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State of Utah

DEPARTMENT OF NATURAL RESOURCES

MICHAEL R. STYLER
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Division of Oil, Gas and Mining

JOHN R. BAZA
Division Director

June 30, 2017

John Byars, General Manager
Canyon Fuel Company, LLC
597 South SR24
Salina, Utah 84654

Subject: Application Review and Deficiencies, Greens Hollow Lease Tract, Canyon Fuel Company, LLC, Sufco Mine, C/041/0002, Task ID #5445

Dear Mr. Byars:

The Division has reviewed your application for permitting the Greens Hollow Lease Tract. A copy of our Technical Analysis and Findings 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 deficiency's author are provided so that your staff can communicate directly with that individual should questions arise.

Please revise the application accordingly in order for us to complete the processing of your permit change.

Thank you for your help during this process. If you have any questions, please feel free to call me at (801) 538-5325.

Sincerely,

Daron R. Haddock
Coal Program Manager

DRH/sqs
Enclosure
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Technical Analysis and Findings

Utah Coal Regulatory Program

PID: C0410002
TaskID: 5445
Mine Name: SUFCO MINE
Title: GREENS HOLLOW LEASE

Summary

The amendment proposes to include the Greens Hollow Lease into the existing Sufco permit.

Deficiencies Details:

Ireinhart

General Contents

Identification of Interest

Analysis:

The application does not meet the State of Utah R645 requirements for Identification of Interest.

The Permittee submitted a separate application on 5/17/17 to update the Ownership and Control information (Task ID #5455). The Division has identified deficiencies within the application. In an effort to avoid duplicity, the Division will continue to review the application to update the Ownership and Control under a separate task.

Deficiencies Details:

ssteab

Violation Information

Analysis:

The application does not meet the State of Utah R645 requirements for Violation Information.

An AVS Permit Evaluation Report was generated for the SUFCO Mine C/041/0002 on June 20, 2017. The report listed 15 Violations. Violations 1 - 12 are linked to John Joseph Siegel Jr and are coded "conditional" indicating a settlement, payment plan or pending challenge. Violation 13 is an outstanding violation for AML Fees issued to Canyon Fuel

Company, LLC C/007/0005. Violation 14 is an outstanding violation for AML Fees issued to Canyon Fuel Company, LLC C/007/0039. Violation 15 is an outstanding violation for AML Fees issued to Canyon Fuel Company, LLC C/041/0002.

Deficiencies Details:

R645-301-113.300:

An AVS Permit Evaluation Report was generated for the SUFCO Mine C/041/0002 on June 20, 2017. The report listed 15 Violations. Violations 1 - 12 are linked to John Joseph Siegel Jr and are coded "conditional" indicating a settlement, payment plan or pending challenge. Violation 13 is an outstanding violation for AML Fees issued to Canyon Fuel Company, LLC C/007/0005. Violation 14 is an outstanding violation for AML Fees issued to Canyon Fuel Company, LLC C/007/0039. Violation 15 is an outstanding violation for AML Fees issued to Canyon Fuel Company, LLC C/041/0002.

ssteab

Legal Description

Analysis:

The amendment does not meet the State of Utah R645 requirements for providing an accurate legal description of the area to be included in the permit. The legal description provided on page 1-12 titled BLM Lease UTU-84102 (6,696.41 acres) does not match the legal description in the ROD page 22 (6,175.39 acres) for said lease. More specifically, property located in T.20S, R4E., Sections 14, 23, and 24 are included in the MRP but are not included in the lease. This additional property is also not included on Plate 5-6 (Land ownership, lease, and permit area map). The legal description on page 1-12 T.20S, R.5 E, Sec.21 incorrectly states W1/2,SW1/4, whereas it should be W1/2SW1/4.

Deficiencies Details:

The amendment does not meet the State of Utah R645 requirements for providing an accurate legal description of the area to be included in the permit. The following deficiency must be addressed prior to final approval. The Permittee must correct the legal description on page 1-12 to show the lease description as provided in the ROD.

Irinhart

Environmental Resource Information

Historic and Archeological Resource Information

Analysis:

The amendment does not meet the State of Utah R645-301-411.140 requirements for cultural and historic resources information. The amendment includes Appendix 4-2 which is titled the Muddy Creek Technical Report Heritage Resources and includes the Greens Hollow Lease as shown on the Inventory Map. This inventory does not cover the entire Greens Hollow Lease area, including the following property: T.21S, R4 E, Section 36: E2E2 T.20S, R.5E, Section 31: Lots 1-8 Section 30: Lots 7 & 8 T. 21 S R4E, Section 1: All but the E2E2 Section 12: All but the E2NE4 Section 11: All but the W2W2 Section 13: NW4, W2NE4 Section 14: NE4, E2NW4 A map pursuant to R645-301-411.141 is provided in the confidential section the amendment as Plate 5-10C. The map shows locations of cultural sites identified in the MOU and indicate no public parks or cemeteries are within 100 feet of the permit area. Utah has approximately 169.3 miles of designated Wild and Scenic River, all of which are tributaries of the Virgin River in southwest Utah and outside the adjacent area. National System of Trails in Utah are inclusive of the Pony Express, California National Historic Trail, Mormon Pioneer Trail, and Old Spanish National Historic Trail. None of the trail systems are within the adjacent area. The Manti-La Sal National Forest Service (MLS NF) is the lead agency and handled all consultation and coordination with the Utah State Historic Preservation Officer (SHPO). Consequently, an MOA between the MLS NF and the SHPO was developed. The MOA is included with the amendment as Appendix 4-5 (Confidential Folder). The MLS NF has determined that the undertaking may have an adverse effect on archaeological sites 42SV1484, 42SV1578/2341, 42SV2554, 42SV2584, 42SV2586, 42SV2589, 42SV2597, 42SV2949, 42SV3224 and 42SV3226, which are eligible for

listing in the National Register of Historic Places. The MLS NF has consulted with the Ute Indian Tribe and Paiute Tribe of Utah regarding the effects of the undertaking on historic properties and they have chosen not to sign the MOA as concurring parties. In accordance with 36 C.F.R. § 800.6(a)(1), the MLS NF has notified the Advisory Council on Historic Preservation (ACHP) of its adverse effect determination with specified documentation and the ACHP has chosen not to participate in the consultation pursuant to 36 CFR § 800.6(a)(1)(iii).

