposed mining activities within the boundaries of the North Lease Expansion area.

R645-301-411.142.1: The Permittee must provide the efforts proposed to mitigate Adverse Effects to sites 42KA3077 and 42KA3097, and limit project impacts to site 42KA6088. The proposed efforts must reference the proposed treatment and mitigation presented in the draft Archaeological Monitoring & Historical Properties Treatment Plan for the Alton Coal Northern Project Lease Area, Kane County, Utah presented in Appendix 4-7.

Previous efforts undertaken to prevent or mitigate adverse impacts within that area must also be summarized in this section. For clarity, mitigation efforts for each area must be discussed individually. Subheadings must also be included to clarify what reporting was undertaken for each area (i.e. the currently approved permit area versus proposed North Lease Expansion area).

R645-301-411.142.2: The Permittee must revise this section to address the fact one site identified in the draft Archaeological Monitoring & Historical Properties Treatment Plan for the Alton Coal Northern Project Lease Area, Kane County, Utah presented in Appendix 4-7 is on land under the jurisdiction of the BLM. Efforts outlined in the draft treatment plan seek to ensure no project-related impacts occur to site 42KA6088, but it must be noted by not affecting site 42KA6088, no additional coordination will be required with the BLM.

R645-301-411.143: The Permittee must clarify this section. The narrative states "there will be no significant effects of mining on historical resources." The language is contradictory to previous statements made in 411.140, wherein two cultural sites Eligible for the National Register of Historic Places have been identified within the North Private Lease area. Mining activities have been determined to have an Adverse Effect to both of the sites. Sites Eligible for the National Register were also identified on the South Private Lease area; where it was similarly determined that mining activity would adversely impact those sites. The section must be edited to reflect this for both the currently approved permit area and the proposed North Lease expansion.

R645-301-411.143.1, -143.2 and 143.3: The Permittee must conduct additional inventory/treatment/monitoring of cultural resource sites identified in the North Lease Expansion area. The requirements for this additional work must be developed through Division/SHPO consultation and review of the draft Archaeological Monitoring & Historical Properties Treatment Plan for the Alton Coal Northern Project Lease Area, Kane County, Utah presented in Appendix 4-7.

R645-301-411.143.1: The Permittee must provide a map showing the inventory area for the proposed North Lease expansion area. The narrative indicates a map showing the inventory area covered for the purposes of identifying cultural resources is included in Appendix 4-1. The only map provided in Appendix 4-1 addresses lands inventoried for the currently approved permit area. A map is not provided for the North Lease Expansion area in either Appendix 4-1 or Appendix 4-7. The inventory conducted in 2005 (U-05-MQ1568bp) covered those lands associated with the North Private Lease area, but no copy of this inventory is provided in Appendix 4-1 or Appendix 4-7.

R645-301-411.144: The Permittee must follow the process for the development and implementation of an appropriate treatment and mitigation plan to address Adverse Effects to sites 42KA3077 and 42AK3097, and to ensure No Adverse Effects to site 42KA6088.

jmontcalm

Climatological Resource Information

Analysis:

The application provides wind direction data and velocity data during a broken up time-period in 2006 and 2007. The weather station has been continuously monitoring since this time allowing the Permittee to update the Climatological Information. The application needs to provide an updated analysis of wind direction and velocity during a 12 month period with supporting windrose plots of monthly data collected at the weather station.

Deficiencies Details:

R645-301-724.412-420: The application needs to provide an updated analysis of wind, rain, and temperature data from the continuously monitored on-site weather station. The climate information should include but is not limited to: an updated analysis of wind direction and velocity and the monthly windrose plots from T0 or the time of weather station installation up to the present; a plot of average daily mean, minimum, and maximum temperatures; a plot of rainfall accumulation and maximum rainfall intensities recorded by the tipping bucket rain gauge. The rainfall intensity data needs to be put into the context of a 24-hour and/or 6-hour return period as rated by the Atlas 14 precipitation frequency analysis.

kstorrar

Vegetation Resource Information

Analysis:

Vegetation information for the North Lease is included in Volume 12, supplemental report, Vegetation and Wildlife Habitat of the North Private Lease Area. This report focuses on the environmental resource requirements of the regulations. Supplemental Report, Volume 10 of the MRP includes wetland and ordinary high water mark identifications and alluvial valley floor field investigations of North Private Lease area.

The general plant community types within the study area are shown on Vegetation Map 1. The majority of the area was originally comprised of rangelands that have been since converted to pasture lands by the private landowners. According to the information in this volume, the pasture lands were most often dominated by grass species such as: intermediate wheatgrass (Elymus hispidus), western wheatgrass (E.smithii), thickspike wheatgrass (E.lanceolatus), smooth brome (Bromus inerme) and crested wheatgrass (Agropyron cristatum). Additionally, there was one relatively small area that supported native,mostly undisturbed vegetation (undeveloped rangelands). This area consisted of pinyon-juniper, sagebrush with minor influence of a mountain brush community (including transitional zones between these types). These types comprised nearly 25 acres of the survey area. Examples of plant species common in these communities included: pinyon-pine (Pinus edulis), Utah juniper (Juniperus osteosperma), Gambel's oak (Quercus gambelii), Moki-apple (Peraphyllum ramosissimum), Wyoming big sagebrush (Artemisia tridentata var. wyomingensis), black sagebrush (A. nova) alder leaf mountain mahogany (Cercocarpus montanus), corymb buckwheat (Eriogonum corymbosum) and snowberry (Symphoricarpos oreophilus). There is one perennial and two ephemeral drainages that contained the following common plants: beaded sedge (Carex utriculata), bluegrass (Poa pratensis), wooly-sedge (Carex pellita), Douglas sedge (C. douglasii), small-wing sedge (C. microptera), maritime arrowgrass (Triglochin maritima), common threesquare (Scirpus pungens), longstyle rush (Juncus longistylis), Missouri iris (Iris missouriensis), willows (Salix boothii and S. exigua), wiregrass (Juncus arcticus), Wood's rose (Rosa woodsii) and Russian olive (Elaeagnus angustifolia).

In addition, there are also upland plant communities within the referenced drainage channels. These communities were primarily dominated by Wyoming big sagebrush and black sagebrush.

Vegetation sampling includes total living cover, cover by species, and composition for all sample sites are shown Tables 1 through 42. Total annual biomass production estimates for all sample sites are shown on Table 43. Woody species density values for the pasture lands that have been proposed for disturbance by mining activities are shown on Table 44. All vegetation sample site locations are shown on Vegetation Map 2; color photographs of the sample sites are provided in Figures 1 through 21.

The application includes a list of Federally listed threatened, endangered and candidate plant species for Kane County, Utah (Table 45). Each species listed includes supportive documentation stating why there would be no impacts to these plants from the proposed mining operations.

Additional information may be required pending receipt of comments from DWR and FWS.

jhelfric

Fish and Wildlife Resource Information

Analysis:

According to the information in the application including high-value wildlife habitat data from the Division of Wildlife

Resources geographic information system GIS database. Habitat of four species have been mapped by DWR within and adjacent to the North Private Lease. These habitats include:

Black bear, Ursus americanus, habitat has been mapped in the general area, Wildlife Map 1. This habitat within and adjacent to the study area has been listed as year-long and classified as having substantial value by DWR. Additionally, year long and crucial ratings have been mapped about 2 miles to the east and northeast of the study area.

Mule deer, Odocoileus hemionus, habitat has also been mapped in the area by DWR. The habitat has been classified as crucial summer range and was located within and adjacent areas, Wildlife Map 2.

Rocky Mountain elk, Cervus Canadensis, habitat was located in the area. Summer habitat has been mapped throughout the entire area as well as assigned a value as substantial and important calving habitat Wildlife Map 3 and;

Sage grouse, Centrocercus urophasianus, habitat has been mapped in the study area. DWR has mapped much of the area to be occupied and brood rearing habitat, Wildlife Map 4. Additional data from DWR's Heritage Conservation database there have been 23 occurrences of sage grouse in the proposed North lease area.

Threatened, Endangered & Sensitive Species
Table 45 of federally listed threatened, endangered and candidate species for Kane County, Utah is included in volume 12 of the application. The table also includes the status of the species, along with site specific notes about the area proposed for disturbance and the probabilities of their occurrences in the study area. Additionally, GIS data and shape files from the state Utah Conservation Data Center database were consulted for potential habitats of sensitive species. At the time this report was written, the only sensitive species mapped on that database was the greater sagegrouse.
The Threatened and Endangered plant and Animal species list found in Table 45, Volume 12, has been updated to include the Yellow billed cuckoo, Meager Camisona and the Northern Leopard Frog. This list was compiled using known species occurrences and species observations from the Utah Natural Heritage Program's Biodiversity Tracking and Conservation System and other federally listed species likely occur in Utah Counties. This list includes both current and historic records. The list was accessed online June 15, 2015. Its last update was dated January 12, 2012. Commitments have been made for additional studies and field surveys, when applicable, on that table.

Critical habitat maps for the Yellow billed cuckoo, Meager Camisona and the Northern Leopard Frog have been included as attachments to Volume 12, Table 45.

Species occurrences for the North lease area are provided by DWR, they include:
Sage grouse, 16 records, the information in table 45 suggests that impacts to this species should be addressed.
Meager Camissonia, Camissonia exilis, 1 record, the information in table suggests that There will be no impact to this species from mining in the study area.
Northern Leopard Frog, 2 records,the information in table suggests that Although impacts to the local populations may be possible due to mining activities relatively close to the habitat, they area thought to be relatively minor.

ACD will need to consult with DOGM, DWR and FWS to determine if additional information or mitigation is required for the Meager Camissonia and Northern Leopard frog.

Deficiencies Details:

The information in the application is not adequate to meet the requirements of this section of the regulations. Prior to approval the following information is required in accordance with R645-301-322.100;

Species occurrences for the North lease area are provided by DWR, they include:
Sage-grouse (16 records), the information in table(45) suggests that impacts to this species should be addressed.
Meager Camissonia (Camissonia exilis) (1 record), the information in table suggests that There will be no impact to this species from mining in the study area.
Northern Leopard Frog (2 records),the information in table suggests that Although impacts to the local populations may be possible due to mining activities relatively close to the habitat, they area thought to be relatively minor.

ACD will need to consult with DOGM, DWR and FWS to determine if additional information or mitigation is required for the Meager Camissonia and Northern Leopard frog.

jhelfric

Soils Resource Information

Analysis:

Analysis:
Drawing 2.3 portrays the results of the soil survey provided in Vol 11. For ease of comparing sample locations to prime farmland designation, this plate must be of the same scale as those plates provided in Vol 11. This Plate must show the correct proposed surface mining permit/disturbed area.

See Environmental Resource Prime Farmland section for further review.

Deficiencies Details:

Deficiency:
R645-301-230 and R645-301-121.300, In Section 232.600 of the MRP, Dwg 2-3 is compared with Dwg 10 in Vol 11 for information on soil salvage depth. These two maps must be of the same scale to be of use as a comparison. Drawing 2-3 must show the correct proposed surface mining permit/disturbed area. Drawing 2-3 must outline the farmlands of statewide importance as shown on Soils Map 9 and indicate the acreage of farmlands of statewide importance.

pburton

Land Use Resource Information

Analysis:

The current land uses for the proposed North Lease area are grazing and wildlife. The native plant communities of the study area were most likely comprised of sagebrush/grass, pinyon-juniper and small mountain brush areas. They have been replaced by developed rangelands, mostly pasture lands. Consultations have been conducted with all surface landowners of the permit area to provide comments in the plan and attain their expectations for the desired postmining land use. According to the landowners, grazing and wildlife habitat would be the desired postmining land use, with emphasis on grazing by domestic livestock in most of the pasture land areas (these areas are shown on Vegetation Map, Drawing 3-1 of the MRP and on Vegetation Map 1 in Volume 12 (Supplemental Report: Vegetation & Wildlife Habitat of the North Private Lease Area). An exception to this plan is that one area in the current mine site that is currently now pasture land will be reseeded appropriately to provide additional habitat for sage sage-grouse, a sensitive species in the area.
A surface ownership map for the current Coal Hollow Mine area as well as the North Private Lease has been provided in the MRP (Drawing 1-3). Management plans for each property owner include the following information:

Richard Dame Property: The portion of land in the permit area owned by Mr. Richard Dame currently provides forage for domestic livestock and some wildlife species. This land is comprised mostly of unirrigated pasture land but also supports some native stands of pinyon- juniper and sagebrush communities (see Vegetation Map 3-1). Mr. Dame has expressed the desire to return his property to pasture land that focuses on domestic livestock, but also included wants some plant species for wildlife habitat to be seeded. In doing so, the revegetation seed mix is composed primarily of native and introduced grasses and forbs, with no woody species to be planted (for the seed mixture refer to Chapter 3, Table 3-38).
The livestock currently sustained on Mr. Dames property are mostly cattle, with some horses. The animals are kept in the pastures from April through November of each year. A management plan to support this same postmining land use has been designed so that the property will adequately support the animals desired by the landowner and will not be over-grazed. The management plan suggests that 1.125 animalsmonthacre could reasonably be sustained on the property. This figure was derived from the Average Animal Weight Method (Pratt and Rasmussen) and is based on raising 1 cow weighing 1,000 lbs and her calf on pastures that have an annual biomass productivity of 1,800 lbs acre. It conservatively estimates that one-half of the production will be consumed (take half, leave half rational). Therefore, the total number of animals allowed on the property in the postmining land use management plan can be calculated by multiplying the estimated number of animals month acre by the number of pasture land acres available by the number of months the animals are maintained on a given pasture.

Burton Pugh Property: The land in the permit area owned by Mr. Pugh also provides forage for domestic livestock and wildlife habitat. This land is comprised of unirrigated pasture land, meadows, sagebrushgrass, pinyon juniper, and oak brush communities (see Vegetation Map 3-1). The livestock currently sustained on Mr. Pugs pasture land property are mostly cattle, but sometimes horses are also kept on the property. The animals are supported in the pastures from April through November of the year. A management plan to support a similar postmining land use has been designed so that the property will not be over-grazed, yet support the animals desired by the landowner. Following mining and reclamation activities, Mr. Pugh has expressed the desire for his land to be returned to its current or better condition for livestock and wildlife habitat. In accomplishing this, the pasture lands will be revegetated to focus on domestic livestock, but the seed mixtures will also

include some plant species used by the resident wildlife species. Because it has been postulated that encroachment of juniper trees into the valley in recent years has had a negative effect on the local sage -grouse populations, the revegetation plan for these areas will also focus on other plant species, or species that could have a positive effect on the birds as well as provide good forage for domestic livestock. The revegetation seed mixes for the Pugh property are shown in Chapter 3 and including: the sage brush grass (Table 3-137), meadows (Table 3-1840), pasture lands (Table 3-1938), oakbrush (Table 3-2141), and pinyonjuniper communities (Table 3-2339).
The management plan for Mr. Pugh suggests that 1.125 animals month acre could reasonably be sustained on the property. This figure was also derived from the Average Animal Weight Method (Pratt and Rasmussen 2001) and is based on raising 1 cow weighing 1,000 lbs and her calf on pastures that have an annual biomass productivity of 1,800 lbs acre.
There is, however, one area within Mr. Pugh's property that currently supports pasture land, but once it is reclaimed, it will be seeded to a mixture that would be conducive to sage grouse enhancement. This field can easily be located on Drawing 3-1 because it is the only pasture land located west of the county road. This land will be seeded with the sage brush grass mixture (Chapter 3, Table 3-37).

A copy of the grazing management plans signed by the landowners along with their comments are provided in Appendix 4-3 and 4-4 of chapter 4 of the MRP.

Deficiencies Details:

The information in the application is not adequate to meet the requirements of this section of the regulations. Prior to approval the following information is required in accordance with R645-301-412.200;
Appendicies 4-3 and 4- 4 of the current MRP need to be revised to include comments of the landowners in the North lease parcel.

jhelfric

Prime Farmland

Analysis:

Analysis:
A reconnaissance survey conducted in accordance with R645-301-221 found that there is prime farmland within the proposed permit/disturbed area boundary and that the requirements of R645-302-314 apply. The application does not meet the requirements of R645-302-314 for several reasons outlined below.

