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State of Utah

DEPARTMENT OF NATURAL RESOURCES

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November 21, 2017

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

Subject: 2nd 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 a few remaining deficiencies in addressing the Utah Coal Mining Rules. The deficiencies are listed and will need to be addressed before further processing can occur. The names of the deficiency's author are provided so that your staff can communicate directly with that individual should questions arise.

Please address the remaining deficiencies and submit your response in order for us to complete the processing of this 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

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.

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 October 11, 2017. The report listed 13 Violations. Violation 10 is outstanding. Linking entity is James J Wolff. The remaining violations are coded "conditional", indicating a settlement, payment or pending challenge. Linking entity is John Joseph Sigel Jr.

Deficiencies Details:

R645-301-113.300:

An AVS Permit Evaluation Report was generated for the SUFCO Mine C/041/0002 on October 11, 2017. The report listed 13 Violations. Violation 10 is outstanding. Linking entity is James J Wolff. The remaining violations are coded "conditional", indicating a settlement, payment or pending challenge. Linking entity is John Joseph Sigel Jr.

ssteab

Legal Description

Analysis:

The amendment meets 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 pages 1-11 and 1-12 titled Federal Coal Lease UTU-84102 – (6,175.39 acres) matches the legal description found in Appendix 1 of the ROD (p. 22) and the UTU-84102 BLM Coal Lease. The properties listed in the lease match the properties listed on pages 1-11 and 1-12 of the MRP as well as the properties delineated on Plate 5-6 (Land Ownership, Lease, and Permit Area Map).

tmiller

Environmental Resource Information

Historic and Archeological Resource Information

Analysis:

The amendment does not meet the State of Utah R645 requirements for Historic and Archaeological Resource Information. Maps 1-5 titled "Cultural Resource Sites from the Greens Hollow EIS" provided in Appendix 4-2, when combined, do not show the entire Greens Hollow Tract. The portion of T. 21 S, R. 4 E., SLM Sec. 2, SE1/4 is not entirely included on any of the five maps. There is also one site, 42SV1578/2341, that is identified in the MOA as being eligible for the National Register of Historic Places and potentially adversely affected by the proposed amendment but its location is not found on any of the maps included in Appendix 4-2. Maps 1-5 also include an Area of Subsidence Mining that is inconsistent with maps found in the MOA and EIS which show an Area of Subsidence Mining as well as an Area of No Subsidence Mining. The EIS identifies 5 total sites within the boundary of subsidence mining (42SV3224, 42SP179, 42SP492, 42SV2774, and 42SV3217) but only one of those (42SV3224) is eligible for listing in the NRHP. The MOA between Manti-La Sal National Forest and SHPO, however, identifies 10 sites (42SV1484, 42SV1578/2341, 42SV2554, 42SV2584, 42SV2586, 42SV2589, 42SV2597, 42SV2949, 42SV3224, and 42SV3226) that are eligible for the NRHP and which may be adversely affected by the proposed undertaking. The narrative found on pages 4-16 and 4-17 and the maps found in Appendix 4-2 do not include a clear or adequate description of the nature of the cultural and historic resources found within the permit and adjacent areas. While Appendix 4-2 includes the MOA and the EIS, there is no mention in the narrative of the plans and stipulations taken on by the Permittee that are required for SHPO clearance of the site. Plate 5-10C shows some of the sites identified in the MOA and EIS but not others. For example, Plate 5-10C shows sites 42SV2589, 42SV2586, and 42SV2584 as being within the Limit of Potential Subsidence and those sites are listed in the MOA as being NRHP eligible yet they are not identified in the EIS and there is no mention of them in the narrative, which states there is only one site (unnamed), out of a total of five (unnamed), that is eligible for NRHP listing. Additionally, the narrative provided in the amendment fails to include the plans and stipulations set forth in the MOA and/or EIS. Overall, the narrative and the maps are unclear as to what sites are identified as NRHP eligible, where they are located, and what monitoring plans and protections will be implemented to protect them.

Deficiencies Details:

The application does not meet the State of Utah R645 requirements for Cultural and Historic Resources Information. The following deficiencies must be addressed prior to final approval:

R645-301-120.200: The Permittee must provide a narrative and maps that are clear and concise. The Permittee must provide, on a single map, the entire Greens Hollow Tract that includes the locations of all sites within the permit and adjacent areas that are eligible for listing in the NRHP and their locations within the boundaries of the Area of Subsidence Mining and the Area of No Subsidence Mining. The Permittee must also provide a clear list of all potentially impacted NRHP-eligible sites and the protective measures, mitigations, and stipulations that will be implemented in the plan.