Deficiencies Details:

The amendment does not meet the State of Utah R645-301-411.140 requirements for cultural and historic resources information. The amendment includes Appendix 4-2 which does not cover all of the Greens Hollow Lease. The Permittee must provide a cultural resources report that covers all of the Greens Hollow permit area and associated clearances and SHPO consultation. The inventory map must cover all of the Greens Hollow Tract and show the location of the cultural sites.

Reinhart

Vegetation Resource Information

Analysis:

The amendment meets the State of Utah R645-301-321 requirements for vegetation resource information. Volume 1, Chapter 3, Section 3.2.1, pages 3-3 through 3-5 provide vegetation information. This amendment updates Ch.3 on page 3-5 to include a summary of vegetation in the Greens Hollow Tract. Detailed vegetation information is located in the EIS (Environmental Impact Statement) prepared by the BLM. Plate 3-1 is updated to include the vegetation within the Greens Hollow Lease.

Reinhart

Fish and Wildlife Resource Information

Analysis:

The amendment meets the State of Utah R645-301-322 requirements for fish and wildlife resource information. Volume 1, Chapter 3, Section 3.2.2, pages 3-6 through 3-27 provide fish and wildlife information. Section 3.2.2.3 contains the Fish and Wildlife Service Review. Appendices are located in Volume 5 Appendix 3-1 includes a report of field investigations from 1983. Appendix 3-2 is an aquatic resource inventory of the permit area. Appendix 3-3 is a wildlife assessment of the permit and adjacent area. Appendix 3-4 discusses raptors and avifauna Appendix 3-5 discusses fauna of the permit and adjacent area. Appendix 3-7 discusses power lines Appendix 3-8 is a bat survey for the SUFCO Mine Appendix 3-9 discusses vegetation and wildlife of the Pines Tract Appendix 3-10 is a monitoring and mitigation plan for mining under the east fork of Box Canyon. Appendix 3-11 discusses wildlife in the Muddy Creek area. Appendix 3-12 is the Mexican Spotted Owl survey for the Muddy Tract Appendix 3-13 discusses vegetation and wildlife of the West Coal Lease Modifications Appendix 3-14 is the Monitoring and Mitigation plan for undermining the south fork of Quitcupah 2R2S Block A and 3R2S Block B. This amendment adds Appendix 3-15 which is the Wildlife Technical Report for Greens Hollow Coal Lease Tract. Federal and State sensitive species within the Greens Hollow Tract were evaluated. As noted on pages 294 and 295 of the FSEIS, the BLM analyzed the impacts of underground coal mining on wildlife and plant species listed under the ESA. None of the potential impacts from the project would be contrary to any of the laws, regulations, and orders included in the ESA of 1973, as amended. A supplemental biological assessment was prepared for the proposed Greens Hollow tract (Cirrus 2014f). That assessment determined there would be no effect on federally-listed threatened and endangered species under the alternatives analyzed. Therefore, consultation with the U.S. Fish and Wildlife Service was not required. There are no known federally listed plant species in the project area. One sensitive plant species (Link Canyon columbine) occurs in the general analysis area but not in the permit area and would not be affected by project. As required by the Migratory Bird Treaty Act, the BLM analyzed the impacts of the project on migratory birds. None of the potential impacts of the project would be contrary to any of the laws, regulations, and orders included in the Migratory Bird Treaty Act of 1918. The level of detail of the information is sufficient to design the protection and enhancement plan under R645-301-333 should one be required. The amended permit area contains habitats of unusually high value for fish and wildlife. However, none of these areas should be adversely affected from underground coal mining. Any surface disturbing activities will be evaluated separately. Pursuant to the Executive Order Implementing the Utah Conservation Plan for Greater Sage-Grouse, consultation with Utah Division of Wildlife occurred on 11/22/2016. DWR did not request any additional mitigation or monitoring at this time. Based on the analysis conducted by the BLM and the Divisions evaluation of the IPac Trust Resource Report generated November 22, 2016 and again on May 18, 2017, Consultation Code: 06E23000-2017-E-00883, the Division determined that approval of this amendment would not affect a listed species or designated critical habitat and therefore did not initiate informal consultation with U.S. Fish and Wildlife Service. Potential water depletions from mining operations that may have an

effect on endangered fish species identified in pertinent fish recovery programs of the USFWS have been evaluated by the Windy Gap Process as it applies to existing coal mines in the Upper Colorado River Basin on pages 3-40A-B. Total mining operations net water gain is 5365.2 ac-ft/yr.