R645-301-315 makes clear that the authority with regard to prime farmland soils is the Secretary of Agriculture through the Utah NRCS State Soil Conservationist. Consultation between the Division and the State Soil Conservationist (NRCS) is required for prime farmland investigation and for prime farmland soil survey, operation plan and reclamation plan per R645-301-315.100 and R645-301-315.200. The State Conservationist is required to review and comment on the details of the proposed plan. This process is underway. The Division will keep the NRCS updated with new information as it is received from ACD.

The applicant has coordinated and consulted on several occasions with the NRCS, but has not copied the Division on these communications. A very poor and partial copy of the NRCS assessment and determination of prime farmland is found in App. A. Vol 11. The NRCS Prime Farmland Determination is shown on Soils Map 8 in Vol 12. The NRCS found that map units 1111 and 1113 are prime farmland when irrigated. Map Unit 1111 is the dominant map unit within the permit boundary. The NRCS found that Map unit 1111 covered 292 acres within the permit area, however through an intensive survey, the prime farmland designation has been reduced to 185.9 acres as shown on Soils Map 9. Section 4 of Volume 11 explains this prime farmland evaluation. Limiting characteristics of soils such as pH 8.4, permeability, high water table, slope, and erosion features are outlined in Table 7 for those soils that would otherwise be determined prime farmland. The Division reviewed the AWC in the upper 50 cm of those soils sampled within prime farmland on Soil Map 8 and disagrees with the conclusion set forth in Vol 11.

Table 8 specifies the criteria for Farmlands of Statewide Importance. Item b in Table 8 states that soils must have a water supplying potential of more than 11 inches OR a developed irrigation system. The analysis of non-irrigated farmland south of the farm road determined that there was 10.39 inches water available in the surface 48 inches of soil during the months of May - September (Table 1 and Section 4 Vol 11). The Division calculates a figure of 6.68 for average precipitation and snowfall received during the months of May through September. In addition, for the crops being grown, grasses and alfalfa, the growing season begins in April. This would add 5.86 additional inches of precipitation for a total of 12.54 inches of precipitation. The available water supply must include precipitation falling as snow and must include the month of April which is when grasses and alfalfa begin to grow. The application must also make clear which sample locations were

evaluated for AWC and to what depth. The available water capacity should be evaluated for the surface 50.8 cm (20 inches) which is the cut-off depth applied to all categories specified in Table 8. The Division reviewed the AWC in the upper 50 cm of those soils sampled within prime farmland on Soil Map 8, and found data was lacking for several locations. Data was available for sample locations 12SA009, 12SA010, 12SA011, 12SA012, 12SA013, 12SA019, 12AS020, 12AS021,12AS023, 12AS025, and 12ASO31. On the average, the AWC for the upper 50 cm at those locations was 9.58 percent. Locations south of the elk fence 12SA010, 12SA011, 12SA012, 12SA019 and 12SA021 were above average and that combined with the increase in precipitation will likely place them in the prime farmland category of 11 inches of soil moisture. AWC for the upper 50 cm at sample locations 12SA019A, 13AS02, 13AS03, 13AS04, 13AS05, and 13AS06 fall within the Map 8 prime farmland designation and should also be evaluated for AWC and must be called out in table C-1a of Appendix C.

R645-302-313.200 Section 4 of Vol 11 must state whether there was ever historical irrigation south of the farm road.

The Order II soil survey is found in Vol 11. Soil Map 1 provides the locations for soil data collection. It does not portray push probe locations and piezometer locations very clearly. At least one soil sample location (13SA01) could not be found on the map For ease of review, the soils mapping locations should be coded by date of analysis, since the analyses are grouped according to date. Some of the soils analyses in Appendix C do not follow the laboratory Case Narrative and are therefore out of sequence. In addition the perimeter of the North Private Lease is vague at the south end. A better copy of Soils Map 1 must be provided and Appendix C must be organized according to case narrative.
Finally sample location 13SA001 could not be found on Soil Map 1.

Appendix C contains soils laboratory analysis. The analysis of density is specified in Table 3 of the Order II soil survey, however, density information could not be found for the soils evaluated for prime farmland in Table C-1a of Appendix C of Vol 11. Please provide the analysis of soil density in Tables C-1a and C-1b and specify the range of soil densities for each prime farmland soil unit in accordance with R645-302-314.120.

The Order II survey evaluated irrigation practices as well as soil quality parameters in Table 4 of Vol 11. The soil survey assessment of irrigated prime farmland soils within the permit/disturbed area are shown on Map 9. of Appendix F. This analysis determined that they are 185.9 acres of irrigated prime farmland and statewide importance in the north lease permit area (see Table 11, Vol 11).

Land use is illustrated on Exhibit 4-2 in MRP Section 400 and Vegetation Map 1 of Vol 12. Productivity was analyzed at sample locations shown on Map 2 and is reported in Table 43 of Vol. 12, Supplemental Report: Vegetation & Wildlife Habitat of the North Private Lease Area. For irrigated prime farmland pasturelands, locations V13, V15 and V18 south of the farm road both have productivity estimated at 1,200 lbs/ac.

Tables 25, 29 and Table 35 provide cover and frequency analysis for sites V13, V15 and V18, respectively. The site V13 pasture is on the east side of Kanab Creek. Site V13 pasture was dominated by grass species Elymus smithii, currently known as Pascopyrum smithii, western wheatgrass and smooth brome (Bromus inerme), Elymus lanceolatus, thickspike wheatgrass, Medicago sativa, alfalfa. Site V13 had Glycyrrhiza lepidota, a facultative wetland species present in small amounts along with Convolvulus arvensis, field bind weed. The site V15 pasture was dominated by alfalfa, and the grass species western wheatgrass and smooth brome and no noticeable weed species. The site V18 had similar desireable composition of alfalfa and grasses with the weed species field bindweed, and Iva axillaris, poverty weed, accounting for 20 percent of the total cover. At sprinkler irrigated (Soils Map 5) and perhaps subirrigated site V-13 total cover was 71 percent. At the irrigated V15 site total cover was 82 percent. At the irrigated V18 site total cover was 75 percent. The presence of weed cover and the relatively low cover for an irrigated sites indicates that the sites are not managed for maximum productivity.

R645-302-314.400 requires that productivity prior to mining, including the average yield of forage obtained under a high level of management. The method used to estimate biomass production was described as 'other methods' in the methods section of the vol 12 vegetation report. The method included research with soil surveys and consultation with plant ecologist Benson. Please describe the method used and parameters evaluated by Mt. Nebo Scientific, Inc biologists to arrive at the data provided in Table 43.

Productivity under a high level of management might be inferred from the 8,000 lbs/ac reported for irrigated prime farmland location V11, north of the farm road. Vegetation of this site is described in Table 21 of Vol. 12. Total cover is 92 percent with the predominant forbe being a weed species Convolvulus arvensis (field bindweed) and the predominant grasses were Bromus inermis, smooth brome, and Elymus smithii, currently known as Pascopyrum smithii, western wheatgrass. The productivity value of 8,000 lbs/ac/year was an estimate provided by the landowner (Table 43).

A higher level of productivity was also noted for site V21 which does not appear to receive the overhead irrigation of site V11, but may be subirrigated from the adjacent pond shown on Vegetation Map 2. This site is dominated by alfalfa and

Teraxacum officinale, dandelion, and the grasses smooth brome and western wheatgrass (Table 41). This site had 92.50 percent total cover and an estimated productivity of 2,500 lbs/ac/year (Table 43)

Deficiencies Details:

R645-301-121.200, Soil Map 1 provides the locations for soil data collection. It does not portray push probe locations and piezometer locations very clearly. At least one soil sample location (13SA01) could not be found on the map For ease of review, the soils mapping locations should be coded by date of analysis, since the analyses are grouped according to date. Some of the soils analyses in Appendix C do not follow the laboratory Case Narrative and are therefore out of sequence. In addition the perimeter of the North Private Lease is vague at the south end. A better copy of Soils Map 1 must be provided and Appendix C must be organized according to case narrative. Finally sample location 13SA001 could not be found on Soil Map 1.

R645-302-313.200, Section 4 Vol 11 calculation of available water supply must include precipitation falling as snow during the months of interest and must include the month of April which is when grasses and alfalfa begin to grow. The application must also make clear which sample locations were evaluated for AWC and to what depth. The available water capacity should be evaluated for the surface 50.8 cm (20 inches) which is the cut-off depth applied to all categories specified in Table 8. The Division reviewed the AWC in the upper 50 cm of those soils sampled within prime farmland on Soil Map 8, and found data was lacking for several locations. AWC for the upper 50 cm at sample locations 12SA019A, 13AS02, 13AS03, 13AS04, 13AS05, and 13AS06 fall within the Map 8 prime farmland designation and should also be evaluated for AWC and must be called out in table C-1a of Appendix C.

R645-302-313.200 Section 4 of Vol 11 must state whether there ever was historical irrigation south of the farm road.

R645-302-314.120, Appendix C contains soils laboratory analysis. The analysis of density is specified in Table 3 of the Order II soil survey, however, density information could not be found for the soils evaluated for prime farmland in Table C-1a of Appendix C of Vol 11. Please provide the analysis of soil density in Tables C-1a and C-1b and specify the range of soil densities for each prime farmland soil unit in accordance with R645-302-314.120.

R645-301-121.200 and R645-302-313, R645-302-314.120, R645-302-315.100, and R645-302-315.200, Consultation between the Division and the State Soil Conservationist (NRCS) is required for prime farmland investigation and for prime farmland soil survey, operation plan and reclamation plan. The applicant has coordinated and consulted on several occasions with the NRCS, but has not copied the Division on these communications. A very poor and partial copy of the NRCS assessment and determination of prime farmland is found in App. A. Vol 11. Please provide the Division with legible copies of all the NRCS prime farmland communications with the State Soil Scientist (Domeier, M) cited in Vol 11, in their entirety.

R645-302-314.400, The method used to estimate biomass production was described as 'other methods' in the methods section of the Vol 12 vegetation report. The method included research with soil surveys and consultation with plant ecologist Benson. Please describe the method used and parameters evaluated by Mt. Nebo Scientific, Inc biologists to arrive at the data provided in Table 43. Please provide productivity information by landowner.

R645-302-315 makes clear that the authority with regard to prime farmland soils is the Secretary of Agriculture through the Utah NRCS State Soil Conservationist. The Division has initiated consultation with the State Conservationist per R645-301-315.100 and R645-301-315.200. Prior to approval, the State Conservationist is required to review and comment on the details of the proposed plan.

pburton

Geologic Resource Information

Analysis:

The application meets the minimum requirements for Geologic Resource information as required by the R645-301-620 regulations.

Chapter 6 has been updated to describe the Geology of the North Private Lease Area. Appendix 6-2 provides an overburden assessment on 8 drill holes located throughout the North Private lease. Information from a 2012 drilling program

in the North Private Lease is found in Appendix 7-16. Cross-section showing stratigraphic relationships and overburden thicknesses are found in Appendix 7-16. A geologic map of the North Private lease area is found as Figure 6 in Appendix 7-16.

Chemical information on acid and toxic forming potential are presented in Appendix 6-2 and information on the Smirl Coal Zone is in Appendix 6-1. The overburden suitablility was judged on levels of pH, Boron, Selenium, Organic Carbon and Acid Base potential. There are specific zones within the overburden (specifically in the Tropic Shale) where the material would be considered unsuitable for use as growth medium or placed within the upper 4 feet of the backfill. However, the backfill would be selectively placed to avoid having the unacceptable materials within this root zone. Overburden materials and coal from the 8 drill holes in the North Private Lease were analyzed and described in Appendix 6-2 and Appendix 6-1 respectively. The Stratum immediately below the coal seam was also analyzed. Appendix 6-1 is labeled as confidential. There are no oil or gas wells within the proposed permit boundary.

dhaddock

Hydro Baseline Information

Analysis:

The application must expand upon the statement on p. 14, Appendix 7-16, "It is common for Kanab Creek to have little or no discharge south of the tract during much of the year" by providing baseline data and graphs/charts/tables and a statistical analysis that clearly and concisely presents the data.

Deficiencies Details:

R645-301-725: The application must expand upon the statement on p. 14, Appendix 7-16, "It is common for Kanab Creek to have little or no discharge south of the tract during much of the year" by providing baseline data and graphs/charts/tables and a statistical analysis that clearly and concisely presents the data and supports these findings.

kstorrar

Hydro Baseline Cumulative Impact Area

Analysis:

The application does not meet the minimum hydrologic and geologic baseline cumulative impact area requirements for the alluvial aquifer within the permit area. Additional information is needed regarding the vertical and horizontal hydraulic conductivities of the alluvial aquifer. As well as a better understanding of the volume of flow recharging the aquifer at the northern permit boundary and discharging from the aquifer at the southern permit boundary.
The methodology of determining the aquifers hydrogeologic characteristics and the supporting discussion has a number of short comings. The alluvial aquifer was only studied at one well, Y-103, and the results from this study are unreliable on a number of levels. 1) The study was conducted by a company (UII) in the 1980's. Out-dated results such as these are not robust enough to be used in a CHIA and would not stand if challenged in court. 2) It is not possible to quantify the vertical and horizontal heterogeneity and isotropy of an alluvial aquifer by performing a slug test at one well site. Slug test results only provide a rough estimate of an aquifer's hydraulic conductivity (K) within the immediate vicinity of the well. 3) Well Y-103 is screened from 17.9' bgl to 77.8' bgl (below ground level) across the water table resting around 30' bgl. This makes interpretation of slug testing results difficult to accurately interpret. 4) The application does not provide a discussion on the development of well Y-103. In a paper by Butler and Healey (GROUNDWATER, 1998), well development can significantly influence slug-test K resulting in an artificially low value for the aquifer. A robust study to determine the aquifer's hydrogeologic regime requires performing tests on wells at multiple locations and depths.
The application needs to provide a greater in depth analysis of the unconfined aquifer in the alluvial sediments within and adjacent to the Permit area. The Permittee needs to analyze the horizontal and vertical hydraulic conductivity of the aquifer at multiple areal locations in the permit area and at multiple vertical depths within the aquifer. This study will be supported with a detailed narrative on the reasoning to support the methodology. A pumping drawdown test need be performed at multiple locations and at multiple screened interval depths to determine additional baseline information on the alluvial aquifer including, but not limited to: transmissivity (T), hydraulic conductivity (K), storativity (S), and specific yield. The application will need to provide the raw data collected in the field and the analyzed results with supporting graphs and charts of all slug-tests and pumping-tests performed. If a slug-test is done in a well that is screened across the water table, an additional in-depth analysis of the results will need to be provided to justify that the findings accurately quantify the aquifer's characteristics. All analyses must specifically detail any assumptions made to justify the chosen test method for the aquifer tests and detail any assumptions used in the equations for calculating any results. The book Construction Dewatering and Groundwater Control: New Methods and Applications
By Powers and Herridge (2007) recommends the piezometer screen intervals should be located in the same stratigraphic horizon as the well screen and where the aquifer is relatively homogeneous for pumping tests. In order to provide long term

monitoring data, the wells will need to be installed in locations that will be undisturbed by all mining activities.

In order to better determine the probable hydrologic consequences of the operation upon the quality and quantity of surface and ground water in the permit and adjacent areas a Gain/Loss study will need to be done on Kanab Creek as it passes through the permit area.

The total volume of surface and groundwater outflow from the permit area will be calculated at the location of the monitoring well matrix just south of the permit area (See Groundwater Monitoring Plan for a complete description on the well matrix). The surface flow will be combined with the volume of groundwater discharged through the monitoring well matrix (cross-sectional area of alluvial aquifer perpendicular to flow, hydraulic conductivity, hydraulic gradient, transmissivity, etc.) to determine the total volume water outflow from the permit area. The methodology, calculations, a geologic cross-section(s), and stream cross-section must be given to support how each parameter variable is determined and ultimately used to determine the final outflow variable.