R645-301-411.140: The Permittee must provide a map including all sites of cultural and historic resources that are eligible for listing in the National Register of Historic Places. The Permittee must also include a supporting narrative which describes the nature of the resources and the implementation of the monitoring plans, protective measures, mitigations, and/or stipulations put forth in the MOA and EIS as they apply to the current proposed mining plan.

R645-301-411.142: The Permittee must provide, in the narrative, a monitoring and protection and/or mitigation plan for each NRHP-eligible site located within the area of subsidence mining and any other sites which may be adversely affected by the proposed activities.

tmiller

Climatological Resource Information

Analysis:

The application meets the State of Utah R645 requirements for Climatological Resource Information.

The Permittee provides a statement of the climatological factors in Chapter 4 and Volume 9 of the MRP

aumarva

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.

Ireinhart

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 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 land use 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

Alluvial Valley Floors

Analysis:

The application meets the State of Utah R645 requirements for the Alluvial Valley Floor Determinations.

The Permittee provides sufficient information regarding the absence of alluvial valley floors in the Greens Hollow Lease Area in Chapter 9 of the MRP. The information provided in this section is part of the conceptual mine plan that assumed full extraction mining with maximum associated impacts as determined by the BLM's Final EIS.

The Canyons of Greens Hollow Tract contain a steep gradient and limited narrow deposits of unconsolidated alluvium. The canyon bottoms contain shallow alluvium, with much of the channel resting directly on bedrock. The unconsolidated sediments have not been mapped in detail but are depicted in the Geologic Fence Diagram in Appendix 6-4. Additional information is provided in Chapters 2, 3, 6, and 7, determining that alluvial valley floors are not present in this tract.

aumarva

Geologic Resource Information

Analysis:

The application meets the State of Utah R645-301-600 requirements for Geologic Resource Information. 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 which discusses 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 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 was only partially available and was missing most of the pages in the original submittal of the Greens Hollow application. Upon discussing this with the Operator, the missing pages were located and in the October 4, 2017 resubmittal the entire report has been provided and the missing information is now 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. The report prepared by Paul Anderson specifically for the Greens Hollow tract 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, and are specific to the Green's Hollow lease. The same is true for the chemical analyses that were done on the drill samples and which are also contained in Appendix 6-1. 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.

Drill hole logs have now been provided in Appendix 6-1 which characterized the formation and lithology of the Greens Hollow Lease area. The following drill holes were logged and the information is now provided; Well 04-29-3, Well 04-33-1, Well 06-30-1, Well 07-31-1, Well 15-13-1 and Well 16-1-1. The second number in the description corresponds to the section number where the well is located. Wells 04-29-3, 04-33-1, 06-30-1 are also located on Plate 6-1 for reference.

Chemical sampling has been provided for the strata above, through and below the coal seam. This included base to acid ratios and total sulfur and pyritic sulfur. The sulfur is relatively low with samples being generally less than 2%. The base to acid ratios are positive in all the samples provided. This is not surprising given the alkaline nature of most strata in Utah. No toxic or acid forming materials were identified that would present a problem within the Greens Hollow Coal lease.

dhaddock

Hydro Sampling and Analysis

Analysis:

The application meets the State of Utah R645 requirements for Sampling and Analysis.

The Permittee states on page 7-3 in Section 7.2.3 that all water samples collected for use in accordance with this MRP will comply with methods described in "Standard Methods for Examination of Water and Wastewater" or 40 CFR parts 136 and 434.

aumarva

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 application 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 PHC description, the Permittee states that groundwater inflows along fault zones that are intercepted by the mine workings in the Greens Hollow Tract may occur. However, the application states the due to the geologic similarity to the existing SUFCO mine, it is likely the Greens Hollow Tract will behave similarly. Therefore, it is likely any water that is encountered will be minimal and short-lived. Appendix 6-4 provides more detailed information on structural geology.

The application includes baseline hydrologic locations on Plate 7-3. The baseline area sufficiently includes all adjacent areas.