Ireinhart

Soils Resource Information

Analysis:

Analysis: The R645-301-200 soils environmental regulations do not apply to this application, because it does not describe any surface disturbance. The application adds 6,696.41 acres in BLM Greens Hollow Lease UTU-84102 within T. 20 S., R. 4 E., Sec 36, 14, 23, 24; and T 20 S., R. 5 E. Sec. 19, 20, 21, 28, 29, 30, 31, 32, and Sec 33; and T 21 S, R 4 E Sec 1, 2, 11, 12, 13, and 1; and T 21 S, R 5 E Sec 6. The Greens Hollow lease surface is managed by Fishlake (79 acres) and Manti LaSal National Forests (the remainder). The application revises the total permitted disturbed area boundary (96.416 acres) and the currently disturbed acreage (48.825 acres, pg 1-15) due to the previously permitted waste rock expansion and sink hole disturbance. There is no revision to Chapter 2, Soils, other than a statement that the 2015 FEIS provides background information. A general Order III survey is included as Dwg 2-3, Soil Types SITLA Muddy & Greens Hollow Tract. The potential for a ventilation and escapeway shaft facility is anticipated in Section 5.2.6.1 with a statement that permitting of the potetial shaft will follow the acquisition of the Greens Hollow Lease. Confidential Appendix 4-5 Memorandum of Agreement between USFS and SHPO outline requirements of shaft development.

pburton

Land Use Resource Information

Analysis:

The amendment meets the State of Utah R645-301-411 requirements for land use information. Volume 1, Chapter 4, Section 4.10, pages 4-1 through 4-12A provide information on premining land use. This amendment adds land use information for the Greens Hollow Tract on page 4-7. The land is under USFS management and therefore is managed for multiple use. Recreational use is light and livestock grazing and wildlife are the primary uses. The narrative analyzes the landuse in conjunction with other environmental resources and provides analysis of the capability of the land before any coal mining and reclamation operations to support a variety of uses. Plates 4-1 and 4-1c are land use maps.

Ireinhart

Geologic Resource Information

Analysis:

The application does not meet the State of Utah R645-301-122 requirements for reference materials. Chapter 6 of the MRP has been updated to include the Greens Hollow Lease tract. A specific geologic report has been added to the MRP to discuss the geology of the tract (Appendix 6-4). This report entitled, " Geology Technical Report Greens Hollow Coal Lease Tract" was prepared by Paul B. Andreson and does contain a Statigraphic column of the Green's Hollow lease and a map showing a fence diagram using borehole data from the Green's Hollow area. This report is only partially available and seems to be missing most of the pages. Upon discussing this with the Operator, it seems that the missing pages contained EIS information pertinent to the Muddy Creek tract and it was felt that the information they contained was not relevant to the Green's Hollow Lease. Regardless, the report either needs to be complete or an explanation needs to be provided in the application as to why the report is only partially available.

Since this is an extension of an existing mine a lot of the geologic information carries over from the existing mine plan. The formations are essentially the same, although most of the Greens Hollow is a little deeper in the geologic column and is covered by the North Horn formation. A report has been prepared by Paul Anderson specifically for the Greens Hollow tract and is found in Appendix 6-4. The Geology Technical Report (Appendix 6-4) contains a General Stratigraphic column (Figure 1) of the Greens Hollow Coal lease tract. It is accompanied by Plate 2 which is a Geologic Fence Diagram of the tract. These adequately describe the stratigraphy of the area. Plate 6-1 of the MRP is the Geology and drill hole location map and has been updated to include the Greens Hollow lease tract.

Lithologic drill logs are found in Appendix 6-1 which is marked confidential because of the proprietary information contained therein. The logs are done on drill holes that reflect the general geology of the area, but are not specific to the Green's Hollow lease. The same is true for the chemical analyses that were done on the drill samples. There are numerous analyses done and shown in Appendix 6-2 but they are not specific to the Green's Hollow lease tract. In

order to evaluate the characteristics of the Green's Hollow strata, additional data must be provided. R645-301-624.300 et. seq. requires samples from test borings or drill cores to provide lithologic characteristics, including physical properties and thickness of each stratum that may be impacted, and location of groundwater where occurring. Chemical analyses for acid or toxic forming materials, including the total sulfur and pyritic sulfur of the coal seam and the strata immediately above and below the coal seam must be provided.

Deficiencies Details:

R645-301-122. The report entitled, " Geology Technical Report Greens Hollow Coal Lease Tract" was prepared by Paul B. Andreson and does contain a Stratigraphic column of the Green's Hollow lease and a map showing a fence diagram using borehole data from the Green's Hollow area. This report is only partially available and seems to be missing most of the pages. Upon discussing this with the Operator, it seems that the missing pages contained EIS information pertinent to the Muddy Creek tract and it was felt that the information they contained was not relevant to the Green's Hollow Lease. Regardless, the report either needs to be complete or an explanation needs to be provided in the application as to why the report is only partially available.

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dhaddock

Hydro Baseline Information

Analysis:

The application does not meet the State of Utah R645 requirements for Baseline Information.

The permittee discusses structural information for the Greens Hollow Tract in Appendix 7-28, on page 15.

The permittee states that no major faulting has been identified in the Greens Hollow Tract, though displacement faults have been encountered in the SUFCO mine. The amendment states that both minor faults and joints are likely to exist in the Greens Hollow Tract, especially in the Castlegate Sandstone. On page 60 of the Probable Hydrologic Consequences description, the Permittee states that groundwater inflows along faults zones that are intercepted by the mine workings in the Greens Hollow Tract may occur. The application does not contain sufficient geologic information with regards to regional and structural geology of the permit and adjacent areas to show how occurrence, availability, movement, quantity, and quality will be impacted by mining. The Permittee includes a Fracture Pattern Analysis for the Greens Hollow Tract in Appendix 6-4. The Permittee must provide a map showing locations of fracture traces discussed in Appendix 6-4 and any additional fault information obtained during exploration. The Permittee must include a narrative on probable hydrologic consequences with regards to the features identified. All fracture and fault information must be provided to the division.