Deficiencies Details:

R645-301-725, R645-301-728: The application does not meet the minimum hydrologic requirements of providing detailed hydrologic and geologic baseline cumulative impact area information on the alluvial aquifer. The application needs to provide a greater in depth analysis of the unconfined aquifer in the alluvial sediments within and adjacent to the Permit area. The Permittee needs to analyze the horizontal and vertical hydraulic conductivity of the aquifer at multiple areal locations in the permit area and at multiple vertical depths within the aquifer. The methodology of the study will be supported with calculations, plan-view and cross-sectional maps, and a detailed narrative of all procedures. A pumping drawdown test will be performed in the alluvial aquifer at multiple locations and at multiple screened interval depths. These results will be used to determine additional baseline information on the alluvial aquifer that includes but is not limited to the following variables: transmissivity (T), hydraulic conductivity (K), storativity (S), and specific yield. The application will need to provide the raw data collected in the field and the analyzed results with supporting graphs and charts of all slug-tests and pumping-tests performed. All analyses must specifically detail any assumptions made to justify the chosen test method for the aquifer tests and detail any assumptions used in the equations for calculating all results. The book Construction Dewatering and Groundwater Control: New Methods and Applications By Powers and Herridge (2007) recommends the piezometer screen intervals should be located in the same stratigraphic horizon as the well screen and where the aquifer is relatively homogeneous for pumping tests. In order to provide long term monitoring data, the wells will be located so they will not be destroyed by mining activities.

R645-301-725; R645-301-728: In order to better determine the probable hydrologic consequences of the operation upon the quality and quantity of surface and ground water in the permit and adjacent areas a Gain/Loss study will need to be done on Kanab Creek as it passes through the permit area.

R645-301-725; R645-301-728: The total volume of surface and groundwater outflow from the permit area will be calculated at the location of the monitoring well matrix just south of the permit area (See Groundwater Monitoring Plan for a complete description on the well matrix). The surface flow will be combined with the volume of groundwater discharged through the monitoring well matrix (cross-sectional area of alluvial aquifer perpendicular to flow, hydraulic conductivity, hydraulic gradient, transmissivity, etc.) to determine the total volume water outflow from the permit area. The methodology, calculations, a geologic cross-section(s), and stream cross-section must be given to support how each parameter variable is determined and ultimately used to determine the final outflow variable.

kstorrar

Hydro Modeling

Analysis:

The application needs to provide a groundwater model of the unconfined alluvial aquifer within and adjacent to the permit area. The alluvial aquifer will be modeled in three phases: 1) Pre-mining, 2) Active mining, 3) Post-mining reclamation. Baseline data will be used to model the pre-mining groundwater conditions of recharge and discharge zones as well as no-flow boundaries. The pre-mining phase of the alluvial aquifer model will be calibrated to specific criteria, including but not limited to, recharge rates and discharge rates; locations and/or areas of recharge, discharge, and no-flow boundaries; seasonal fluctuations in the water table; and vertical and horizontal heterogeneities that influence/determine flow paths and equipotential lines. The active mining phase will model all associated active mining (pit advancement, highwall mining, etc.) at six month intervals during the planned 4 years of active mining. The model will predict groundwater drawdown in the surrounding alluvial aquifer as pits advance below the water table. The model will show the lateral extent of the radius of influence associated with the maximum expected hydraulic gradient for each six month interval. The active mining model will also estimate the volume of water pumped from the alluvium during each six month interval. A post-reclamation groundwater model will be done on the backfilled pits and the surrounding undisturbed alluvial aquifer's response to

these mined through areas as the third phase of modeling. The post-reclamation model will calculate the groundwater recharge rate of the backfill and of the undisturbed alluvial aquifer. The model will provide an estimate of the time it will take the alluvial aquifer to reach a pre-mining recharge and discharge equilibrium rate and discuss any potential affect this may have on the flow in Kanab creek in the mean time.
For each of the three modeling phases, the application will provide professionally certified plan view maps and cross-sections, a supporting narrative with calculations, and any appropriate and relevant data that was used in order to fully convey the accuracy and precision of the model. Each phase and interval of the groundwater model will must show a West-East A-A' cross-section that includes but is not limited to the parameters: equipotential lines; flow lines; the water table; no-flow boundaries; the radius of influence/cone of depression associated with the maximum hydraulic gradient in the active mining areas; and the location and flow response of Kanab Creek to the groundwater radius of influence.

Deficiencies Details:

R645-301-726: The application needs to provide a groundwater model of the unconfined alluvial aquifer within and adjacent to the permit area. The alluvial aquifer will be modeled in three phases: 1) Pre-mining, 2) Active mining, 3) Post-mining reclamation. Baseline data will be used to model the pre-mining groundwater conditions of recharge and discharge zones as well as no-flow boundaries. The pre-mining phase of the alluvial aquifer model will be calibrated to specific criteria, including but not limited to, recharge rates and discharge rates; locations and/or areas of recharge, discharge, and no-flow boundaries; seasonal fluctuations in the water table; and vertical and horizontal heterogeneities that influence/determine flow paths and equipotential lines. The active mining phase will model all associated active mining (pit advancement, highwall mining, etc.) at six month intervals during the planned 4 years of active mining. The model will predict groundwater drawdown in the surrounding alluvial aquifer as pits advance below the water table. The model will show the lateral extent of the radius of influence associated with the maximum expected hydraulic gradient for each six month interval. The active mining model will estimate the volume of water pumped from the alluvium during each six month interval. A post-reclamation groundwater model will be done on the backfilled pits and the surrounding undisturbed alluvial aquifer's response to these mined through areas as the third phase of modeling. The post-reclamation model will calculate the groundwater recharge rate of the backfill and of the undisturbed alluvial aquifer. The model will provide an estimate of the time it will take the alluvial aquifer to reach a pre-mining recharge and discharge equilibrium rate and discuss any potential affect this may have on the flow in Kanab creek in the mean time.
For each of the three modeling phases, the application will provide professionally certified plan view maps and cross-sections, a supporting narrative with calculations, and any appropriate and relevant data that was used in order to fully convey the accuracy and precision of the model. Each phase and interval of the groundwater model will must show a West-East A-A' cross-section that includes but is not limited to the parameters: equipotential lines; flow lines; the water table; no-flow boundaries; the radius of influence/cone of depression associated with the maximum hydraulic gradient in the active mining areas; and the location and flow response of Kanab Creek to the groundwater radius of influence.

kstorrar

Probable Hydrologic Consequences Determination

Analysis:

The application does not meet the minimum requirements of considering all the Probable Hydrologic Consequences associated with open-pit mining adjacent to Kanab Creek. Open-pit mining in the alluvial aquifer adjacent to irrigated fields and Kanab Creek will likely disrupt the hydrologic balance and cause material damage to these water resources.

The application needs to discuss the potential of disrupting the return flow from the irrigated field located to the north of the permit area and up-gradient of planned open-pits. A subsequent disruption of Junior water rights claimed on the return flow may result in material damage to the hydrologic balance.

Open-pit mining below an unconfined aquifer's water table and subsequent drawdown of the aquifer during mining operations will cause groundwater held in the surrounding undisturbed alluvium to flow towards and ultimately into the mine workings along a hydraulic gradient. In order for the mine to operate in the bottom of the open-pits, the mine water in-flow will be continually dewatered using pumps and other water conveyance systems. In the North Lease, the open-pits will dig deeper into the alluvium as the mining advances north which will increase the vertical hydraulic gradient and the lateral radius of influence on the surrounding alluvial aquifer. It is important to know how far this radius of influence or cone of depression will extend out from the open-pits. If the cone of depression extends to the edge or beyond Kanab Creek this will likely cause draw down in the creek itself because the creek is in a gaining-losing equilibrium with the unconfined water table. The application does not provide a narrative and calculations associated with the cone of depression that will form in the alluvium around the open-pits. The Permittee needs to provide calculations and a supporting analysis of the cone of depression associated with each open-pit and highwall auger hole within the North Privae lease. This analysis must be supported with cross-sectional and plan view maps, tables, and graphs. The analysis must provide a discussion on the response of flow in Kanab if the cone of depression is expected to extend to and/or beyond the creek. This analysis must

also provide a discussion on any stratigraphic units encountered in drill holes that may have a stronger influence on the aquifer's response to drawdown. A discussion must be provided on any interruption of flow along the length of Kanab Creek that may result in material damage to the water resources within and adjacent to the permit area.

In order to better determine the probable hydrologic consequences of the operation upon the quality and quantity of surface and ground water in the permit and adjacent areas a Gain/Loss study will need to be done on Kanab Creek as it passes through the permit area.

Deficiencies Details:

R645-301-727: The application needs to discuss any potential disruption of the return flow from the irrigated field located to the north of the permit area and up-gradient of planned open-pits.

R645-301-728: The application will provide calculations and a supporting analysis of the cone of depression associated with each open-pit and highwall auger hole within the North Privae lease. This analysis must be supported with cross-sectional and plan view maps, tables, and graphs. The analysis must provide a discussion on the response of flow in Kanab if the cone of depression is expected to extend to and/or beyond the creek. This analysis must also provide a discussion on any stratigraphic units encountered in drill holes that may have a stronger influence on the aquifer's response to drawdown. A discussion must be provided on any interruption of flow along the length of Kanab Creek that may result in material damage to the water resources within and adjacent to the permit area.

kstorrar

Hydro GroundWater Monitoring Plan

Analysis:

The current groundwater monitoring plan does not adequately monitor the alluvial aquifer within and adjacent to the permit area. The groundwater monitoring plan does not have an adequate number of wells above, within, and below the permit area. The majority of wells in groundwater monitoring plan lack monitoring the aquifer at varying screened interval depths and a significant amount of monitoring wells will be destroyed during active mining. More wells are needed in order to be able to provide a clear picture of groundwater movement and how it may be affected by mining activities.
The permit area contains a valley-fill alluvial aquifer formed by quaternary erosional and depositional processes of Kanab Creek. In general, groundwater flows through this large alluvial aquifer that covers the majority of the permit area along a north to south hydraulic gradient. A large volume of flow enters the permit boundary on the north end through a wide and deep deposit of alluvial sediments resting on top of the Tropic Shale and the Smirl Coal seam. As groundwater migrates southward, the alluvial aquifer constricts in 1) width between Tropic shale outcrops to the east and west of the alluvial deposits and in 2) thickness as the updip of Dakota sandstone rises to the surface and eventually outcrops. Groundwater then exits the southern permit boundary primarily contained in a narrow and shallow gravel alluvial deposit resting on top of the Dakota sandstone.
Additional groundwater monitoring wells must be installed in the alluvial aquifer within and adjacent to the North Private lease and positioned so as not to be destroyed by mining activities. The intent of these wells is to monitor any impact that active mining may have on the quantity and quality of groundwater and surface water in Kanab Creek within and adjacent to the permit area. The alluvial aquifer groundwater must be monitored at multiple vertical depths and multiple areal locations in three zones: 1) just north of the permit area, 2) on both the east and west sides of Kanab Creek in-between the creek and the active mine workings, and 3) just south of the permit area. The methodology of selecting the specific well locations and identifying the screened interval lengths and depths based on relevant well log data must be outlined. When groundwater is measured at multiple vertical depths the wells will be tightly grouped, such as the C- and S-well groups found in the southern permit area. At a minimum the aquifer will be screened: 1) across the current existing water table, 2) roughly mid-depth in the aquifer, 3) at the base of the aquifer, but not within the underlying bedrock. The roughly mid-depth monitoring wells will be screened across gravel lenses with the highest permeability. The specific locations for these monitoring wells are:
1) Groundwater monitoring wells must be installed within the alluvial aquifer directly north of the permit area and on the east and west banks of Kanab Creek. The wells will be no more than 100 yards from Kanab Creek and no more than 100 yards north of the permit area.
2) Groundwater monitoring wells must be installed on the east and west banks of Kanab Creek. These wells will be installed between active mining and the creek. There will be at a minimum three groundwater monitoring locations that will be roughly equally spaced along the length fo the creek through the permit area.
3) Groundwater monitoring wells must be installed downstream of the permit area no more than 140 yds downstream of the county road where it crosses Kanab Creek. The monitoring wells will be placed in the gravel alluvium (D50 > 1 cm) at point where the quantity of surface flow in Kanab Creek is readily and accurately measured. A minimum of six wells will be installed in the bottom of the Kanab Creek channel floodplain in a 3 x 2 gridded matrix. The matrix will be positioned to have

both the three well arrays running along cross-sections that are perpendicular to flow in Kanab Creek. Both three well arrays will be spaced no more than 15 yards apart. The wells will be fully screened from the water-table to the bottom of the alluvial sediments resting on the bedrock. The three wells along the perpendicular array will be equally spaced along the cross-section in the bottom of Kanab Creek's floodplain channel. Both three well arrays will have one well located on the opposite and narrower bank as measured along the cross-section.

This third location of water monitoring just south of the permit area is a critical location to establish long-term monitoring of groundwater and surface flows in the incised channel of Kanab Creek. Groundwater passing southward through the alluvial aquifer can be the most accurately quantified at this location because it is forced into the narrow bedrock outcrop or bottleneck of the Dakota sandstone near the southern permit boundary. As groundwater enters this transition zone it up-wells and discharges into Kanab Creek leaving a relatively low volume of groundwater held within the shallow gravel alluvial deposits. At this location both the groundwater discharge and surface runoff from the permit area can be readily and accurately monitored to detect any changes in the hydraulic balance caused by mining.

Deficiencies Details:

R645-301-724.310, R645-301-731: Additional groundwater monitoring wells must be installed in the alluvial aquifer within and adjacent to the North Private lease and positioned so as not to be destroyed by mining activities. The intent of these wells is to monitor any impact that active mining may have on the quantity and quality of groundwater and surface water in Kanab Creek within and adjacent to the permit area. The alluvial aquifer groundwater must be monitored at multiple vertical depths and multiple areal locations in three zones: 1) just north of the permit area, 2) on both the east and west sides of Kanab Creek in-between the creek and the active mine workings, and 3) just south of the permit area. The methodology of selecting the specific well locations and identifying the screened interval lengths and depths based on relevant well log data must be outlined. When groundwater is measured at multiple vertical depths the wells will be tightly grouped, such as the C- and S-well groups found in the southern permit area. At a minimum the aquifer will be screened: 1) across the current existing water table, 2) roughly mid-depth in the aquifer, 3) at the base of the aquifer, but not within the underlying bedrock. The roughly mid-depth monitoring wells will be screened across gravel lenses with the highest permeability. The specific locations for these monitoring wells are:
1) Groundwater monitoring wells must be installed within the alluvial aquifer directly north of the permit area and on the east and west banks of Kanab Creek. The wells will be no more than 100 yards from Kanab Creek and no more than 100 yards north of the permit area.
2) Groundwater monitoring wells must be installed on the east and west banks of Kanab Creek. These wells will be installed between active mining and the creek. There will be at a minimum three groundwater monitoring locations that will be roughly equally spaced along the length fo the creek through the permit area.
3) Groundwater monitoring wells must be installed downstream of the permit area no more than 140 yds downstream of the county road where it crosses Kanab Creek. The monitoring wells will be placed in the gravel alluvium (D50 > 1 cm) at point where the quantity of surface flow in Kanab Creek is readily and accurately measured. A minimum of six wells will be installed in the bottom of the Kanab Creek channel floodplain in a 3 x 2 gridded matrix. The matrix will be positioned to have both the three well arrays running along cross-sections that are perpendicular to flow in Kanab Creek. Both three well arrays will be spaced no more than 15 yards apart. The wells will be fully screened from the water-table to the bottom of the alluvial sediments resting on the bedrock. The three wells along the perpendicular array will be equally spaced along the cross-section in the bottom of Kanab Creek's floodplain channel. Both three well arrays will have one well located on the opposite and narrower bank as measured along the cross-section.

kstorrar

Hydro SurfaceWater Monitoring Plan

Analysis:

An additional surface water monitoring point on Kanab Creek south of the permit area will be added to the surface-water monitoring plan. The surface water monitoring point will be along one of the two cross-sections in the groundwater monitoring well matrix located south of the permit area. This surface water monitoring point will be at a point where the stream is confined to one channel where by the quality and quantity of flow in Kanab Creek is readily and accurately measured. This surface water monitoring point will be monitored quarterly through active mining and reclamation of the site.

Deficiencies Details:

724.310; R645-301-731: An additional surface water monitoring point on Kanab Creek south of the permit area will be added to the surface-water monitoring plan. The surface water monitoring point will be along one of the two cross-sections in the groundwater monitoring well matrix located south of the permit area. This surface water monitoring point will be at a point where the stream is confined to one channel where by the quality and quantity of flow in Kanab Creek is readily and accurately measured. This surface water monitoring point will be monitored quarterly through active mining and reclamation of the site.