The application does not include a sufficient spring and seep survey. The last survey took place in Summer 2001. When mining commences, the survey will be approximately 20 years old. The current baseline monitoring includes 63 springs and seeps of which 23 sites have not been monitored since 2004, or at latest 2009. Most significant springs have been

monitored consistently since 2015. However, due to the climatology/recharge driven hydrology of the region, and the significant time that has passed since the last survey, the Division requests a new spring and seep survey to be conducted in order to verify location and geologic origin of all springs and seeps, as well as, clearly ensure that no new significant springs not identified in the 2001 survey exist. The Permittee must provide documentation that shows conditions haven't changed since the 2001 survey or, complete a new spring and seep survey as the application states on page 7-51J. If a new survey is required, the Permittee states that the new spring and seep survey will be started as mining moves into specific areas of the lease, with expected completion of the survey by 2021. The approximate dates of survey will correlate with the monitoring schedule of sites above and below long wall panels. The Permittee does not define "specific areas of the lease." An up-to-date survey or documentation that no new seeps have emerged since 2001 is required to be completed for baseline analysis prior to the commencement of mining.

Appendix 7-27 includes information regarding in-mine sampling locations for 2015 and 2016. The data is marked for removal with a new map in Appendix 7-28. Please clarify.

In Appendix 7-28, page 41, the Permittee states that discharge from an old sealed long wall gob area and other abandoned long wall areas consistently decrease with time especially from inactive-zone mine inflows. The Permittee suggests that reduced discharge is one indicator of poor hydrologic communication between systems overlying the mine and shallow groundwater. The Permittee provides the data to support this in Appendix 7-17, using the contents of Mayo and Associates literature.

The Permittee describes the mine water management system on Page 7-15.

The formations within the Greens Hollow Tract do not qualify as "aquifers" under R645-100-200 rules. The definition of aquifer means "a zone, stratum, or group of strata that can store and transmit water in sufficient quantities for a specific use." Details of formation characteristics that support these claims are provided in Appendix 7-27 in Section 3.1.1 Groundwater Aquifers and Springs, Appendix 7-28 of the MRP, and portions of Appendix 7-17 provides a summary of the groundwater systems.

Further, the Permittee states on page 29 of the PHC that continuously saturated groundwater systems generally do not exist in the geologic formations overlying or immediately below the coal seams to be mined in the Greens Hollow Lease area. The formations are largely heterogeneous in nature and groundwater is typically present in fracture systems or isolated strata i.e. sandstone paleochannels. Furthermore, waters in the Castlegate Sandstone and Starpoint Sandstone, immediately above and below the coal strata, respectively, do not discharge within the Greens Hollow Tract. As described previously, the R645 definition of "aquifer" is that which is "sufficient quantities for a specific use." As no specific use for the waters above and below the coal strata could be identified within and adjacent to the Greens Hollow Tract, the Division finds the data provided within and adjacent of the mining area is sufficient for the Castlegate and Star Point Formations is sufficient. Details of the data available for these formations is provided in Appendix 7-27.

Formation specifics:

Castlegate Sandstone overlying the coal seam is a massive sandstone unit with groundwater flow occurring primarily through fractures, joint systems, and along bedding planes. However, the interbedded mudstone drapes limit groundwater flow in the formation. The typical direction is controlled by local stratigraphic dip, typically toward the north-northwest direction. The Castlegate Sandstone unit is discontinuous due to the presence of shale layers and permeable sandstone strata are not continuous over significant, long, regional-type flow systems. All water flow is typically local in nature with small to moderate quantities discharged. The only surface exposure of the Castlegate is along the rims of the North Fork of Quitchupah, South Fork of Quitchupah, Box Canyon, and Muddy Creek Canyon. Further, no water rights exist on the Castlegate within the tract and no surface expression is observed. Therefore, the Castlegate Formation does not meet the R645-100-200 definition for "aquifer" as this unit does not transmit water in sufficient quantities for a specific use.

There is no surface expression for the Star point Sandstone Formation within the Tract, therefore the water is not put to a specific use as required by R645-100-200 to qualify as an aquifer. Further, flow within the Star Point Sandstone occurs primarily through joints, fractures, and faults. The internal fifth-order bounding surface restricts horizontal and vertical flow. The Permittee provides information on the bounding impermeable layer below the Blackhawk that separates the Star Point formation, as well as, isotopic evidence to show surface water and groundwater are not in communication. Therefore, the Star Point Formation does not meet the R645-100-200 definition for "aquifer" as this unit does not transmit water for a specific use within the areas expected to be impacted by mining.