The amendment does not include sufficient baseline hydrologic data for the Greens Hollow Tract for regions within and adjacent to the lease area. The typical direction of groundwater flow is along bedding plane partings and fractures in the direction of dip (N-NW) in the Star Point and Castlegate Formations. Therefore, baseline monitoring must also be conducted down-dip of mining. This area has analyzed during baseline hydrologic analysis for the Muddy Tract, water quality data is presented in Appendix 7-21 of the MRP. Though the permittee has collected baseline data in the adjacent areas north-west of the lease tract, this information is not referred to as baseline for the Greens Hollow Tract and must be incorporated into the Greens Hollow Tract Amendment. No new baseline collection is requested in this NW adjacent area. The information to be incorporated into the amendment must include site elevation, formation, and UTM coordinates, to support all previous water quantity and quality data in Appendix 7-21.

The last spring and seep survey took place in the summer of 2001. Due to the climatological/recharge driven hydrology of the region, and the significant time that has passed since the last survey, the Division requests a new spring/seep survey to be conducted in order to verify location and geologic origin of all springs/seeps.

In Appendix 7-28 on page 37, the Permittee states that an investigation was performed by Mayo and Associates to determine groundwater inflow origin in an old sealed longwall gob area using 3H and 14C. The Permittee states that outflow in this area had steadily decreased with time. Similarly, on page 38 and 71, the permittee states that the discharge from this site and other abandoned longwall areas consistently decrease with time, especially from inactive-zone mine inflows. The Permittee suggests that reduced discharge indicates poor hydraulic communication between

systems overlying the mine and shallow groundwater. However, the Permittee does not provide data to support this claim. The Permittee must provide evidence including the location of discharge sites and/or in-mine sampling locations, flow measurements, hydrographs, and geochemical and isotopic data, to show mine inflows have consistently decreased with time.

The Permittee must describe in more detail the mine-water discharges mentioned on page 7-55. The description must include details of the underground mine water management system including inflow collection, diversion to the sump, location of sump/s, and discharge procedures.

Deficiencies Details:

The application does not meet the State of Utah R645 requirements for Baseline Information. The following deficiencies must be addressed prior to final approval: R645-301-724.300, -728.200: The Permittee must include additional geologic information, including in full the Cirrus Geology Technical Report for the Greens Hollow Tract to aid in determining the probable hydrologic consequences. R645-301-724.300, -728.200: The Permittee must provide fault and fracture maps that visually map and identify the location of these features. The Provided Fracture Trace Map is not sufficient for hydrologic purposes. In addition, the permittee must provide all available seismic data to DOGM. R645-301-724.100: The Permittee must provide groundwater quantity description, depth to water for the Star Point Sandstone, which is the water-bearing stratum that has potential to be impacted below the coal seam. R645-301-728.310: The Permittee must provide graphical evidence of climatic and seasonal variations in mine inflows. The Permittee cites personal communication with Mark Bunnell, however additional supporting evidence to support these claims is required. The permittee must provide all mine inflow and outflow data with dates measured (daily measurements preferred), the location with UTM and map of each sample point, and any additional parameters sampled, including but not limited to isotopes, temperature, conductivity, TDS, and/or ionic constituents. R645-301-724.100: The Permittee has collected baseline information for all adjacent areas, but not all sites have been incorporated into Table 1 of the most recent amendment. The Permittee must provide a concise description, similar to that given in Table 1, of historic sites located northwest of the Greens Hollow lease tract. The water quality data for these sites is provided in Appendix 7-21 of the MRP. However, the Permittee must provide information for these sites that includes the location (UTM), elevation, geologic formation, monitoring period, and summary of the water analysis completed. R645-301-722.200, 728.100: The Permittee must provide an updated spring and seep survey that identifies water within and adjacent to the Greens Hollow Tract. The current spring and seep survey is dated and does not provide an accurate, up-to-date representation of pre-mining conditions as they currently exist. From this spring and seep survey, sites must also provide a comprehensive water quantity and quality information including geologic formation. R645-301-724.100, 722.100, 722.300: The permittee must provide the location of discharge sites and/or in-mine sampling locations, flow measurements, hydrographs, and geochemical and isotopic data, to show mine inflows have consistently decreased with time. The mine inflow description must include details of the underground mine water management system including inflow collection, diversion to the sump, location of sump/s, and discharge procedures.

aumarva

Probable Hydrologic Consequences Determination

Analysis:

The application does not meet the State of Utah R645 requirements for Probable Hydrologic Consequences Determination. The permittee provides a Probable Hydrologic Consequences assessment in Appendix 7-28. The permittee provides a spring and seep survey of the permit and adjacent areas from 2001. This spring and seep survey is dated and not sufficient to determine future adverse impacts to the hydrologic balance. There is insufficient geologic information to determine probable hydrologic consequences. The Permittee conducted a Geologic Technical Report that was not included in the amendment.

Deficiencies Details:

The application does not meet the State of Utah R645 requirements for Probable Hydrologic Consequences Determination. The following deficiencies must be addressed prior to final approval: R645-301-722.200, 728.100: The Permittee must provide an updated spring and seep survey that identifies water resources within and adjacent to the Greens Hollow Tract, including north, northwest, west, south, and east of the lease area. Selected sites within these areas must also provide comprehensive water quantity and quality information for each geologic formation, including the water bearing Star Point, Blackhawk, and Castlegate formations. R645-301-728.200, -724.300: The Permittee must provide geologic information, including the location of faults and fractures with supporting maps to determine probable hydrologic consequences.

aumarva

Hydro GroundWater Monitoring Plan

Analysis:

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

In the event water is encountered underground at a continuous 100 gpm flow rate for 120 hours, the Permittee commits to collect samples for lab analysis of parameters described in Table 7-2, subcategory D9, The sampling will continue quarterly for one year, with age dating completed once. The Permittee must provide a list of the age dating parameters to be sampled to the Division. In addition, if event water is encountered, the Permittee must provide the lab analysis results, sample location map, and daily flow data from the first encounter of water to the Division.