Maps Affected Area Boundary Maps

Analysis:

The application does not meet the minimum requirements of R645-301-358.400, R645-301-521.100 through-521.130, R645-301-731.610 and R645-301-121.200 by showing disturbance shading crossing into Kanab Creek Stream channel in Drawings 5-46 and not providing any cross sections of the existing arroyos geomorphology that will be destroyed during mining operations.

The stream buffer area, labeled as Undisturbed Kanab Creek (21.3 Acres) shows the associated area for a 100 ft. buffer from the stream center line, however, due to the extensive erosion and incised channel of Kanab Creek, some of the boundary of Year 1, Year 3 disturbance areas, and Undisturbed NE and N cross below the Ordinary High Water Mark on drawing 5-43. Kanab Creek is considered a water of the U.S. and fill placed below the OHWM would require USACE approval. In addition to the joint approval agency required, the reclamation of the incised channel slopes of Kanab Creek would require new engineering designs to achieve a stable slope post disturbance.

The Division requires:
Drawing 5-46 to be edited to show all disturbance and undisturbed shadings outside the channel of Kanab Creek
The corresponding acres to each of the labeled areas will also need to be updated on all relevant drawings
Cross Sections of existing arroyos to demonstrate the existing geomorphology to be able to reconstruct the arroyos post mining operations to stable conditions

Drawings 5-45 of the pre-mining topography meets the minimum requirements of R645-301-521.100 by accurately showing the proposed North Lease permit boundary according to the pre mining topography.

The application meets the minimum requirements of R645-301-521.110 which requires previously mined areas to be show. Within the application Chapter 5, Section 521.110 details the previously historic mining operations within the Alton Amphitheater. The text also details how none of these previous mining operations occur within the existing Coal Hollow permit area or the proposed North Lease permit area.

Deficiencies Details:

The application does not meet the minimum requirements of R645-301-358.400, R645-301-521.100 through-521.130, R645-301-731.610 and R645-301-121.200 by showing disturbance shading crossing into Kanab Creek Stream channel in Drawings 5-46 and not providing any cross sections of the existing arroyos geomorphology that will be destroyed during mining operations.

The stream buffer area, labeled as Undisturbed Kanab Creek (21.3 Acres) shows the associated area for a 100 ft. buffer from the stream center line, however, due to the extensive erosion and incised channel of Kanab Creek, some of the boundary of Year 1, Year 3 disturbance areas, and Undisturbed NE and N cross below the Ordinary High Water Mark on drawing 5-43. Kanab Creek is considered a water of the U.S. and fill placed below the OHWM would require USACE approval. In addition to the joint approval agency required, the reclamation of the incised channel slopes of Kanab Creek would require new engineering designs to achieve a stable slope post disturbance.

The Permittee shall provide:
- Drawing 5-46 edited to show all disturbance and undisturbed shadings outside the channel of Kanab Creek
- The corresponding acres to each of the labeled areas will also be updated on all relevant drawings throughout the MRP.
- Cross Sections of existing arroyos to demonstrate the existing geomorphology to be able to reconstruct the arroyos post mining operations to stable conditions .

Maps Archeological Site Maps

Analysis:

The application does not meet the State of Utah R645 Coal Mining Rule requirements for Maps, Plans and Cross Sections of Resource Information requirements.

The maps provided that detail the cultural resources and their locations within the North Private Lease are not sufficient. While maps addressing the currently approved permit area are provided, a map showing the area inventoried for cultural

resources in the North Private Lease area is not provided.

Deficiencies Details:

R645-301-411.141.1: The Permittee must provide maps for the North Private Lease area that "clearly show" the "boundaries ... and locations of any cultural and historical resources listed or eligible for listing in the National Register of Historic Places and known archaeological sites within the permit and adjacent areas." These are confidential in nature, but should be included in the appropriate Appendix. This includes, but is not limited to, a map showing the area inventoried during efforts to identify cultural resources within the North Private Lease area, a map showing identified sites in relation to the proposed lease area boundaries, etc.

jmontcalm

Maps Existing Structures and Facilities

Analysis:

The application meets the minimum requirements of R645-301-521.120 by clearly showing that there are no buildings within a 1000 ft of the existing and proposed permit area. Drawings 1-5 and 1-6 along with text within Chapter 5 Section 521.121 of the MRP were updated to include the proposed North Lease within the current application.See discussion of existing surface configuration for more details.

cparker

Maps Existing Surface Configuration

Analysis:

The application does not meet the minimum requirements of R645-301-521.150 due to missing cross section drawings detailing the slope measurements utilized to take into account the natural variation in the slope to provide accurate representation of the range of natural slopes and reflect the geomorphic differences of the area being disturbed as represented in the large scale Drawing 5-45. Drawing 5-45 details the existing surface with four foot contours but does not detail the Middle Wash, West wash, in addition to the arroyo east of Kanab Creek that will be disturbed by mining operations. The Permittee will submit detail cross sections showing the existing geomorphology of any wash or arroyo that will be disturbed due to mining operations.

Deficiencies Details:

The application does not meet the minimum requirements of R645-301-521.150 due to missing cross section drawings detailing the slope measurements utilized to take into account the natural variation in the slope to provide accurate representation of the range of natural slopes and reflect the geomorphic differences of the area being disturbed as represented in the large scale Drawing 5-45. Drawing 5-45 details the existing surface with four foot contours but does not detail the Middle Wash, West wash, in addition to the arroyo east of Kanab Creek that will be disturbed by mining operations. Drawing 5-71 does not show any engineered stabilized banks that will meet the minimum requirements of R645-301-358.400, R645-301-521.100 through-521.130, R645-301-731.610 and R645-301-121.200.

The Permittee will submit detail cross sections showing the existing geomorphology of any wash or arroyo that will be disturbed due to mining operations so that the reclamation of the arroyos will be able to match the a reasonable extent the existing geomorphology in detail cross section of Drawing 5-72.

cparker

Maps Mine Working

Analysis:

The application meets the minimum requirement of R645-301-521.140 which require maps that clearly show all mine plans. Drawings 5-47 through 5-75 detail the North Lease Facilities and mining and reclamation operations footprints thought the proposed permitted area.

cparker

Maps Permit Area Boundary

Analysis:

The application meets the minimum requirements of R645-301-521.140 as Drawing 5-45 details the new permit boundary, lease boundary, and adjacent areas to the current mine plan. Chapter 5 Section 521.132 accurately details that the proposed permit areas are shown on all applicable drawings within the MRP.

cparker

Maps Surface and Subsurface Manmade Features

Analysis:

The application meets the minimum requirement of R645-301-521.122 as it includes Drawing 5-45 and Figure 12 in Appendix 7-16 which clearly call 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. Exiting agricultural water pipelines are shown on Figure 12 in Appendix 7-16. Four ponds are located in the North Lease area along with public roads detailed in Section 521.123 and 521.124 of Chapter 5 of the MRP.

cparker

Maps Surface and Subsurface Ownershiip

Analysis:

The application meets the minimum requirements of R645-301-521.130 which requires landowners, right of entry, and public interest maps as updated within the application for the North Lease in Drawing 1-3 for surface ownership and Drawing 1-4 for subsurface ownership drawings.

cparker

Maps Surface Water Resource

Analysis:

R645-301-728; R645-301-724.310 - The application needs to provide maps, geologic and hydrogeology cross-sections, and a supporting narrative of the probable hydrologic consequences of highwall mining on the alluvial aquifer in the permit area. This includes specifically detailing the alluvial scour zones into the coal seam in the southern portion of the permit area. As well as areas where the alluvial sediments rest on top of the coal seam.

The application does not provide on-the-ground photo documentation of the pre-mining site. It will be important to have photo documentation during site reclamation in order to accurately reconstruct the landscape. The Permittee needs to provide photos along the longitudinal length of all geomorphic surface features that will be disturbed or potentially disturbed by mining activities. These features include, but are not limited to: Kanab creek and the two gullies within the southern end of the permit area.

722.500: The application does not provide measured cross-sections and longitudinal profiles of the premining geomorphic landscape.

R645-301-724.300: The application does not include a plan view map of the Smirl coal seam line boundary, including but not limited to the surfical coal outcroppings and any Quaternary Alluvium scour zones that occur underground.

The Permittee has added an additional surface water monitoring point along Kanab creek about halfway through the permit area or roughly halfway between NLP-5 and NLP-11. This requires the application to update the water monitoring map needs to have the updated monitoring point in center of permit area along Kanab Creek.

Figure 18 in Appendix 7-16 shows water level contours for the alluvial groundwater system. In order to easily interpret this map it also needs to show the high and low surface to groundwater values at each well site. This map needs to include equipotential line and flow lines of groundwater movement as it enters, passes through, and exits the permit area.

R645-301-512.100. All required Hydrologic and Geologic plan view maps and cross-sections in Appendix 7-16 need to be professionally certified. Many of the maps provided in the appendix are not professionally certified.

R645-301-731.700; R645-301-512.100: The cross-sectional view of the alluvial groundwater system in Appendix 7-16 needs to portray seasonal differences of head and be based upon groundwater monitoring data. This map must be

professionally certified.

R645-301-731.700: For all maps showing contours in Appendix 7-16, the contour interval needs to be stated in the legend.

The application will provide a map of the location of wells that will be mined through in the permit area. The application will commit to a timetable of when these wells will be permanently closed and abandoned.

Deficiencies Details:

R645-301-728; R645-301-724.310 - The application needs to provide maps, geologic and hydrogeology cross-sections, and a supporting narrative of the probable hydrologic consequences of highwall mining on the alluvial aquifer in the permit area. This includes specifically detailing the alluvial scour zones into the coal seam in the southern portion of the permit area. As well as areas where the alluvial sediments rest on top of the coal seam.

R645-301-722.500: The application must provide photos along the longitudinal length of all geomorphic features (streams, ephemeral channels, seeps, ponds, etc.) that will be disturbed or potentially disturbed by mining activities. These features include, but are not limited to: Kanab creek and all the major gullies within the permit area that will be disturbed. These photos will be referenced during reclamation phases.

R645-301-722.500: The application will provide measured cross-sections and longitudinal profiles of the premining geomorphic landscape.

R645-301-724.300: The application must include a plan view map of the Smirl coal seam line boundary, including but not limited to the surfical coal outcroppings and any Quaternary Alluvium scour zones that occur underground.

R645-301-731.700: The Permittee has added an additional surface water monitoring point along Kanab creek about halfway through the permit area or roughly halfway between NLP-5 and NLP-11. This requires the application to update the water monitoring map needs to have the updated monitoring point in center of permit area along Kanab Creek.

R645-301-731.700: Figure 18 in Appendix 7-16 shows water level contours for the alluvial groundwater system. In order to easily interpret this map it also needs to show the high and low surface to groundwater values at each well site. This map needs to include equipotential lines and flow lines of groundwater movement as it enters, passes through, and exits the permit area.

R645-301-512.100. All required Hydrologic and Geologic plan view maps and cross-sections in Appendix 7-16 need to be professionally certified.

R645-301-731.700; R645-301-512.100: The cross-sectional view of the alluvial groundwater system in Appendix 7-16 needs to portray seasonal differences of head and be based upon groundwater monitoring data. This map must be professionally certified.

R645-301-731.700: For all maps showing contours in Appendix 7-16, the contour interval needs to be stated in the legend.

R645-301-731.700: The application will provide a map of the location of wells that will be mined through in the permit area. The application will commit to a timetable of when these wells will be permanently closed and abandoned.

kstorrar

Operation Plan

Mining Operations and Facilities

Analysis:

The application meets the minimum requirements of R645-301-523 by including a description of the mining operation, method of coal mining, engineering techniques, anticipated annual and total production of coal by tonnage, and major equipment to be used for all aspects of those operations proposed to be conducted during the life. Drawings 5-1 through 5-44 along with appendices 5-1 through 5-10 detail the mining operations of the current Coal Hollow permit area. Drawings 5-45 through 5-75 along with appendix 5-11 and 5-12 detail the mining operations of the North Private Lease. Text was

added to the MRP Chapter 5 Section 521.140 detailing the extend of total disturbance for the North Lease is expected to reach a maximum of 230.8 acres or a three year period.

The application meets the minimum requirements of R645-301-526 detailing the sequencing and mining operations total production schedule with Chapter 5 Section 526. Drawings 5-50 through 5-55 support the details described with section 526 of the MRP.

cparker

Existing Structures

Analysis:

The application meets the minimum requirements of R645-301-526 by providing updated information to include the discussion of the existing buildings associated with the Coal hollow permit. Drawing 5-45 details the public road location associated with the North Private Lease and Figure 12 within Appendix 7-16 details the existing agricultural ponds and pipelines that exist prior to mining operations.

cparker

Protection Public Places

Analysis:

The application does not meet the State of Utah R645 Coal Mining Rule requirements for Protection of Public Parks and Historic Places.

Presented in Appendix 4-7 is the draft Archaeological Monitoring & Historical Properties Treatment Plan for the Alton Coal Northern Project Lease Area, Kane County, Utah. As proposed mining activities in the North Lease area have been determined to adversely affect cultural resource sites Eligible for the National Register of Historic Places, appropriate treatment and mitigation measures will be required for sites 42KA3077, 42KA3097, and 42KA6088 (R645-301-411.144). This step is usually taken after a determination of Eligibility and Effect has been made by the Division, and concurrence with said determination is received from SHPO.

In this case, the proposed treatment and mitigation plan was drafted prior to Division coordination with SHPO regarding Eligibility and Effects to cultural resource sites. It does not represent a plan approved by the Division (through consultation with SHPO) to protect historic resources within the North Lease Expansion area. Appropriate treatment and mitigation measures will be decided by the Division in consultation with SHPO. Additional information will be required by the Division (as discussed in R645-301-411.143). The requirements for this additional work must be developed through Division/SHPO consultation and review of the draft Archaeological Monitoring & Historical Properties Treatment Plan for the Alton Coal Northern Project Lease Area, Kane County, Utah presented in Appendix 4-7.
The draft Archaeological Monitoring & Historical Properties Treatment Plan for the Alton Coal Northern Project Lease Area, Kane County, Utah presented in Appendix 4-7 will be utilized by the Division for this purpose. Division comments and edits to said treatment plan will be provided to the archaeological contractor and must be addressed. Once the draft treatment plan meets the Division's standards and expectations, it will be submitted to SHPO for review.

The draft Archaeological Monitoring & Historical Properties Treatment Plan for the Alton Coal Northern Project Lease Area, Kane County, Utah, will be reviewed by the Division and will serve as the basis for developing a treatment and mitigation plan to address Adverse Effects to sites 42KA3067 and 42KA3097. Efforts described in the draft plan to avoid 42KA6088 seek to ensure no project related impacts occur to the site. The Division will review the draft, provide comments/edits, and consult with SHPO regarding said plan. The final treatment and mitigation plan will be developed through that consultation.