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:

R645-301-722.200, 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. The application states on page 7-51J that a seep and spring survey will be started as mining moves into specific areas of the lease, with expected completion of the survey by 2021. The approximate dates of survey will correlate with the monitoring schedule of sites above and below long wall panels. The Permittee does not define "specific areas of the lease." An up-to-date survey is required to be completed for baseline analysis prior to the commencement of mining.

R645-301-121.200: The Permittee in Appendix 7-27 includes information regarding in-mine sampling locations for 2015 and 2016. The data is marked for removal with a new map in Appendix 7-28. Please clarify.

aumarva

Hydro Baseline Cumulative Impact Area

Analysis:

The amendment does not meet the State of Utah R645 requirements for Cumulative Hydrologic Impact Assessment (CHIA).

The Permittee must provide the additional hydrologic information to address the outstanding hydrologic deficiencies in order to complete the CHIA.

Deficiencies Details:

The application does not meet the State of Utah R645 requirements for Cumulative Hydrologic Impact Assessment (CHIA).

R645-301-729: The Permittee must address the outstanding hydrologic deficiencies in order to complete the CHIA.

aumarva

Probable Hydrologic Consequences Determination

Analysis:

The application does not meet the State of Utah R645 requirements for Probable Hydrologic Consequences Determination.

The Permittee states on page 29 of the PHC that continuously saturated groundwater systems generally do not exist in the geologic formations overlying or immediately below the coal seams to be mined in the Greens Hollow Lease area. The formations are largely heterogeneous in nature and groundwater is typically present in fracture systems or isolated strata i.e. sandstone paleochannels. Furthermore, waters in the Castlegate Sandstone and Starpoint Sandstone, immediately above and below the coal strata, respectively, do not discharge within the Greens Hollow Tract. The R645 definition of "aquifer" means "a zone, stratum, or group of strata that can store and transmit water in sufficient quantities for a specific use." As no specific use for the waters above and below the coal strata could be identified within and adjacent to the Greens Hollow Tract, the Division does not qualify the Star Point and Castlegate as aquifers. In addition, the geology does not lend itself to communication between surface and subsurface water, the details of which are outlined below.

Formation specifics:

North Horn Formation consists of groundwater flow within shallow sandstone paleochannels. Due to the presence of low-permeability shales throughout the formation, groundwater flow is restricted to the sinuous nature of the sandstone paleochannels and does not widely flow throughout the formation with lateral and vertical flow largely constrained. Based on these characteristics, the North Horn formation does not meet the definition of "aquifer" per R645-100-200 rules.

Price River Formation consists of mudstone drapes separated by fluvial sandstones. Vertical flow of groundwater is

restricted causing perched zones and springs to appear at higher topographic positions.

Castlegate Sandstone overlying the coal seam is a massive sandstone unit with groundwater flow occurring primarily through fractures, joint systems, and along bedding planes. However, the interbedded mudstone drapes limit groundwater flow in the formation. The typical direction is controlled by local stratigraphic dip, typically toward the north-northwest direction. The Castlegate Sandstone unit is discontinuous due to the presence of shale layers and permeable sandstone strata are not continuous over significant, long, regional-type flow systems. All water flow is typically local in nature with small to moderate quantities discharged. The only surface exposure of the Castlegate is along the rims of the North Fork of Quitchupah, South Fork of Quitchupah, Box Canyon, and Muddy Creek Canyon. No water rights exist on the Castlegate within the tract and no surface expression is observed. Therefore, the Castlegate Formation does not meet the R645-100-200 definition for "aquifer" as this unit does not transmit water in sufficient quantities for a specific use.

There is no surface expression for the Star point Sandstone Formation within the Tract, therefore the water is not put to a specific use as required by R645-100-200 to qualify as an aquifer. Further, flow within the Star Point Sandstone occurs primarily through joints, fractures, and faults. The internal fifth-order bounding surface restricts horizontal and vertical flow. The Permittee provides information on the bounding impermeable layer below the Blackhawk that separates the Star Point formation, as well as, isotopic evidence to show surface water and groundwater are not in communication. Therefore, the Star Point Formation does not meet the R645-100-200 definition for "aquifer" as this unit does not transmit water for a specific use within the areas expected to be impacted by mining.