The Permittee plans to monitor MW-15-5-2 and M-SP87 in the Castlegate Sandstone. Two additional sites, USP-1 and USP-2, are also noted to occur in the Castlegate and were monitored in 2009. These two springs are located where they will be within the zone of impact according to the mining plan. This is direct contradiction to the Permittee's claim in section 728.334 of Appendix 7-28 where they state "no Castlegate Sandstone springs are to be undermined in the proposed mining plan." In the same section, the permittee states that in the event Castlegate Sandstone springs or flowpaths would be directly undermined and subsided there would be potential for diminished discharge. Therefore, the permittee must incorporate all Castlegate Sandstone discharges, including USP-1 and USP-2 into their monitoring plan. The Permittee must also provide location information for USP-1 and USP-2. The locations shown on Plate 7-3 are inconsistent with the provided UTM coordinates in Table 1 and locations shown in all other maps. This is addressed in Maps, Plans, and Cross-sections Section of this Review.

Selected spring and seep sites located north-west of the lease area must also be incorporated into the groundwater monitoring plan for this amendment.

Deficiencies Details:

The application does not meet the State of Utah R645 requirements for Ground-Water Monitoring Plan. The following deficiencies must be addressed prior to final approval: R645-301-731.211, 724.100: The Permittee will provide additional monitoring sites for above and below the coal seam in order to sufficiently meet the objectives of protecting the hydrologic balance and determining impacts. In addition, the Permittee must incorporate, at a minimum, sites USP-1 and USP-2, discharging from the Castlegate into the Monitoring Plan. R645-301-731.211: The Permittee must provide narrative that clearly outlines the commitment to provide information regarding mine inflow when flow exceeds 100 gpm for 72 hours. The Permittee must describe which aging parameters will be analyzed, as well as, commit to providing maps and discharge information of all mine flows. R645-301-731, -121.200: The permittee must update the water monitoring plan and/or Plate 7-10 to accurately and clearly reflect only sites that are intended to be monitored during all anticipated coal mining and reclamation activities. The current map, Plate 7-10, does not contain all monitoring locations and contains sites that are not scheduled to be sampled according to the proposed monitoring plan. Plate 7-10 must match Table-2 Water Monitoring Program.

aumarva

Hydro SurfaceWater Monitoring Plan

Analysis:

The application does not meet the State of Utah R645 requirements for Surface-Water Monitoring Plan. The Permittee plans to provide additional hydrologic data for surface streams above future longwall panels by proposing to sample above and below proposed mining areas quarterly, for one year prior the beginning of longwall mining in the area, quarterly during the period of active mining, and for one year after the mining is completed. This commitment is on page 80 of Appendix 7-28. The Permittee plans to specify these future monitoring locations as the final mining plan is developed. The Permittee must provide a monitoring plan with sampling site locations identified for each phase of mining and a list of parameters to be sampled. The Permittee must update the Surface Monitoring Plan to incorporate additional sites that accurately describe surface water resources in the region to sufficiently characterize any disturbances to the hydrologic balance. The amendment does not provide enough monitoring for units above and below the coal seam.

Deficiencies Details:

The application does not meet the State of Utah R645 requirements for the Surface Water Monitoring Plan. The following deficiencies must be addressed prior to final approval: R645-301-731.222, 512.100; 521.111: The Monitoring

Plan must include the locations at which the Permittee plans to monitor above and below longwall mining areas prior to the commencement of mining. The Plan must include the anticipated sampling locations, commitment term, and parameters to be sampled. The specific future monitoring locations will be updated and provided to the division quarterly with the current mine panel completion extent map and locations in order to ensure sampling locations are corresponding with areas above and below mining areas, as outlined in the Permit. These commitments must be incorporated into the narrative of the MRP. R645-301-731, -121.200: The Permittee must update the Surface Water Monitoring Plan and/or Plate 7-10 to accurately and clearly reflect only sites that are intended to be monitoring during all anticipated coal mining and reclamation activities. The current map, Plate 7-10, does not contain all monitoring locations and contains sites that are not scheduled to be sampled according to the proposed monitoring plan. R645-301-731-200: The Permittee must include additional monitoring locations in their operational monitoring plan. The new plan should incorporate, at a minimum; at least one new location must be located downstream in Muddy Creek below the confluence with Box Canyon at the Mancos shale outcrop, and the surface monitoring point M-STR5.

aumarva

Maps Affected Area Boundary Maps

Analysis:

The amendment meets the State of Utah R645-301-323 requirements for maps and aerial photographs. This amendment updates Plate 3-1 (plant communities and reference areas), 3-2 (elk range), 3-3 (deer range and raptor nests) and 4-b1(land use) to include the Greens Hollow tract.

Irinhart

Maps Affected Area Boundary Maps

Analysis:

The amendment meets State of Utah R645 requirements for Affected Area Boundary Maps.

A previous deficiency outlined the need for the Permittee to amend all drawings and maps to show only approved Sufco leases and pending Green's Hollow lease boundaries. All maps now only include relevant Sufco leases and Green's Hollow lease boundaries, and therefore adequately address this requirement.

jeatchel

Maps Monitoring and Sampling Locations

Analysis:

The application does not meet the State of Utah R645 requirements for Monitoring and Sampling Location Maps. The Permittee provides Plate 7-10, Operation Hydrologic Monitoring Stations, to present monitoring and sampling location maps. This plate identifies ground and surface water resources to be monitored during mining operations. However, this map also includes points that are not included in the Water Monitoring Plan outlined in Table 7-2 on page 7-41. The map does not include sites FP-1, FP-2, and Pines 206 that are included as part of the monitoring plan. Also, the Operational Hydrologic Monitoring Stations map includes many sites that are not scheduled to be monitored. The map must be updated to accurately and clearly portray all sites to be monitored in both narrative and map form. The amendment also provides Plate 7-3, Hydrologic Monitoring Locations, which presents historic stations used for baseline and operational monitoring stations. This map presents locations that are inconsistent in location with the UTM NAD 27 coordinates and the other maps presented with this amendment, such as Figure 2 and 4 in Appendix 7-28.