Deficiencies Details:

R645-301-411.144: The Permittee must follow the process for the development, approval, and implementation of an appropriate treatment and mitigation plan to address Adverse Effects to sites 42KA3077 and 42AK3097, and to ensure No Adverse Effects to site 42KA6088.

jmontcalm

Relocation or Use of Public Roads

Analysis:

The application meets the minimum 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. Chapter 5 section 521.1333.2 details how County Road 136 (k3900) and Alton Coal mine road (K3100) will be temporarily relocated outside the North Private Lease permit area. Temporary bypass roads will be constructed by Along Coal as detailed in Drawings 5-3, 5-45, 5-22E, 5-22F, and 5-59 through 5-61. The County will hold the required bond amount for the reconstruction of the roads which are expected to be diverted around the mine for approximately 5 years.

cparker

Coal Recovery

Analysis:

The application meets the minimum requirements of R645-301-522 due to a discussion of the measures to be used to maximize the use and conservation of the coal resources.
The coal seam varies from 11 to 18.5 feet thick throughout the permit areas. Drawing 5-50 meets the minimum requirements of R645-301-522 by detailing the how the coal seam will be mined throughout the North Private Lease permit area. Drawing 5-51 details the tonnage of coal to be mined by the various mining methods annually. Specifically highwall mining will not begin until Year 2 of the North Private lease operations. Drawing 5-52, 5-53 and - detail the strip isopach, coal thickness isopach, and the overburden thickness isopach at meet the minimum requirements as required by R645-301-522. Chapter 5 Section 522 was updated to detail the operations of the North Private lease to include over the road trucks loaded by the backhole or font end loader and hauled via inpit roads and the primary haul road to the crusher facility.

cparker

Subsidence Control Plan Renewable Resource

Analysis:

The minimum requirements of R645-301-525.130 are met in the application as the Permittee presented a clear subsidence plan for protected areas detail in Chapter 5 section 525.

cparker

Subsidence Control Plan Subsidence

Analysis:

The minimum requirements of R645-301-525.700 are met in the application as the Permittee addressed that although there will be first mining and the coal extraction will be limited to less than 50% to ensure no subsidence, the Permittee will conduct Surface inspections as outlines within Chapter 5 Section 525.

cparker

Subsidence Control Plan Performance STD

Analysis:

The Applicant has met the minimum regulatory requirements for this section of the regulations. Mining in the North Private Lease area will only be conducted by surface methods (Open pit and Highwall mining). No underground mining is planned. As such, no subsidence is projected to occur and no subsidence monitoring plan is required.

dhaddock

Subsidence Control Plan Performance STD

Analysis:

The minimum requirements of R645-301-525.700 are met in the application as the Permittee addressed that although there will be first mining and the coal extraction will be limited to less than 50% to ensure no subsidence, the Permittee will conduct Surface inspections as outlines within Chapter 5 Section 525.

cparker

Subsidence Control Plan Notification

Analysis:

The minimum requirements of R645-301-525.700 are met in the application as the Permittee addressed that although there will be first mining and the coal extraction will be limited to less than 50% to ensure no subsidence, the Permittee will conduct Surface inspections as outlines within Chapter 5 Section 525.

cparker

Subsidence Control Plan Slides and Other Damage

Analysis:

The application meets the minimum 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 natural barrier will be left undisturbed except as necessary for road, sedimentation control, temporary topsoil storage and similar features, beginning at the elevation of the coal seam and extending from the out slope for a distance of 50 ft.

cparker

Fish and Wildlife Protection and Enhancement Plan

Analysis:

Appendix 3-8, the Greater Sage Grouse Management Plan North Private Lease, Alton, Utah is included in the application.
The fish and wildlife protection and enhancement plan will need to include the following:
A description of how the proposed mitigation of 1000 acres of accessable sage grouse habitat will be completed prior to obtaining a permit to commence surface mining activities in the Private North lease area and ;
A commitment to provide funding annually for the purchase of two GPS collars or $8,000 whichever is greater.
The application refers to the current (2015) sage grouse monitoring that has not been approved. ACD will need to obtain approval for the 2015 sage grouse monitoring plan and ACD will need to consult with the Division to determine the specific criterion for implementing the following components of the sage grouse management plan for the North lease area:

Employee Observations;
Monthly Bird Surveys;
GPS Collaring and Monitoring;
Noise Detection and Sound Assessment;
Habitat Mitigation;
Vegetation Improvements and Monitoring and;
Predator Control Activities.

Deficiencies Details:

The information in the application is not adequate to meet the requirements of this section of the regulations. Prior to approval the following information is required in accordance with R645-301-330;

ACD will need to provide verification of completion 1000 acres of sage grouse mitigation for the North Lease area;

ACD will need to consult with the Division to determine the specific criterion for implementing the following components of the sage grouse management plan for the North lease application:

Employee Observations;
Monthly Bird Surveys;
GPS Collaring and Monitoring;
Noise Detection and Sound Assessment;
Habitat Mitigation;
Vegetation Improvements and Monitoring and;
Predator Control Activities.

Additional information may be required by DWR an or FWS.

jhelfric

Topsoil and Subsoil

Analysis:

Analysis:
R645-302-315.300 and R645-302-317.210 requires the consent of the NRCS State Conservationist. This process is underway. The Division will keep the NRCS updated with new information from ACD as it is provided.

In Section 232.600 of the MRP, Dwg 2-3 is compared with Dwg 10 in Vol 11 for information on soil salvage depth. These two maps must be of the same scale to be of use as a comparison.

Table 13 and Table 14 and Soil Map 10 in Vol 11 show the average salvage depths in prime farmland and non-prime farmland soils. All soils will have approximately 48 inches recovered and stockpiled. The plan further describes separate handling of prime farmland sols by horizon, with the A or surface horizon of 0.7 ft. (approximately 22 cm) being salvaged separately from the B horizon which extends 3 ft or 91 cm. The C horizon is 0.3 ft (3.6 inches or 9.1 cm). Realistically, such a small fraction of the C horizon will be very difficult to separate and the salvage plan describes combining the B & C horizons (Section 317.432). All the prime farmland C horizons outlined for salvage is less than 6 inches, this means that there will be no salvage of C horizon from the prime farmland soil. The use of soil mixtures and substitutes is contemplated in R645-302-314.200, therefore, the NRCS may be able to authorize this combined salvage.

The plan must specify the equipment used to achieve the salvage of the A and B/C horizons. The consultant recommends that salvage depths should be monitored in close consultation with a Certified Professional Soil Scientist. However, the Division does not agree with the analysis as set forth in the application as to the extent of the prime farmland soils within the permit area. The extent of the delineation will affect soil handling plans.

Map 2.3 Soil survey provides a chart of soil salvage depth. The surface 7 inches of Map Unit J is scheduled for a 7 inch salvage depth. However, Section 5 of Vol 11 clearly indicates that surface soils in map unit J are extreme in pH and should not be salvaged. Carbonate content greater than 30% at the surface is called out for 14 profile locations and is combined with clay textures and poor AWC, but the soil salvage map does not reflect this fact. The Permittee should review the information in Volume 11 and ensure that Dwg 2-3 salvage depths reflect that best available information.

The Soil Handling Map 2-4 shows the correct permit/disturbed area. Map 2-4 describes one topsoil stockpile and two temporary subsoil stockpiles to be used for live haul. By definition stockpiled materials are not being live-hauled. Therefore, the plan should include measures to be taken to stabilize any stockpiled soils, including seed and siltation structures in accordance with R645-301-231.400.

The plan states in Section 231.400 that Dwg 2-4 provides details for soil salvage by horizon in the prime farmland soils. Little information is provided for the prime farmland soils on Dwg 2-4. Section 317.400 describes salvage by horizon and stockpiled separately by landowner. In accordance with R645-302-317.400, the plan must state where the three prime farmland soil stockpiles for each landowner will be placed. The plan must include stockpile and protection of prime farmland soils on the east side of Kanab Creek within the permit/disturbed area. The plan must include provision for stabilization of soil stockpiles within 30 days as required by R645-302-317.440.

Section 317.400 also also describes sampling every 2 acres of prime farmland soils for for analysis of several parameters. The plan states that the depth of sampling will be limited to 12 inches. If the purpose of this sampling is to comply with R645-302-317.500, then the sampling should take place at final reclamation and this should be clear in the plan.

Section 232.720 describes the salvage of subsoil from adjacent soil units where subsoil is inadequate from soil map units A1, A2, A3, B, C, D and K. Section 317.420 also describes increased salvage depths in prime farmland soils to make up for a deficit of subsoil on soil map units A1, A2, N and D which are limited by the depth to Tropic Shale. In both cases and in both sections, the plan should call out the depth of salvage and the map unit area to be salvaged to produce the volume required.

Chap 2 should provide a reference to the location of topsoil and subsoil salvage volumes and a proposed method of tracking those volumes on a weekly basis.

Deficiencies Details:

R645-302-317.400, The plan states in Section 231.400 that Dwg 2-4 provides details for soil salvage by horizon in the prime farmland soils. But, there is little information provided for the prime farmland soils on Dwg 2-4. Section 317.400 describes salvage by horizon and stockpiled separately by landowner. In accordance with R645-302-317.400, the plan must state where the three prime farmland soil stockpiles for each landowner will be placed. The plan must also include stockpile and

protection of prime farmland soils on the east side of Kanab Creek within the permit/disturbed area.

R645-302-317.440,The plan must include descriptions for stabilization of soil stockpiles within 30 days.

R645-301-231.100, The soil salvage plan must include special handling for farmlands of statewide importance as described in the Order II Soil Survey. The soil salvage plan described in Section 317.432 must specify the equipment used to achieve the salvage of the A and B/C horizons. The plan must include the consultant's recommendation that salvage depths should be monitored in close consultation with a Certified Professional Soil Scientist.

R645-301-231.100, Drawing 2.3 Soil survey provides a chart of soil salvage depth. Map Unit J is scheduled for a 7 inch salvage depth. However, Section 5 of Vol 11 clearly indicates that surface soils in map unit J are extreme in pH and should not be salvaged. Carbonate content greater than 30% at the surface is called out for 14 profile locations and is combined with clay textures and poor AWC, but the soil salvage map does not reflect this fact. The Permittee should review the information in Volume 11 and ensure that Dwg 2-3 salvage depths reflect that best available information.

R645-301-231.400, Drawing 2-4 describes three temporary soil stockpiles to be used for live haul. By definition stockpiled materials are not being live-hauled. Therefore, the plan should include measures to be taken to stabilize any stockpiled soils, including seed and siltation structures.

R645-301-232.500, Section 232.720 describes the salvage of subsoil from adjacent soil units where subsoil is inadequate from soil map units A1, A2, A3, B, C, D and K. Section 317.420 also describes increased salvage depths in prime farmland soils to make up for a deficit of subsoil on soil map units A1, A2, N and D which are limited by the depth to Tropic Shale. In both cases and in both sections, the plan should call out the depth of salvage and the map unit area to be salvaged to produce the volume required and indicate the location of salvage on a map.

R645-301-231.400 and R645-301-232.600, Chapter 2 should provide the timing for topsoil and subsoil salvage by area shown on Dwg 2-4. Chapter 2 must state the volumes to be salvaged and stored in stockpiles and a proposed method of tracking volumes salvaged, stockpiled and replaced on a weekly basis.

R645-302-317.500, Section 317.400 describes sampling every 2 acres of prime farmland soils for for analysis of several parameters. If the purpose of this sampling is to comply with R645-302-317.500, then the sampling should take place at final reclamation and this should be clear in the plan.

pburton

Vegetation

Analysis:

In accordance with R645-301-356.110 the Division is responsible for consult with the applicant in determining appropriate reference area(s) as the benchmark for revegetation success of reclaimed disturbed areas. The Division's biologist assigned to this permit expansion (Joe Helfrich) conducted a field investigation of the proposed reference areas with with the applicant's consultant, (Pat Collins of Mt. Nebo Scientific) on August 13, 2015. For the three vegetative communities identified, two reference areas were proposed V03 Sagebrush and Wetland V306. The third community (pasture lands) will be reclaimed in accordance with the species composition of the plants identified and surveyed within the proposed area to be surfaced mined. There are three potential impacts to these two reference areas, air quality, water quality and available ground water in light of the 100' buffer of no disturbance on either side of Kanab creek.

The application needs to include the following information to address these potential impacts:
A monitoring frequency for the proposed reference areas V03 and V06 during active mining and the reclamation liability period;
An alternative reference area for site sagebrush reference area V03;
A vegetation sampling regimen for the riparian wetland vegetation communities located along Kanab creek below the southern end of the permit boundary(To be established by ACD in consultation with DOGM) and;
A commitment to mitigate impacts to these wetland riparian vegetation communities.

Deficiencies Details:

The information in the application is not adequate to meet the requirements of this section of the regulations. Prior to approval the following information is required in accordance with R645-301-330;
The application needs to include the following information:
A monitoring frequency for the proposed reference areas V03 and V06 during active mining and the reclamation liability period;

An alternative reference area for site sagebrush reference area V03;
A vegetation sampling regimen for the riparian wetland vegetation communities located along Kanab creek below the southern end of the permit boundary (to be established in consultation with DOGM) and;
A commitment to mitigate impacts to these wetland riparian vegetation communities located along Kanab creek below the southern end of the permit boundary.

Additional information may be required by DWR an or FWS.

jhelfric

Road Systems Classification

Analysis:

The application meets the minimum requirements of R645-301-527.100 by classify each road as primary or ancillary. Section 527 was updated to include the two additional primary haul roads that will be located in the North Private Lease, as detail in Drawing 5-56, 5-57, and 5-58.

cparker

Road System Plans and Drawings

Analysis:

The application meets the minimum requirements of R645-301-534.100 by submitting plans and drawing for each road to be maintained within the permit area as detailed under Chapter 5 Section 527.200. The description within the MRP details the design specification of the various primary road within the proposed North Lease permit area.

Deficiencies Details:

The minimum requirements of R645-301-527.220 are not met due to no change within the MRP to detail how the natural drainage ways affected by coal mining operations will be reclaimed to meet requirements of R645-301-358.400, R645-301-521.100 through-521.130, R645-301-731.610 and R645-301-121.200. The Permittee will provide engineering drawings detailing that the reclaimed natural drainage ways will be reconstructed to meet the above requirements.

R645-301-521.180, -526, -527.210, -534.150 are not met due to missing culvert labels on Drawing 5-47 of the facilities layout through the North Lease Area. No engineering analysis of the sizing of the culverts could also be located in Appendix 5-11 or 5-12. Culverts utilized within a disturbance area must meet R645 regulations, simply matching County DOT culverts is not a design analysis.

cparker

Road System Plans and Drawings

Analysis:

R645-301-742.423: It is unclear how the runoff from the haul road will be handled. The Drawing 5-64 Sediment Control Area Watershed does not show the Kanab Creek crossing within any of the disturbed watersheds.

R645-301-742.423: Culverts and their respective names must be shown on Drawing 5-47.

Deficiencies Details:

R645-301-742.423: It is unclear how the runoff from the haul road will be handled. The Drawing 5-64 Sediment Control Area Watershed does not show the Kanab Creek crossing within any of the disturbed watersheds.

R645-301-742.423: Culverts and their respective names must be shown on Drawing 5-47.

kstorrar

Road System Performance Standards

Analysis:

The application meets the minimum 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 but does not meet the requirements of detailing the road

drainage on Drawing 5-47 provided due to missing culvert information.

Deficiencies Details:

See Deficiencies detailed in Plans and Drawings.

cparker

Road System Performance Standards

Analysis:

R645-301-742.423.1; R645-301-742.423.5: Culvert sizing lacks supporting engineering calculations. No design calculations are provided for Drainage control along primary roads to safely pass a 10-year 6-hour rain event.

Deficiencies Details:

R645-301-742.423.1; R645-301-742.423.5: Culvert sizing lacks supporting engineering calculations. No design calculations are provided for Drainage control along primary roads to safely pass a 10-year 6-hour rain event.

kstorrar

Road System Certification

Analysis:

The application meets the minimum requirements of R645-301-521.170 by submitting plans and drawing for each road to be prepared by or under the direction of and certified by a qualified registered professional engineer.

cparker

Road System Other Transportation Facilities

Analysis:

The application meets the minimum 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.

cparker

Spoil Waste Disposals of Noncoal Mine Wastes

Analysis:

The application meets the minimum standards or R645-301-528.330 due detailing the disposal of noncoal mine waste disposal located in the current MRP Chapter 5 Section 528.

cparker

Spoil Waste Coal Mine Waste

Analysis:

The application meets the minimum standards or R645-301-528.320 due to not changes in the MRP text.

cparker

Spoil Waste Refuse Piles

Analysis:

The application meets the minimum standards or R645-301-528.322 due to not changes in the MRP text.

cparker

Spoil Waste Impounding Structures

Analysis:

The application does not meet the minimum standards of R645-301-512.240, R645-301-533.110 through 533.7.14 due missing information within the text presented in Chapter 5 Section 512.240 and Section 526.300. R645-301-533.110 states coal mine waste impounding structures shall have a minimum static safety factor of 1.3 for a normal pool with steady sate seepage saturation conditions. The aforementioned sections reference Appendix 5-11 and Appendix 5-12, however, neither appendix contains a slope stability analysis for Sediment impoundment 5 through 7 as detailed in Drawings 5-65 through 5-67.

The Permittee will amend text within Chapter 5 Section 512.240 to clarify that a detailed geotechnical analysis was only conducted for the south Coal Hollow private lease in and the report can be found in Appendix 5-1. Text will be added to the section stating how the detail field investigation that was conducted for the North Private Lease found the soils to be representative of the south lease negating the need for another detailed geotechnical analysis, specific slope stability.