The Permittee commits on page 82 of the PHC to add additional quarterly stream monitoring locations above and below proposed mining areas to be collected one year prior, one year during, and one year after the commencement of long wall mining in the area. These locations will be turned on and off as mining proceeds throughout the area. The narrative on this page indicates that specific locations will be determined as a final mining plan is developed for respective mining areas. However, the Permittee has provided proposed monitoring locations above and below mining panels on Figure 1, in Appendix 7-27. The narrative in the PHC must be updated to reflect that these locations have already been determined, and where the figure is located.

The application does not include a sufficient spring and seep survey. The last survey took place in Summer 2001. When mining commences, the survey will be approximately 20 years old. Due to the climatology/recharge driven hydrology of the region, and the significant time that has passed since the last survey, the Division requests a new spring and seep survey to be conducted in order to verify location and geologic origin of all springs and seeps. The application states on page 7-51J that a seep and spring survey will be started as mining moves into specific areas of the lease, with expected completion of the survey by 2021. The approximate dates of survey will correlate with the monitoring schedule of sites above and below long wall panels. The Permittee does not define "specific areas of the lease." An up-to-date survey is required to be completed for baseline analysis prior to the commencement of mining.

The PHC must include a short narrative describing the mining plan as it relates to mining buffer zones established and potential relationship to hydrologic impacts.

There is a discrepancy within the PHC regarding M-SP87. Throughout the MRP, M-SP87 is deemed to originate from the Castlegate Formation, including on page 76 of the PHC. The redline strikeout in the PHC on page 80, and in the subsequent PHC tables, M-SP87 is claimed to originate from the Price River Formation. Please clarify.

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:

R645-301-121-200: The Permittee must update the narrative in the MRP, including in the PHC on page 82 to reflect the inclusion of monitoring locations map of sites above and below longwall panels. The narrative on this page indicates that specific locations will be determined as a final mining plan is developed for respective mining areas. However, the Permittee has provided proposed monitoring locations above and below mining panels on Figure 1, in Appendix 7-27. The narrative in the PHC must be updated to reflect that these locations have already been determined, and where the figure is located.

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. The application states on page 7-51J that a seep and spring survey will be started as mining moves into specific areas of the lease, with expected completion of the survey by 2021. The approximate dates of survey will correlate with the monitoring schedule of sites above and below long wall panels.

The Permittee does not define "specific areas of the lease." An up-to-date survey is required to be completed for baseline analysis prior to the commencement of mining. The PHC must include a short narrative describing the mining plan as it relates to mining buffer zones established and potential relationship to hydrologic impacts.

R645-301-121-200: M-SP87 is deemed to originate from the Castlegate Formation, including on page 76 of the PHC. The redline strikeout in the PHC on page 80, and in the subsequent PHC tables, M-SP87 is claimed to originate from the Price River Formation. Please clarify.

aumarva

Hydro GroundWater Monitoring Plan

Analysis:

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

The Greens Hollow Tract has springs occurring in the Castlegate, Price River, and North Horn Formations. According to the Final Supplemental Environmental Impact Statement completed in 2015, "the overall risk for permanent water loss at any spring located within the tract should be relatively low."

There is a discrepancy within the application regarding M-SP87. Throughout the MRP, M-SP87 is deemed to originate from the Castlegate Formation or the Price River Formation, including on page 76 and 80 of the PHC, Table 1 in the PHC, and the Monitoring Plan on 7-44. The redline strikeout in the PHC on page 80, and in the subsequent PHC tables, M-SP87 is claimed to originate from the Price River Formation. Please clarify. Other than M-SP87, no additional Castlegate springs exist in the Greens Hollow Tract. There is one well, MW 15-5-2 that is screened in the Castlegate, however, this well has been dry since it was drilled. The Division notes that the Permittee does not provide many sampling locations for monitoring the Castlegate Sandstone water-bearing stratum. However, the Castlegate Formation does not outcrop in the mining or adjacent areas and is not transmitted or stored within the Tract for a specific use. Therefore, the Castlegate Formation does not meet the R645-100-200 criteria for "aquifer." Therefore, additional monitoring locations within the Castlegate are not required by the Division as the Castlegate does not meet the definition of "aquifer" according to R645-100-200.