Deficiencies Details:

The application does not meet the State of Utah R645 requirements for Monitoring and Sampling Location Maps. The following deficiency must be addressed prior to final approval: R645-301-121.200: The Permittee must present a map that clearly identifies the active monitoring locations for the SUFCO mine. The current map, Plate 7-10, does not clearly identify monitoring locations because it includes/does not include only the sites in the monitoring plan, R645-301-722: The Permittee must update all maps to show correct location information for all monitoring locations. In addition, UTM coordinates must be provided for all monitoring and historic baseline locations. Specifically, USP-1 and USP-2 appear to be misplaced.

aumarva

Maps Subsurface Water Resources

Analysis:

The amendment does not meet the State of Utah R645 requirements for Subsurface Water Resources Maps. The amendment must provide maps that identify the location and extent of subsurface water resources within and adjacent to the proposed permit boundary. The maps will include, but not limited to, areal and vertical distribution of aquifers and portrayal of seasonal differences in head.

Deficiencies Details:

The application does not meet the State of Utah R645 requirements for Subsurface Water Resource Maps. The following deficiency must be addressed prior to final approval: R645-301-722.100: The amendment must provide maps that identify location and extent of subsurface water within the proposed permit and adjacent areas. The maps will include, but not limited to, areal and vertical distribution of aquifers, and portrayal of seasonal differences in head.

aumarva

Maps Surface and Subsurface Ownership

Analysis:

The amendment meets State of Utah R645 requirements for Surface and Subsurface Ownership Maps.

A previous deficiency outlined the need for the Permittee to amend all plates to show only approved Sufco leases and pending Green's Hollow lease boundaries. All plates now only include relevant Sufco leases and Green's Hollow lease boundaries, and therefore adequately address this requirement.

jeatchel

Operation Plan

Mining Operations and Facilities

Analysis:

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

A previous deficiency outlined the need for the Permittee to include a detailed description of proposed mining methods and procedures, including anticipated annual and total coal production within the Green's Hollow Lease. Amendments to section 5.2.3 describe the use of continuous miners and longwall mining techniques to recover coal within the Green's Hollow Lease. Anticipated annual coal production throughout the life of the Green's Hollow Lease is projected to be between 5.5 - 6.3 Million tons.

jeatchel

Air Pollution Control Plan

Analysis:

The amendment meets the State of Utah R645-301-420 requirements for Air Quality. The approved MRP references DAQ Permit Approval Order DAQE-AN0106650013-11 dated March 30, 2011 and DAQEEN0106590004-11. With the addition of the Greens Hollow Lease, Sufco will continue to be considered a "Minor Source" by the Utah Department of Environmental Quality and the mining of the Greens Hollow Lease is not a significant acid rain source (FSEIS, 2015). The demand for coal from the Sufco mine is established, the addition of the coal in the Greens Hollow Lease extends the supply of coal for years. Coal production and therefore trucking is intended to remain within the limits of the existing Air Quality Approval Order (Review production quantities in Section 5.2.3). Should mining changes require a revision; the Air Quality Approval Order will be updated at that time.

Ireinhart

Coal Recovery

Analysis:

The amendment meets State of Utah R645 requirements for Coal Recovery.

A previous deficiency outlined the need for the Permittee to include a narrative describing sequencing of operations, measures used to maximize use and conservation of coal resource, expected recovery, and R2P2 details for the Greens Hollow Lease. As outlined in section 5.2.3, anticipated annual coal production throughout the life of the Greens Hollow Lease is projected to be between 5.5 - 6.3 Million tons and will be extracted using a longwall, thus ensuring the maximum amount of coal will be extracted using best available technology. Section 5.1.2 and appendix 1-1 includes a discussion about the R2P2, although the details haven't yet been finalized but will be sent to the BLM once it is complete.

jeatchel

Subsidence Control Plan Renewable Resource

Analysis:

The amendment meets the State of Utah R645-301-332 requirements for describing impacts of subsidence to fish, wildlife, and vegetative resources. Volume 1, Chapter 3, Section 3.3.3 provides a description of the anticipated impacts of subsidence. Subsidence associated with the Greens Hollow Lease is consistent with information in the approved MRP. As noted on pages 3-43 and 3-45A, the permittee has implemented a program to monitor the effect of subsidence on the vegetative communities. The applicant uses color infrared photography (CIR) to document changes in vegetation. This CIR coverage began in 1987 and will be updated at least every 5 years. Because of the depth and type of cover, Sufco anticipates there will be little impact to upland vegetation due to the subsidence. Subsidence cracks that form that are determined to be a safety hazard will be mitigated as discussed in section 3.3.3.

lreinhart

Subsidence Control Plan Renewable Resource

Analysis:

The amendment meets State of Utah R645 requirements for Renewable Resource Subsidence Control Plan.

A previous deficiency outlined the need for the Permittee to clarify whether the stock troughs and man-made ponds within the permit area are state-appropriated water supplies. Narrative in section 5.2.5.1 states that according to water right records, no man-made ponds or troughs are assigned state appropriated water supplies.

jeatchel

Subsidence Control Plan Subsidence

Analysis:

The application meets the State of Utah R645-301-623.300 requirements for a subsidence Control plan.