The application meets the minimum requirements of R645-301-514.310-313 by text within Section 513.310-313 detailing inspection made regularly during construction, upon completion, and at least yearly until removal at final reclamation.

Deficiencies Details:

The application does not meet the minimum standards of R645-301-512.240, R645-301-533.110 through 533.7.14 due missing information within the text presented in Chapter 5 Section 512.240 and Section 526.300. R645-301-533.110 states coal mine waste impounding structures shall have a minimum static safety factor of 1.3 for a normal pool with steady sate seepage saturation conditions. The aforementioned sections reference Appendix 5-11 and Appendix 5-12, however, neither appendix contains a slope stability analysis for Sediment impoundment 5 through 7 as detailed in Drawings 5-65 through 5-67.

The Permittee will amend text within Chapter 5 Section 512.240 to clarify that a detailed geotechnical analysis was only conducted for the south Coal Hollow private lease in and the report can be found in Appendix 5-1. Text will be added to the section stating how the detail field investigation that was conducted for the North Private Lease found the soils to be representative of the south lease negating the need for another detailed geotechnical analysis, specific slope stability.

cparker

Spoil Waste Burning and Burned Waste Utilization

Analysis:

The application meets the minimum standards or R645-301-528.323 due to not changes in the MRP text.

cparker

Spoil Waste Coal Processing Waste to Abandoned

Analysis:

The application meets the minimum standards or R645-301-528.340 due to not changes in the MRP text.

cparker

Spoil Waste Excess Spoil

Analysis:

The application does not meet the minimum requirements of R645-301-512.210, -528.310, -535 due to no new slope stability calculations provided for the North Lease temporary excess spoil pile and no description of the design for the North Lease spoil placement and disposal sequencing. For example, Chapter 5 Section 512.210, 521.143 and various other sections call out that a professional engineer has certified the designs of the North Private Lease temporary excess spoil pile according to 535.100 and that the analysis can be viewed in Appendix 5-11. Appendix 5-11 is the GEM geotechnical report simply references the original slope stability report for the design of the southern Coal Hollow 150 ft. tall excess spoil pile. Stability factors stated throughout the MRP are for the design of the excess spoil pile detailed in the TGE report, not the final design of the Excess spoil pile or the temporary excess spoil pile located in the North Private Lease. The Permittee will submit text to detail the design, placement, and disposal sequencing of the North Lease temporary spoil pile with applicable designs and slope stability analysis as required by R645-301-535.

R645-301-528 is not met due to updated overburden calculations within Chapter 5 Section 528 detailing the volumes. The MRP does not detail what swell factor is utilized and the geotechnical report in Appendix 5-11 details a new the shrink factor of 15%. The Permittee will demonstrate the volumes with the new shrink factor of 15% or show details that the current volumes utilize 15% shrink factor.

The application meets the minimum requirements of R645-301-514.100 detailing inspection of the excess spoil pile during construction, completion and quarterly.

Deficiencies Details:

The application does not meet the minimum requirements of R645-301-512.210, -528.310, -535 due to no new slope stability calculations provided for the North Lease temporary excess spoil pile and no description of the design for the North Lease spoil placement and disposal sequencing. For example, Chapter 5 Section 512.210, 521.143 and various other sections call out that a professional engineer has certified the designs of the North Private Lease temporary excess spoil pile according to 535.100 and that the analysis can be viewed in Appendix 5-11. Appendix 5-11 is the GEM geotechnical report simply references the original slope stability report for the design of the southern Coal Hollow 150 ft. tall excess spoil pile. Stability factors stated throughout the MRP are for the design of the excess spoil pile detailed in the TGE report, not the final design of the Excess spoil pile or the temporary excess spoil pile located in the North Private Lease. The Permittee will submit text to detail the design, placement, and disposal sequencing of the North Lease temporary spoil pile with applicable designs and slope stability analysis as required by R645-301-535.

R645-301-528 is not met due to updated overburden calculations within Chapter 5 Section 528 detailing the volumes. The MRP does not detail what swell factor is utilized and the geotechnical report in Appendix 5-11 details a new the shrink factor of 15%. The Permittee will demonstrate the volumes with the new shrink factor of 15% or show details that the current volumes utilize 15% shrink factor.

cparker

Hydrologic General

Analysis:

R645-301-742.200: Chapter 7 does not reference any North Private Lease drawings in this section. It is important to reference the North Private lease in this section to more easily navigate the MRP.

731-727, 731.800: The application proposes to use the production well located in the south lease to offset and or replace any interruption of groundwater and/or surface water sources within or adjacent to the North Private lease. While this may be an acceptable plan, there are multiple deficiencies within the permit application that need to be addressed. The Permittee lacks establishing the extent of the disturbance or potential material damage to down-stream water rights holders. The application must establish a point along Kanab Creek where any quantifiable impact to the hydrologic balance by mining activities would be negligible or a flow off-set point, such as when the creek reaches a large river, a lake, a reservoir, etc. The water rights potentially impacted along Kanab Creek and a sum of the total acre-feet for these water rights must be given from the flow off-set point up-stream to the permit area.

R645-301-731-727, R645-301-731.800: The application needs to demonstrate the production well is capable of replacing all affected water rights to the flow off-set point. This includes but is not limited to calculating the volume held in the aquifer and providing a narrative with supporting evidence of aquifer's hydrogeologic characteristics, recharge rates, and discharge rates. The application needs to commit to a timeline of procedures the Permittee will take to begin replacing water rights. This will include a timeline for filing the change application on the water right held by Alton Town Incorporated.

R645-301-731-727, R645-301-731.800: The application will provide a threshold value at multiple water monitoring sites (wells and streams) for determining when water right replacement will commence.

R645-301-731.211: The application must provide a detailed discussion of how it will deal with alluvial groundwater intercepted in open pits and provide a monitoring plan for water discharged into the open-pits.

Deficiencies Details:

R645-301-742.200: Chapter 7 does not reference any North Private Lease drawings in this section. It is important to reference the North Private lease in this section to more easily navigate the MRP.

731-727, 731.800: The application proposes to use the production well located in the south lease to offset and or replace

any interruption of groundwater and/or surface water sources within or adjacent to the North Private lease. While this may be an acceptable plan, there are multiple deficiencies within the permit application that need to be addressed. The Permittee lacks establishing the extent of the disturbance or potential material damage to down-stream water rights holders. The application must establish a point along Kanab Creek where any quantifiable impact to the hydrologic balance by mining activities would be negligible or a flow off-set point, such as when the creek reaches a large river, a lake, a reservoir, etc. The water rights potentially impacted along Kanab Creek and a sum of the total acre-feet for these water rights must be given from the flow off-set point up-stream to the permit area.

R645-301-731-727, R645-301-731.800: The application needs to demonstrate the production well is capable of replacing all affected water rights to the flow off-set point. This includes but is not limited to calculating the volume held in the aquifer and providing a narrative with supporting evidence of aquifer's hydrogeologic characteristics, recharge rates, and discharge rates. The application needs to commit to a timeline of procedures the Permittee will take to begin replacing water rights. This will include a timeline for filing the change application on the water right held by Alton Town Incorporated.

R645-301-731-727, R645-301-731.800: The application will provide a threshold value at multiple water monitoring sites (wells and streams) for determining when water right replacement will commence.

R645-301-731.211: The application must provide a detailed discussion of how it will deal with alluvial groundwater intercepted in open pits and provide a monitoring plan for water discharged into the open-pits.

kstorrar

Hydrologic Ground Water Monitoring

Analysis:

The application needs to provide a detailed narrative and map of the pit backfill sequence in six-months intervals. It is necessary to know the handling sequence of earth materials in order to minimize potentially long lasting impacts to surface and groundwater quality.

R645-301-731.211: The application must provide a detailed discussion of how it will deal with alluvial groundwater intercepted in open pits and provide a monitoring plan for water discharged into the open-pits.

R645-301-727: The application must provide a narrative of how mining activities will to slow or stop any material damage that may occur to flow rates along Kanab Creek above within and below the permit area.

The ultrasonic depth measuring device at 'Kanab @ CR' is unable to accurately measure the baseflow of Kanab Creek. The ultrasonic is suspended from a ceiling mount to be ~5 feet from the bottom of the culvert. The device uses an acoustic 'chirp' to determine the distance to the bottom of the culvert or the depth of water in the culvert. However, the width of Kanab Creek flowing at baseflow through the culvert is too narrow for the ultrasonic to accurately detect the distance to the water surface to determine the flow depth. This form of measurement is unacceptable for accurately and consistently measuring flow in Kanab Creek at all flow stages. The application must detail a specific methodology that will accurately measure the flow volume in Kanab Creek at all flow stages at the surface water sampling site 'Kanab @ CR'.

Deficiencies Details:

R645-301-731.112.; R645-301-731.121; R645-301-731.122; R645-301-731.611: The application needs to provide a detailed narrative and map of the pit backfill sequence in six-months intervals.

R645-301-731.211: The application must provide a detailed discussion of how it will deal with alluvial groundwater intercepted in open pits and provide a monitoring plan for water discharged into the open-pits.

R645-301-727: The application must provide a narrative of how mining activities will to slow or stop any material damage that may occur to flow rates along Kanab Creek above within and below the permit area.

R645-301-731.220: The method for measuring quarterly flow measurements using an ultrasonic at Kanab at CR is unacceptable. The device cannot accurately and consistently measure flow in Kanab Creek at all flow stages. The application must detail a specific methodology that will accurately measure the flow volume in Kanab Creek at all flow stages at the surface water sampling site Kanab at CR.

kstorrar

Hydrologic Acid and Toxic forming Materials

Analysis:

R645-301-731.121 – The application must discuss how surface waters will be protected if groundwater discharge from the open-pits is high in TDS.

Deficiencies Details:

R645-301-731.121 – The application must discuss how surface waters will be protected if groundwater discharge from the open-pits is high in TDS.

kstorrar

Hydrologic Water Quality Standards

Analysis:

R645-301-742: The three Alternative Sediment Control Areas (ASCAs) on the west side of the North Lease area are not implementing the Best Technology Currently Available. ASCAs are intended for areas that will only receive small amounts of suspended sediment as runoff effluent. The current design shows the ASCAs will treat watersheds with runoff effluent carrying coal fines, hydraulic fluid, machine oil, gasoline and grease and all other pollutants associated with industrial activities within the defined watersheds. The Best Technology Currently Available will need to be implemented at each Point Source discharge point where effluent exits the permit area.

R645-301-742: Alternative Sediment Control Area 3 is in a position where it will accept runoff from 2.9 acres of the disturbed permit area and runoff from water discharged by sediment Pond 3. ASCA's may not receive discharge from sediment ponds. At the discharge location of ASCA-3, the Best Technology Currently Available must be implemented.

R645-301-751, R645-301-752.230: From the outfall of Pond 5, discharged effluent will flow for 200' within the permit area before draining through the southern permit boundary. While effluent passes through this disturbed area drainage it will pick up additional pollutants prior to leaving the site. Thus, the outfall of Pond 5 does not accurately represent effluent levels discharging from the permit area to waters of the U.S. Effluent sampled from Pond 5 may not flow through disturbed permit area prior to leaving the permit area and discharging to waters of the U.S.

Deficiencies Details:

R645-301-742: The three Alternative Sediment Control Areas (ASCAs) on the west side of the North Lease area are not implementing the Best Technology Currently Available. The Best Technology Currently Available must be implemented at each of these Point Source discharges point where effluent exits the permit area. Appropriately sized sediment ponds must be placed at each of these three locations.

R645-301-742: Alternative Sediment Control Area 3 is in a position where it will accept runoff from 2.9 acres of the disturbed permit area and runoff from water discharged by sediment Pond 3. ASCA's may not receive discharge from sediment ponds. At the discharge location of ASCA-3, the Best Technology Currently Available must be implemented.

R645-301-751, R645-301-752.230: From the outfall of Pond 5, discharged effluent will flow for 200' within the permit area before draining through the southern permit boundary. While effluent passes through this disturbed area drainage it will pick up additional pollutants prior to leaving the site. Thus, the outfall of Pond 5 does not accurately represent effluent levels discharging from the permit area to waters of the U.S. Effluent sampled from Pond 5 may not flow through disturbed permit area prior to leaving the permit area and discharging to waters of the U.S.

kstorrar

Hydrologic Diversion General

Analysis:

R645-301-742.300; R645-301-742.423: There are multiple issues with diversion ditches in Drawing: 5-64 Sediment Control Area Watersheds. The ditches UD-18, DD-13, DD-10, DD-16, DD-12, DD-11, DD-05, and UD-14 cross from lower elevation contour lines to higher elevation contour lines. The design shows the ditch will not properly convey water at these low spots. These ditches need to be designed to convey all runoff they receive.

R645-301-742.330: The sediment control watershed areas are not properly delineated in Drawing 5-64. The following watershed boundaries incorrectly follow surface flow paths: UA-4, UA-1, DA-1.

R645-301-742.330: DD-10 is graded to drain disturbed area drainage into Kanab Creek un-treated. Runoff effluent flowing from DD-10 must be treated with the Best Technology Currently Available.

R645-301-742.210; R645-301-742.300: Design calculations, supporting narrative, and drawings must be given for all drainage ditches to show they will safely pass the volume and velocities of the design storm event. These calculations will include but are not limited to providing: watershed areas draining to ditches, the runoff curve number(s) of the watershed, peak flow velocity, peak discharge volume, manning's n in the channel, flow depth, freeboard, etc.

Deficiencies Details:

R645-301-742.300; R645-301-742.423: There are multiple issues with diversion ditches in Drawing: 5-64 Sediment Control Area Watersheds. The ditches UD-18, DD-13, DD-10, DD-16, DD-12, DD-11, DD-05, and UD-14 cross from lower elevation contour lines to higher elevation contour lines. The design shows the ditch will not properly convey water at these low spots. These ditches need to be designed to convey all runoff they receive.

R645-301-742.330: The sediment control watershed areas are not properly delineated in Drawing 5-64. The following watershed boundaries incorrectly follow surface flow paths: UA-4, UA-1, DA-1.

R645-301-742.330: DD-10 is graded to drain disturbed area drainage into Kanab Creek un-treated. Runoff effluent flowing from DD-10 must be treated with the Best Technology Currently Available.

R645-301-742.210; R645-301-742.300: Design calculations, supporting narrative, and drawings must be given for all drainage ditches to show they will safely pass the volume and velocities of the design storm event. These calculations will include but are not limited to providing: watershed areas draining to ditches, the runoff curve number(s) of the watershed, peak flow velocity, peak discharge volume, manning's n in the channel, flow depth, freeboard, etc.

kstorrar

Hydrologic Siltation General

Analysis:

R645-301-742.220: Provide engineered design and supporting calculations of mine water discharge conveyance system to sediment pond.

The following are R645-301-742.220: Sedimentation Pond deficiencies:
Design calculations, a supporting narrative, and reference to appropriate drawings are required for Sediment Impoundment Capacities.

The application must provide a sediment runoff budget from disturbed (and undisturbed) areas that will be captured by the pond. This sediment volume will be incorporated into the Sediment Impoundment Capacities table(s).

Calculate the approximate number of years it will take each sediment pond to reach a specified cleanout level.

Provide a broken down and detailed narrative of cleanout level elevations for 60% and maximum storage capacity of 100%.

Runoff from the disturbed area drainage DA-1 needs to be clearly discussed.

Design calculations, supporting narrative, and drawings are required to show inlets and outlets of sediment ponds are stable and will pass the volume and velocities of the design storm event. Calculations will include inlet slopes, peak discharge, maximum flow velocity, and sizing of rip-rap if needed.

Design calculations, supporting narrative, and drawings are required to show outlets of undisturbed diversion ditches are stable and will pass the volume and velocities of the design storm event.

The design of Pond 5 in Drawing 5-65 North Area Sediment Impoundment 5, does not meet the design standards of 512.240. The embankment will need to be designed properly.

742.222: Pond 7 is regulated under MSHA, 30 CFR 77.216(a). The current design shows a 24' berm on the downstream side of the embankment.

Expected inflow and outflow calculations for sediment ponds.

Backwater pooling will occur up-gradient of Ponds 5 and 7. The design currently shows an upstream embankment will be located in the center of the channel, which will be at a higher elevation than base of the channel flowing to this area causing ponding in channel upstream of pond. Ponds 5 and 7 need to be designed so runoff will not pool behind the inlet embankments.

In Drawing 5-65 North Area Sediment Impoundment 5 Details, the dike elevation cross-section give an incorrect elevation for the top of the embankment.

Pond 5 does not show a metal oil and grease skimmer cover.

742.223: Pond 5, 6, 7 need emergency open channel spillways.

R645-301-733.120: Ponds 5, 6, 7 need contour intervals for the topographic lines and designed embankments.

R645-301-733.120: The plan view of embankments for the sediment impoundment structures 5, 6, 7 need to be incorporated into the underlying topographic surface.

Deficiencies Details:

R645-301-742.220: Provide engineered design and supporting calculations of mine water discharge conveyance system to sediment pond.

R645-301-742.220: Sedimentation Pond deficiencies: Design calculations, a supporting narrative, and reference to appropriate drawings are required for Sediment Impoundment Capacities.

R645-301-742.220: The application must provide a sediment runoff budget from disturbed (and undisturbed) areas that will be captured by the pond. This sediment volume will be incorporated into the Sediment Impoundment Capacities table(s).

R645-301-742.220: Calculate the approximate number of years it will take each sediment pond to reach a specified cleanout level.

R645-301-742.220: Provide a broken down and detailed narrative of cleanout level elevations for 60% and maximum storage capacity of 100%.

R645-301-742: Runoff from the disturbed area drainage DA-1 needs to be clearly discussed.

R645-301-742.220: Design calculations, supporting narrative, and drawings are required to show inlets and outlets of sediment ponds are stable and will pass the volume and velocities of the design storm event. Calculations will include inlet slopes, peak discharge, maximum flow velocity, and sizing of rip-rap if needed.

R645-301-742.220: Design calculations, supporting narrative, and drawings are required to show outlets of undisturbed diversion ditches are stable and will pass the volume and velocities of the design storm event.

R645-301-742.220: The design of Pond 5 in Drawing 5-65 North Area Sediment Impoundment 5, does not meet the design standards of 512.240. The embankment will need to be designed properly.

R645-301-742.220: Pond 7 is regulated under MSHA, 30 CFR 77.216(a). The current design shows a 24' berm on the downstream side of the embankment.

R645-301-742.220: Inflow and outflow calculations for design storm of sediment ponds.

R645-301-742.220: Backwater pooling will occur up-gradient of Ponds 5 and 7. The design currently shows an upstream embankment will be located in the center of the channel, which will be at a higher elevation than base of the channel flowing to this area causing ponding in channel upstream of pond. Ponds 5 and 7 need to be designed so runoff will not pool behind the inlet embankments.

R645-301-742.220: In Drawing 5-65 North Area Sediment Impoundment 5 Details, the dike elevation cross-section gives an

incorrect elevation for the top of the embankment.

R645-301-742.220: Pond 5 does not show a metal oil and grease skimmer cover.

R645-301-742.223: Pond 5, 6, 7 need emergency open channel spillways.

R645-301-733.120: Ponds 5, 6, 7 need contour intervals for the topographic lines and designed embankments.

R645-301-733.120: The plan view of embankments for the sediment impoundment structures 5, 6, 7 need to be incorporated into the underlying topographic surface.

kstorrar

Hydrologic Discharge Structures

Analysis:

R645-301-742.411: Design calculations are needed for all culverts passing under primary roads in the North Private Lease area to show they will safely pass a 10-year 6-hour event.

R645-301-731.720: The application must provide a map and narrative of the water conveyance and discharge system that will be used to de-water open-pits.

R645-301-733.222: The application must provide a narrative on the de-watering of active pits. This narrative will provide a location(s) of where mine-water from the pits will be pumped to. The narrative will also discuss the water quality specifically the TDS of the mine-discharge and any adverse affect it may have on the receiving Kanab Creek.

Deficiencies Details:

R645-301-742.411: Design calculations are needed for all culverts passing under primary roads in the North Private Lease area to show they will safely pass a 10-year 6-hour event.

R645-301-731.720: The application must provide a map and narrative of the water conveyance and discharge system that will be used to de-water open-pits.

R645-301-733.222: The application must provide a narrative on the de-watering of active pits. This narrative will provide a location(s) of where mine-water from the pits will be pumped to. The narrative will also discuss the water quality specifically the TDS of the mine-discharge and any adverse affect it may have on the receiving Kanab Creek.

kstorrar

Hydrologic Impoundments

Analysis:

R645-302-316.500, The plan should take note of this requirement for placement of water bodies during and following mining in prime farmland designated areas.

Deficiencies Details:

R645-302-316.500, The plan should take note of this requirement for placement of water bodies during and following mining in prime farmland designated areas.

pburton

Support Facilites and Utility Installations

Analysis:

The application meets the minimum 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, drawing 5-47 details the support facilities locations for the North Private Lease. All references to relocation of the public road were updated in relation to the North Private Lease in Chapter 5 Section 526.

cparker

Signs and Markers

Analysis:

The application meets the minimum requirements of R645-301-521.200 by the general discussion of signs that remains unchanged from the existing MRP.

cparker

Explosives General

Analysis:

The application meets the minimum requirements of R645-301-524 by detailing the commencement of blasting of the overlaying shale and clay to facilitate the timely removal of the overburden for pit and highwall trench development. Chapter 5 Section 524.200

cparker

Explosives Preblasting Survey

Analysis:

The application meets the minimum requirements of R645-301-524.300 by no changes made to the preblasting survey plan of the MRP Chapter 5 Section 524.300-350 within the application.

cparker

Explosives General Performance Standards

Analysis:

The application meets the minimum requirements of R645-301-524.430 by updating Section 524.200 detail the specifics of the blasting plan to meet the performance standards established in R645-301-524.

cparker

Explosives Blasting Signs Warnings Access Control

Analysis:

The application meets the minimum requirements of R645-301-524.460 and -524.530 by no changes made to the blasting schedule contents and access control contained within the blasting plan of the MRP.

cparker

Explosvies Control of Adverse Effects

Analysis:

The application meets the minimum requirements of R645-301-524.600 by no changes made to the performance standards to prevent injury or damage to public or private property outside the permit area.

cparker

Explosives Records of Blasting Operations

Analysis:

The application meets the minimum requirements of R645-301-524.700 by no changes made to the blasting record to be kept on site at the mine.

cparker

Maps Affected Area

Analysis:

See deficiency under MAPS, PLANS, AND CROSS SECTIONS OF RESOURCE INFORMATION

cparker

Maps Affected Area

Analysis:

R645-301-738: The application needs to provide a timeline and narrative of what wells will be destroyed during surface mining and replacement wells will be established.

Deficiencies Details:

R645-301-738: The application needs to provide a timeline and narrative of what wells will be destroyed during surface mining and replacement wells will be established.

kstorrar

Maps Facilities

Analysis:

The application does not meet the minimum requirements of R645-301-521.120 through-521.125, -521.140, -521.160 through 521.170.

Drawing 5-47 details:
• A low spot in DD-10
• Designs to show the outfall of all ditches will not cause excessive erosion the banks of Kanab Creek.
• Pooling north of Pond 5, see the Division hydrologist deficiencies in accordance with spillway requirements in R645-301-700, and the outfall is located so as to discharge into disturbed area before leaving the permit area and as shown details a dike of 103 ft in the typical cross section
• Pond 6 outfall located within the disturbed area
• Year 1 and Year 3 Disturbance cross into the OHWM of Kanab Creek.

Text within the MRP Chapter 5 section 521.141 states that Drawing 5-47 details the facilities of the North Private lease but is missing A discussion of how fill will be place and compacted in all applicable ditches where fill is required as show on Drawing 5-68 and 5-69.

Deficiencies Details:

The application does not meet the minimum requirements of R645-301-521.120 through-521.125, -521.140, -521.160 through 521.170.

Drawing 5-47 details:
• A low spot in DD-10
• Designs to show the outfall of all ditches will not cause excessive erosion the banks of Kanab Creek.
• Pooling north of Pond 5, see the Division hydrologist deficiencies in accordance with spillway requirements in R645-301-700, and the outfall is located so as to discharge into disturbed area before leaving the permit area and as shown details a dike of 103 ft in the typical cross section
• Pond 6 outfall located within the disturbed area
• Year 1 and Year 3 Disturbance cross into the OHWM of Kanab Creek.
• None of the Culverts discussed in Appendix 5-12 are shown in the map

There is no discussion or detail of updating the current Coal Hollow SWPPP which will require some measures in place to limit the amount of coal fines tracked outside the permit boundary due haul traffic onto a public road to the Crushing facility.

Text within the MRP Chapter 5 section 521.141 states that Drawing 5-47 details the facilities of the North Private lease but is missing a discussion of how fill will be place and compacted in all applicable ditches where fill is required as show on Drawing 5-68 and 5-69.

cparker

Maps Facilities

Analysis:

R645-301-742.212: A plan view map will be provided showing active mining operations in six month sequences for the duration of active mining. Each plan view map must include the layout for all water conveyance systems, sediment retention structures, active haul roads, ancillary roads, area of open pit disturbance, and reclaimed watersheds.

R645-301-742.212: A narrative on the timing sequence for the construction of siltation structures is needed.

R645-301-742: Fix Top of Dike Elev. 6955' in Drawing 5-65.

Deficiencies Details:

R645-301-742.212: A plan view map will be provided showing active mining operations in six month sequences for the duration of active mining. Each plan view map must include the layout for all water conveyance systems, sediment retention structures, active haul roads, ancillary roads, area of open pit disturbance, and reclaimed watersheds.

R645-301-742.212: A narrative on the timing sequence for the construction of siltation structures is needed.

R645-301-742: Fix Top of Dike Elev. 6955' in Drawing 5-65.

kstorrar

Maps Mine Workings

Analysis:

The application does not meet the minimum requirements of R645-301-521.140 which requires maps that clearly show all mine plans due to erroneous and conflicting information presented on the following drawings:
Drawing 5-46 as detailed under Environmental Maps, Cross Sections Affected Area
Drawing 5-47 as detail under Mining Facilities maps
Drawing 5-48

Deficiencies Details:

The application does not meet the minimum requirements of R645-301-521.140 which requires maps that clearly show all mine plans due to erroneous and conflicting information presented on the following drawings:
Drawing 5-46 as detailed under Environmental Maps, Cross Sections Affected Area
Drawing 5-47 as detail under Mining Facilities maps
Drawing 5-71 and 5-72 are missing details showing engineered designs of reconstruction of natural drainage ways and of agricultural ponds destroyed during mining operations.
Drawings 5-73 shows reclamation activities below the OHWM, see discussions under Environmental maps above.

cparker

Maps Mine Workings

Analysis:

R645-301-724.310 – There are no maps or a narrative of highwall mining in relation to the alluvail scour zones into the coal seam in the southern portion of the permit area.

Deficiencies Details:

R645-301-724.310 – There are no maps or a narrative of highwall mining in relation to the alluvail scour zones into the coal seam in the southern portion of the permit area.

kstorrar

Maps Certification Requirements

Analysis:

R645-301-512 minimum requirements are met as all mine drawings and plates are stamped by a Utah certified professional engineer with experience in underground mining operations.

cparker

Reclamation Plan

General Requirements

Analysis:

The application does not meet the minimum requirements of R645-301-541 by not including any details as to how the described agricultural ponds in Section 521.124 which are located within the permit are will be returned to pre mining conditions or mention of any agreement with the landowner as to the final reclamation status of the ponds.

The application meets the minimum requirements of R645-301-513 by detailing no ponds meet the MSAH, 30 CFR 77.216 requirements, no refuse piles will be constructed and all sealing of underground openings shall meet MSHA, 30 CFR 75.1711 and R645-301-551 requirements.

The application meets the minimum requirements of R645-301-515 detailing the procedures to be followed in the event of temporary cessation of coal mining and reclamation activities. A statement detailing information such as the exact number of acres affected in the permit area, extent and kind of reclamation accomplished within the permit area, and identify the backfill, regrading and revegetation will continue during temporary cessation.

The application does not meet the minimum requirements of R645-301-542 by the MRP using a swell factor of 10.25% for backfill volumes when the GEM geotechnical report details a shrink factor of 15% for the North Lease in Appendix 5-11. The Permittee will correct the volume calculations to match the geotechnical report for the site.

Deficiencies Details:

The application does not meet the minimum requirements of R645-301-541 by not including any details as to how the described agricultural ponds in Section 521.124 which are located within the permit are will be returned to pre mining conditions or mention of any agreement with the landowner as to the final reclamation status of the ponds. The Permittee shall provide some documentation as what state the existing agricultural ponds will be returned to at the end of mining operations that meets the land owner's post mining land use.

The application does not meet the minimum requirements of R645-301-542 by the MRP using a swell factor of 10.25% for backfill volumes when the GEM geotechnical report details a shrink factor of 15% for the North Lease in Appendix 5-11. The Permittee will correct the volume calculations to match the geotechnical report for the site.

The minimum requirements of R645-301-358.400, R645-301-521.100 through-521.130, R645-301-731.610 and R645-301-121.200 are not met due to no change within the MRP to detail how the natural drainage ways affected by coal mining operations will be reclaimed to a stable condition.

cparker

PostMining Land Use

Analysis:

Analysis:
R645-302-316.100 requires that designated special areas of prime farmland may be mined, if the approved proposed postmining land use of the designated special prime farmlands ares is cropland . The application states Section 222.400 that the soils in the northern portion of the North lease are in agricultural production of alfalfa and small grains. The plan states in Section 410 that the North Private Lease area consists of cropland and pastureland and undeveloped rangeland. These areas are shown on Exhibit 4.2. Section 411.100 states that after reclamation the land will be restored to its pre-mining uses. The Division understands that the North lease permit/disturbed area has been reduced and no longer includes the crop lands. Soil Salvage Map 2-4 reflects this fact.

Deficiencies Details:

R645-302-316.100, The Division understands that the North lease permit/disturbed area has been reduced and no longer includes the crop lands. The permit area boundary must equal the disturbed area boundary on all maps and exhibits. i.e. Soil Survey Dwg 2-3, and Exhibit 4-2.

pburton

WildLife Protection

Analysis:

The application needs to include a commitment to implement the criterion included in the sage grouse management plan for the North lase area during the reclamation liability period. An additional seed mix for reclamation of wetland habitat has been added for the North Private Lease as a protection and enhancement measure for that high value habitat.

Deficiencies Details:

The information in the application is not adequate to meet the requirements of this section of the regulations. Prior to approval the following information is required in accordance with R645-301-342;
ACD will need to provide a commitment to implement the criterion included in the sage grouse management plan for the North lase area during the reclamation liability period.

Additional information may be required by DWR an or FWS.

jhelfric

Approximate Original Contour Restoration

Analysis:

The application meets the minimum 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.

cparker

Backfill and Grading General

Analysis:

The minimum requirements of R645-301-553 are not met within the application by the MRP using a swell factor of 10.25% for backfill volumes when the GEM geotechnical report details a shrink factor of 15% for the North Lease in Appendix 5-11. The Permittee will correct the volume calculations to match the geotechnical report for the site.

Deficiencies Details:

The minimum requirements of R645-301-553 are not met within the application by the MRP using a swell factor of 10.25% for backfill volumes when the GEM geotechnical report details a shrink factor of 15% for the North Lease in Appendix 5-11. The Permittee will correct the volume calculations to match the geotechnical report for the site.

cparker

Backfill and Grading General

Analysis:

R645-301-764: The application will provide a timetable and plans for removal of all structures in the North Private Lease.