Subsidence mining has the potential to be excluded from areas identified for protection such as stream segments where the overburden is insufficient in thickness or rock types to facilitate healing of surface tensile cracks. Mining may also be excluded along cliff escarpments where subsidence would impact cultural features or raptor habitat. Each exclusion will be evaluated on a case by case basis and permitted as required. Prior to mining the Greens Hollow Lease, the subsidence monitoring points will be located and the site surveyed for baseline information.

dhaddock

Subsidence Control Plan Subsidence

Analysis:

The amendment meets State of Utah R645 requirements for Subsidence Control Plan.

A previous deficiency outlined the need for the Permittee to update the Subsidence Control Plan as it pertains to the Greens Hollow Lease, specifically addressing the lithology of the strata overlying the coal seam. Appendix 7-27 illustrates the lithologic column overlying the coal seam. Narrative in 5.2.5.1 states that man-made troughs and stock ponds should be unaffected by subsidence, although will be mitigated in the event that they are negatively impacted. Additionally, subsidence monitoring points will be located and the site surveyed for baseline information. The process of collecting baseline information will begin in 2017.

jeatchel

Subsidence Control Plan Performance STD

Analysis:

The amendment meets State of Utah R645 requirements for Subsidence Control Plan Performance STD.

A previous deficiency outlined the need for the Permittee to explain why additional subsidence monitoring points are not required for the Greens Hollow Lease. Narrative in section 5.2.5.1 states that subsidence monitoring points will be located and the site surveyed for baseline information. The process of collecting baseline information will begin in 2017. In addition to collecting baseline subsidence data over the permit area, mining may also be excluded along cliff escarpments where subsidence would impact cultural features or raptor habitat, but will be evaluated on a case by case basis and permitted as required.

jeatchel

Subsidence Control Plan Notification

Analysis:

The amendment meets State of Utah R645 requirements for Subsidence Control Plan Notification.

A previous deficiency outlined the need for the Permittee to define a clear plan of specific areas to be protected from subsidence and a notification sent to the appropriate surface owners affected by said subsidence. Narrative in section 5.2.5.1 states that mining may be excluded along cliff escarpments where subsidence would impact cultural features or raptor habitat, but will be evaluated on a case by case basis and permitted as required. There is no private surface ownership as the surface rights for the entirety of the Greens Hollow tract is owned by the USFS.

jeatchel

Fish and Wildlife Protection and Enhancement Plan

Analysis:

The amendment meets the State of Utah R645-301-333 requirements to describe how using best technology currently available to minimize adverse impacts to fish and wildlife, including compliance with the Endangered Species Act. Volume 1, Chapter 3, Section 3.3.3 provides a plan to minimize disturbance and adverse impacts to fish and wildlife. Since this amendment does not include additional surface disturbance, the approved MRP is adequate. Appendix 3-15 contains a sound monitoring report conducted by Tetra Tech, Inc from 2008. The monitoring was conducted to collect baseline data in association with the potential development and operation of a ventilation shaft near Quitchupah Canyon. The data was collected around an existing ventilation fan and at selected sensitive resource location such as Forest System Roads, and Greater Sage-grouse leks. The collected sound level data will be used to determine measures which could reduce sound related impacts associated with the operation of the proposed ventilation fan.

Ireinhart

Vegetation

Analysis:

The amendment meets the State of Utah R645-301-331 requirements for protection of vegetation. Volume 1, Chapter 3, Section 3.3.1 provides protection measures for vegetation. Potential impacts to vegetative, fish and wildlife resources and the associated mitigation plans are presented in Sections 3.30 and 3.40 of the approved MRP. Since this amendment is an expansion of underground mine workings with no additional surface disturbance, the existing protection measures are adequate. However, this amendment includes Appendix 3-15, a sound monitoring report in association with the potential development and operation of a vent shaft near Quitchupah Canyon. The collected sound level data will be used to determine measures which could reduce sound related impacts associated with the operation of the proposed ventilation fan. Additional monitoring information for the upper reaches of Quitchupah Creek is provided on page 3-34.

Ireinhart

Hydrologic Ground Water Monitoring

Analysis:

The application does not meet the State of Utah R645 requirements for Groundwater Monitoring. The Permittee must revise the Groundwater Monitoring Plan to incorporate new monitoring points that are to be obtained from the historic monitoring sites located northwest of the Greens Hollow adjacent permit area. The Permittee must select and incorporate sites into the Groundwater Monitoring Plan in order to address potential impacts to hydrologic resources down-dip of mining. The Permittee must also address the absence of ground water monitoring locations above and below the proposed mine workings in water-bearing strata. The location and extent, including areal and vertical distribution of aquifers, and portrayal of seasonal differences of head in aquifers on cross sections and contour maps must be provided in accordance with R645-301-722.100. These include the Star Point, Castlegate, and Blackhawk. In addition, only two wells exist within the area, 01-8-01 in the Blackhawk and MW-15-5-2 in the Castlegate. MW-15-5-2 has been consistently dry during monitoring.