Deficiencies Details:

R645-301-764: The application will provide a timetable and plans for removal of all structures in the North Private Lease.

kstorrar

Backfill and Grading Previously Mined

Analysis:

The minimum requirements of R645-301-553.500 are met within the application as there is no change to the existing MRP grading reclamation details.

cparker

Backfill and Grading on Steep Slopes

Analysis:

The minimum requirements of R645-301-553.200 are met within the application as there is no change to the existing MRP grading reclamation details.

cparker

Backfill and Grading Steep Special Provisions

Analysis:

The minimum requirements of R645-301-537 and -553 are met within the application as there is no change to the existing MRP grading reclamation details.

cparker

Mine Openings

Analysis:

The applicant has met the minimum regulatory requirements for the closure of wells and boreholes. The plans for Casing and Sealing of holes is located in the original MRP Section 631. No changes have been proposed with this application. Boreholes will be backfilled to within 1 foot of the land surface with concrete or other materials approved by the Division as necessary to prevent contamination of groundwater or surface-water resources or to protect the prevailing hydrologic balance. The upper approximately 1 foot will be backfilled with native materials to facilitate reclamation (see Drawing 6-11). Exploration holes and boreholes that may be uncovered during mining and reclamation activities will be permanently closed unless approved for water monitoring or otherwise managed in a manner approved by the Division. Permanent closure methods will be designed to prevent access to the mine workings by people, livestock, fish and wildlife, and machinery and to keep acid or other toxic drainage from entering water resources.

dhaddock

Mine Openings

Analysis:

The minimum requirements of R645-301-529 and -551 are met within the application as there is no change to the existing MRP sealing of mine openings at the time of final reclamation.

cparker

Topsoil and Subsoil

Analysis:

Analysis:
R645-302-315.300 and R645-302-317.210 dictate that the NRCS has the primary authority for determining the requirements of the soil salvage and reconstruction plan. In addition R645-302-317.500 specifies the minimum characteristics of soils to be considered when developing reconstruction specifications. Density is one of those minimum requirements. Density information could not be found for the soils evaluated for prime farmland in Table C-1a or Table C-1b of Appendix C of Vol 11.

The plan describes 12 inches of topsoil replacement in Section 240 and 13 inches in Section 231.100-231.400. The plan specifies live haul of subsoil, a separate topsoil and subsoil stockpile is shown for pits 1 & 2 on Dwg 2-4. The plan describes Vessilla family soil within map unit C as having less than 6 inches of subsoil. this location with map unit C should

be called out on Dwg 2-3.

Section 243 plans for sampling every 2 - 5 acres at final reclamation with a composite sample analyzed for N:P:K should be more specific as to sampling timing and occurrance.

Deficiencies Details:

R645-302-315.300 and R645-302-317.210 dictate that the NRCS has the primary authority for determining the requirements of the soil salvage and reconstruction plan. In addition R645-302-317.500 specifies the minimum characteristics of soils to be considered when developing reconstruction specifications. Density is one of those minimum requirements. Provide density information for the soils evaluated for prime farmland in Table C-1a and Table C-1b of Appendix C of Vol 11.

R645-301-121.200 and R645-301-240, The plan specifies live haul of subsoil, a separate topsoil and subsoil stockpile is shown for pits 1 & 2 on Dwg 2-4. The plan describes Vessilla family soil within map unit C as having less than 6 inches of subsoil. this location with map unit C should be called out on Dwg 2-3.

R645-301-121.200, The plan describes 12 inches of topsoil replacement in Section 240 and 13 inches in Section 231.100-231.400. Please clarify.

R645-301-243, Section 243 plans for sampling every 2 - 5 acres at final reclamation with a composite sample analyzed for N:P:K should be more specific as to sampling frequency and occurrance.

pburton

Road System Reclamation

Analysis:

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

cparker

Road System Retention

Analysis:

The minimum requirements of R645-301-534 and -552 are met within the application as there is no change to the existing MRP reclamation of roads that will be retailed at the end of mining that exist throughout the permitted area.

cparker

Hydrological Information Reclamation Plan

Analysis:

R645-301-731: Show peak hydrograph calculations for reclaimed watersheds. Calculations will include but are not limited to showing: time of concentration, curve numbers, drainage areas, design storm accumulation, peak discharge, runoff volumes, etc., and any assumptions made.

R645-301-727: The application must provide a discussion of long term water replacement for Kanab Creek.

Deficiencies Details:

R645-301-731: Show peak hydrograph calculations for reclaimed watersheds. Calculations will include but are not limited to showing: time of concentration, curve numbers, drainage areas, design storm accumulation, peak discharge, runoff volumes, etc., and any assumptions made.

R645-301-727: The application must provide a discussion of long term water replacement for Kanab Creek.

kstorrar

Contemporaneous Reclamation General

Analysis:

The minimum requirements of R645-301-553 in regards to contemporaneous reclamation and backfilling activities are met within the application as the MRP details the sequencing of mining and backfilling of the operation in Chapter 5 Section 526, 528 and 553.

cparker

Revegetation General Requirements

Analysis:

The existing seed mixtures and reclamation techniques in the MRP (Chapter 3, Section 3.41) are also applicable in the North Private lease area. For the additional plant communities that were found and described in the Vegetation & Wildlife Habitat of the North Private Lease Area {Volume 12}, seed mixtures were added to the MRP (Chapter 3, Section 3.41) in the first submittal. New reference areas and revegetation success standards for the additional plant communities of the North Private Lease are proposed in the DISCUSSION section (Volume 12). An additional seed mix for reclamation of wetland habitat has been added for the North Private Lease as a protection and enhancement measure for that high value habitat. The information is adequate to meet the requirements of this section of the regulations. Additional information may be required pending receipt of comments from DWR and FWS.

jhelfric

Revegetation Standards for Success

Analysis:

Analysis:
R645-302-317.600 outlines revegetation and and restoration of soil productivity. MRP Section 317.620 et seq describes the implementation of a plan yet developed for the measurement of soil productivity within 10 years after completion of soil replacement. Productivity will be measured for three consecutive years before bond release. The level of management will be the same as for non-mined prime farmland in the surrounding area. R645-302-317.622, R645-302-317.627 and R645-302-317.628 require the the Division consult with the NRCS State Conservationist for the reference crop and the post mining land use evaluation. That coordinated review is ongoing.

Deficiencies Details:

Deficiency:
R645-302-317.622, R645-302-317.627 and R645-302-317.628 require the the Division consult with the NRCS State Conservationist for the reference crop and the post mining land use evaluation. That coordinated review is ongoing and the recommendations made by the NRCS will be incorporated into the mining plan.

pburton

Cessation of Operations

Analysis:

The minimum requirements of R645-301-515 and -541 are met within the application 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 Affected Area Boundary

Analysis:

See deficiency under MAPS, PLANS, AND CROSS SECTIONS OF RESOURCE INFORMATION

cparker

Maps Bonded Area

Analysis:

The minimum requirements of R645-301-800are meet within the application as the bonded area map was updated in

Drawing 5-74.

cparker

Maps Reclamation BackFilling and Grading

Analysis:

The minimum requirements of R645-301-542 are not met within the application due to competing swell and shrink factors between the MRP volumes and the geotechnical report for the site. The Permittee will recalculate the backfill volumes and required grading based on the 15% shrink factor demonstrated in the GEM geotechnical report.

Deficiencies Details:

The minimum requirements of R645-301-542 are not met within the application due to competing swell and shrink factors between the MRP volumes and the geotechnical report for the site. The Permittee will recalculate the backfill volumes and required grading based on the 15% shrink factor demonstrated in the GEM geotechnical report.

cparker

Maps Reclamation Facilities

Analysis:

The minimum requirements of R645-301-542 are not met within the application as there is no discussion or engineering design provided to show that the natural drainages that will be destroyed due to mining operations will be placed back in a stable manor meeting the requirements of R645-301-358.400, R645-301-521.100 through-521.130, R645-301-731.610 and R645-301-121.200

Deficiencies Details:

The minimum requirements of R645-301-542 are not met within the application as there is no discussion or engineering design provided to show that the natural drainages that will be destroyed due to mining operations will be placed back in a stable manor meeting the requirements of R645-301-358.400, R645-301-521.100 through-521.130, R645-301-731.610 and R645-301-121.200

cparker

Maps Reclamation Final Surface Configuration

Analysis:

The minimum requirements of R645-301-542 are not met within the application as there is no discussion or engineering design provided to show that the natural drainages that will be destroyed due to mining operations will be placed back in a stable manor meeting the requirements of R645-301-358.400, R645-301-521.100 through-521.130, R645-301-731.610 and R645-301-121.200. Drawing 5-71 and 5-72 will show stable engineered channels for the natural drainages affected by coal mining operations; along with relevant details and cross sections to illustrate that the above regulations have been fulfilled.

Deficiencies Details:

The minimum requirements of R645-301-542 are not met within the application as there is no discussion or engineering design provided to show that the natural drainages that will be destroyed due to mining operations will be placed back in a stable manor meeting the requirements of R645-301-358.400, R645-301-521.100 through-521.130, R645-301-731.610 and R645-301-121.200. Drawing 5-71 and 5-72 will show stable engineered channels for the natural drainages affected by coal mining operations; along with relevant details and cross sections to illustrate that the above regulations have been fulfilled.

cparker

Maps Reclamation Surface and Subsurface Man Made

Analysis:

The minimum requirements of R645-301-542 are not met within the application as there is no text detailing that the preexisting ponds, shown on Figure 12 in appendix 7-16 will be placed back in a stable manor meeting The minimum requirements of R645-301-542 are not met within the application as there is no discussion or engineering design provided to show that the natural drainages that will be destroyed due to mining operations will be placed back in a stable manor

meeting the requirements of R645-301-358.400, R645-301-521.100 through-521.130, R645-301-731.610 and R645-301-121.200.

Deficiencies Details:

The minimum requirements of R645-301-542 are not met within the application as there is no text detailing that the preexisting ponds, shown on Figure 12 in appendix 7-16 will be placed back in a stable manor meeting The minimum requirements of R645-301-542 are not met within the application as there is no discussion or engineering design provided to show that the natural drainages that will be destroyed due to mining operations will be placed back in a stable manor meeting the requirements of R645-301-358.400, R645-301-521.100 through-521.130, R645-301-731.610 and R645-301-121.200.

cparker

Maps Reclamation Certification Requirments

Analysis:

R645-3010-512 minimum requirements are met as all mine drawings and plates are stamped by a Utah certified professional engineer with experience in underground mining operations.

cparker

Bonding Form of Bond

Analysis:

The application does not meet the minimum requirements of R645-301-860.100 as the applicant currently maintains a surety bond amount of $12,750,000 which is held by Lexon Insurance Co with a rider held by Ironshore Indemnity Inc for 342 disturbed acres.

Deficiencies Details:

The application does not meet the minimum requirements of R645-301-860.100 as the applicant currently maintains a surety bond amount of $12,750,000 which is held by Lexon Insurance Co with a rider held by Ironshore Indemnity Inc for 342 disturbed acres. Chapter 8 submitted within the application details a January, may and July release that did not happen. Text within chapter 8 needs to be amended to reflect the actual bond releases. The bond according to Appendix 8-1 with the bond releases described for Year 1 would need to be $20,758,000.

cparker

Bonding Determination of Amount

Analysis:

The application does not meet the minimum requirements of R645-301-830.140 as the Permittee submitted detailed bond information in regards to the application which details a swell factor of 10.7 to 7.2 % while the geotechnical report submitted for the North Private Lease states a shrink factor of 15%. The Permittee shall correct the corresponding volumes throughout the bond estimate.

Deficiencies Details:

The application does not meet the minimum requirements of R645-301-860.100 as the applicant currently maintains a surety bond amount of $12,750,000 which is held by Lexon Insurance Co with a rider held by Ironshore Indemnity Inc for 342 disturbed acres. Chapter 8 submitted within the application details a January, may and July release that did not happen. Text within chapter 8 needs to be amended to reflect the actual bond releases. The bond according to Appendix 8-1 with the bond releases described for Year 1 would need to be $20,758,000.

The application does not meet the minimum requirements of R645-301-830.140 as the Permittee submitted detailed bond information in regards to the application which details a swell factor of 10.7 to 7.2 % while the geotechnical report submitted for the North Private Lease states a shrink factor of 15%. The Permittee shall correct the corresponding volumes throughout the bond estimate.

cparker

Bonding Determination of Amount

Analysis:

Analysis:
R645-302-317.220, The Division will use the soil-reconstruction specifications of R645-302-317.210 to carry out its responsibilities under R645-302-310 through R645-302-316 and R645-301-800. Soil reconstruction specifications must be considered adequate prior to approval.

Deficiencies Details:

R645-302-317.220, The Division will use the soil-reconstruction specifications of R645-302-317.210 to carry out its responsibilities under R645-302-310 through R645-302-316 and R645-301-800. Soil reconstruction specifications must be considered adequate prior to approval.

pburton

Bonding Terms and Conditions Liability Insurance

Analysis:

The application meets the minimum requirements of R645-301-850 as the applicant currently holds liability insurance through American Mining Insurance Co, effective until 12/10/15. The insurance includes the required Marsh form, explosives and claims made per occurrence.

cparker

Special Categories

Auger Mining

Analysis:

The MRP does not contain any reference to the R645-302-240 regulations for auger mining operations.

Deficiencies Details:

The MRP does not contain any reference to the R645-302-240 regulations for auger mining operations. The Permittee shall add discussion to the relevant chapters detailing how the Augur mining rules -240 through -245.500 are met for the North Private Lease.

cparker

Operations Alluvial Essential Hydrologic Functions

Analysis:

The application meets the minimum requirements of R645-302-322. A report entitled Alluvial Valley Floor Field Investigation in the North Private Lease was developed and submitted to the Division on July 17, 2014. This report along with supplemental information submitted on October 10, 2014 allowed the Division to make a determination regarding the existance of any alluvial valley floor within the proposed permit and adjacent areas. It was determined by the Division that an alluvial valley floor does not exist in the area being proposed for mining, however, there is an alluvial valley floor to the North on adjacent property.

Further, the hydrologic monitoring data indicate that the alluvial groundwater systems present within and adjacent to the North Private Lease area do not contribute to the essential hydrologic function of agricultural lands within the North Private Lease area. No irrigation wells are present in the shallow alluvial groundwater system within the North Private Lease area. Waters that are currently or have historically been utilized for irrigation of lands within the North Private Lease area have been derived from the Kanab Creek surface-water system. The surface-water diversions to the existing and historic irrigation systems are located up-stream of the North Private Lease area. The depths to water in the shallow groundwater systems within agricultural areas in the North Private Lease area are too deep to facilitate subirrigation of agricultural vegetation within the area. Additionally, the water quality of shallow groundwaters in much of the North Private Lease area is poor (Table B-2a, Table B-2b in appendix B), which would likely limit its usefulness for flood irrigation and/or subirrigation even if it were accessible for use.

Consequently, there is essentially no potential for mining-related activities to affect the water supply of any potential AVF areas in the North Private Lease area. Also, because it is possible to successfully restore the flat land surface and associated soils during reclamation, the potential for mining-related activities to cause material damage to the land resource within potential AVF areas is very low. In other words, proposed mining operations in the North Private Lease area will not cause damage to the water source of any identified alluvial valley floors in the North Private Lease.

dhaddock

Operations Alluvial Protectioin of Agricultural

Analysis:

The Division finds that the regulatory requirements for the protection of farming have been met. A determination has been made that the proposed mining area does not contain an AVF, but that the AVF is to the north of the proposed permit area. Mining in the proposed permit area will not interupt, discontinue, or preclude farming on the adjacent area AVF. Recharge to the AVF is from the North and would not be disrupted by mining in the proposed permit area, which is to the south of the AVF.

dhaddock

Auger Mining

Analysis:

R645-302-240: The application does not include a written commitment to Special Categories of Mining R645-302-240 Auger Mining and Remining Operations in the North Lease area. The rules require an evaluation of the proposed auger mining areas and any potential mitigative measures that need to be addressed. These rules include, but are not limited to: R645-302-241.200, R645-302-242, R645-302-243, R645-302-244.200, R645-302-245.110, R645-302-245.120, R645-302-245.130, R645-302-245.210, R645-302-245.220, R645-302-245.221, R645-302-245.222, R645-302-245.230, R645-302-245.231, R645-302-245.232, R645-302-245.300

R645-301-722: The application does not provide planned locations of highwall mining locations in Appendix 7-16 Figure 3.

Deficiencies Details:

R645-302-240: The application does not include a written commitment to Special Categories of Mining R645-302-240 Auger Mining and Remining Operations in the North Lease area. The rules require an evaluation of the proposed auger mining areas and any potential mitigative measures that need to be addressed. These rules include, but are not limited to: R645-302-241.200, R645-302-242, R645-302-243, R645-302-244.200, R645-302-245.110, R645-302-245.120, R645-302-245.130, R645-302-245.210, R645-302-245.220, R645-302-245.221, R645-302-245.222, R645-302-245.230, R645-302-245.231, R645-302-245.232, R645-302-245.300

R645-301-722: The application does not provide planned locations of highwall mining locations in Appendix 7-16 Figure 3.

kstorrar