Deficiencies Details:

The application does not meet the State of Utah R645 requirements for Groundwater Monitoring. The following deficiencies must be addressed prior to final approval: R645-301-731.210, -731.211, -724.100: The Permittee must revise the ground water monitoring plan to incorporate new sites because the current plan as proposed is not adequate for adjacent areas or areas above/below the coal seam. R645-301-731.200, -731.211: The amendment must incorporate specifics of age dating parameters to be samples for in-mine water encountered at rates and duration outlined in the Permit. R645-301-722.100: The Permittee must address the absence of ground water monitoring locations above and below the proposed mine workings in water-bearing strata. The location and extent, including areal and vertical distribution of aquifers, and portrayal of seasonal differences of head in aquifers on cross sections and contour maps

aumarva

Hydro Surface Water Monitoring

Analysis:

The application does not meet the State of Utah R645 requirements for Surface Water Monitoring. The Permittee must revise the Surface Water Monitoring Plan to incorporate new monitoring points. At a minimum, a new monitoring point is required at the Mancos Shale outcrop in Muddy Creek, just below the Box Canyon confluence. An additional monitoring point will be M-STR5 in order to monitor this gaining section of Greens Canyon/Cowboy Creek. The Monitoring plan must be updated to reflect the requirements for surface water monitoring points outlined in R645-301-731.220, -731.221, -731.222.1. The Permittee must address the absence of surface monitoring points on the major drainages. Specifically, Greens Hollow Creek/Canyon, Cowboy Creek, Muddy Creek, and North Fork of Quitcupah. New sampling locations, in addition to those specifically outlined above, are required by the Division.

Deficiencies Details:

The amendment does not meet the State of Utah R645 requirements for Surface Water Monitoring. The following deficiencies must be addressed prior to final approval: R645-301-731.222.1: The Permittee must revise the Surface Water Monitoring Plan. The two specified surface monitoring points must be added to the plan with a commitment to monitor discharge and field water quality parameters, at a minimum. R645-301-731.220, -731.221, -731.222: The Permittee must add additional monitoring locations above and below the proposed mine workings on the major surface drainages within the Greens Hollow Lease. Specifically, Greens Hollow Creek/Canyon, Cowboy Creek, Muddy Creek, and North Fork of Quitcupah.

aumarva

Maps Affected Area

Analysis:

The amendment meets State of Utah R645 requirements for Affected Area Boundary Maps.

A previous deficiency outlined the need for the Permittee to amend all drawings and maps to show only approved Sufco leases and pending Green's Hollow lease boundaries. All maps now only include relevant Sufco leases and Green's Hollow lease boundaries, and therefore adequately address this requirement.

jeatchel

Reclamation Plan

PostMining Land Use

Analysis:

The amendment meets the State of Utah R645-301-412 requirements for postmining land use. Volume 1, Chapter 4, Section 4.1.2 pages 4-16 through 4-16 provide the post-mining land use plan. The Greens Hollow mining area is managed by U.S. Forest Service under the multiple use under the Federal Land Policy and Management Act. Present management emphasizes livestock grazing, wildlife, timber and watershed development. The postmining land uses will be consistent with the land use plans prepared by the Forest Service. Final reclamation activities such as grading and seeding as detailed within the MRP will be completed in a manner to provide uses of the lands consistent with those uses required by the U.S. Forest Service land use plans. Retention of pre-SMCRA highwalls is discussed in Section 5.5.3.6. Volume 1, Chapter 4, Section 4.1.3 pages 4-19 through 4-20 provide the postmining land use plan which is the same as the premining land use.

Ireinhart

WildLife Protection

Analysis:

The amendment meets the State of Utah R645-301-342 requirements for a fish and wildlife plan for the reclamation and postmining phase of operation. The amendment does not propose any additional surface disturbance and therefore the existing MRP adequately meets the requirements. Volume 1, Chapter 3, Section 3.4.2 provides a wildlife enhancement plan. Enhancement measures include range improvements within the lease area and reclamation seed mixes are designed to provide nutritional value and cover to wildlife. Table 3-1 (pg. 3-15) provides information on federally protected threatened, endangered, and listed species. Table 3-2 (pg 3-27/28) provides a list of Utah species that are protected. Table 3-3 (pg 3-29/30) provides a list of USDA-FS Region 4 Sensitive species. The proposed amendment will not affect the continued existence of endangered or threatened species or result in the destruction or adverse modification of their critical habitats, as determined under the Endangered Species Act.

Ireinhart

Mine Openings

Analysis:

The application meets the State of Utah R645 301-631 requirements for managing mine openings and sealing exploration holes had boreholes.. Since this application is for an extension of an existing underground mine, there are no plans for additional or new portals in the Greens Hollow tract. Reclamation of exploration boreholes has been addressed. The plan for casing and sealing of wells is found in section 7.6.5 of the MRP. When no longer needed for monitoring or approved for transfer as a water well, each well will be sealed and backfilled by placing a concrete plug from TD to the surface.

dhaddock

Contemporaneous Reclamation General

Analysis:

The amendment meets the State of Utah R645-301-352 requirements for contemporaneous reclamation. Volume 1, Chapter 3, Section 3.5.2 page 3-52 provides the contemporaneous reclamation plan. The amendment does not contemplate any surface disturbance and therefore, the approved MRP meets the regulations.

Ireinhart

Revegetation General Requirements

Analysis:

The amendment meets the State of Utah R645-301-341 requirements for a revegetation plan. Volume 1, Chapter 3, Section 3.40 provides the revegetation plan which covers all lands disturbed by coal mining and reclamation operations. Nothing has been added to the existing reclamation plan with this amendment since additional surface disturbance is not proposed at this time.

Ireinhart

Revegetation Mulching and Other Soil Stabilization

Analysis:

The amendment meets the State of Utah R645-301-353 requirements for vegetative cover. Volume 1, Chapter 3, Section 3.5.3 page 3-53 through 3-58 provides general requirements for revegetation. The amendment does not contemplate any surface disturbance and therefore, the approved MRP meets the regulations.

Ireinhart

Maps Affected Area Boundary

Analysis:

The amendment meets State of Utah R645 requirements for Affected Area Boundary Maps.

A previous deficiency outlined the need for the Permittee to amend all drawings and maps to show only approved Sufco leases and pending Green's Hollow lease boundaries. All maps now only include relevant Sufco leases and Green's Hollow lease boundaries, and therefore adequately address this requirement.

jeatchel