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:

R645-301-121.200: There is a discrepancy within the application regarding M-SP87. Throughout the MRP, M-SP87 is deemed to originate from the Castlegate Formation, including on page 76 of the PHC. The redline strikeout in the PHC on page 80, and in the subsequent PHC tables, M-SP87 is claimed to originate from the Price River Formation. Please clarify.

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 82 of Appendix 7-28. The Permittee includes a map and water monitoring baseline for these sites from Second Quarter 2017. The Division requires these additional surface monitoring locations for sufficiently quantifying surface water above and below panels in the major drainages within the Greens Hollow Tract. However, the permittee does not provide sufficient baseline monitoring for the locations identified on Figure 1, Appendix 7-27 Above and Below Monitoring Locations. The Permittee must provide the Division with water monitoring data from Third and Fourth Quarter 2017 at a minimum.

The surface monitoring sites identified in Figure 1, Appendix 7-27 must be incorporated into Plate 7-3 as they qualify as

Hydrologic Monitoring Stations used to characterize the Greens Hollow Area.

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:

R645-301-724.200: The Permittee must provide additional baseline information for all sites identified in Figure 1, Appendix 7-27, Monitoring Locations Above and Below Longwall Panels. The Permittee provides only Second Quarter 2017. The Division requests additional monitoring information from Third and Fourth Quarter 2017 to develop a sufficient baseline of high and low flows. The Permittee must also update Plate 7-3 to include these new hydrologic monitoring locations.

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.

ireinhart

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 7-3, Hydrologic Monitoring Locations, which presents historic stations used for baseline and operational monitoring stations.

However, the Permittee includes Figure 1 from Appendix 7-27 to show additional monitoring locations above and below mining panels. These locations must be incorporated into Plate 7-3 because these hydrologic monitoring stations are relevant for characterizing the Greens Hollow Tract hydrology.

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:

R645-301-722: The Permittee must update Plate 7-3 to show all hydrologic monitoring location information, specifically those sites presented on Figure 1, in Appendix 7-27 for surface water monitoring above and below the longwall panels.

aumarva

Maps Subsurface Water Resources

Analysis:

The application meets the State of Utah R645 requirements for Subsurface Water Resources Maps.

According to R645-301-722, Cross Sections and Maps, the Permittee must provide depictions of locations and extent of subsurface water, with aerial and vertical extent distribution of aquifers and and portrayal of seasonal difference of head in different aquifers on cross-sections and contour maps. However, the formations within the Greens Hollow Tract do not qualify a "aquifers" under R645-100-200 rules. The definition of aquifer means "a zone, stratum, or group of strata that can store and transmit water in sufficient quantities for a specific use." Details of formation characteristics that support these claims are provided in Appendix 7-27 in Section 3.1.1 Groundwater Aquifers and Springs, Appenix 7-28 of the MRP, and portions of Appendix 7-17 provides a summary of the groundwater systems.

Further, the Permittee states on page 29 of the PHC that continuously saturated groundwater systems generally do not exist in the geologic formations overlying or immediately below the coal seams to be mined in the Greens Hollow Lease area. The formations are largely heterogeneous in nature and groundwater is typically present in fracture systems or isolated strata i.e. sandstone paleochannels. Furthermore, waters in the Castlegate Sandstone and Starpoint Sandstone, immediately above and below the coal strata, respectively, do not discharge within the Greens Hollow Tract. As described previously, the R645 definition of "aquifer" is that which is "sufficient quantities for a specific use." As no specific use for the waters above and below the coal strata could be identified within and adjacent to the Greens Hollow Tract, the Division does not request additional subsurface water resource maps.

The Permittee provides a generalized conceptual cross-section as Figure 38 in the Cirrus Surface and Groundwater Technical Report for the Greens Hollow Tract.

Formation specifics:

North Horn Formation consists of groundwater flow within shallow sandstone paleochannels. Due to the presence of low-permeability shales throughout the formation, groundwater flow is restricted to the sinuous nature of the sandstone paleochannels and does not widely flow throughout the formation. Based on these characteristics, the North Horn formation does not meet the definition of "aquifer" per R645-100-200 rules.

Price River Formation consists of mudstone drapes separated by fluvial sandstones. Vertical flow of groundwater is restricted causing perched zones and springs to appear at higher topographic positions. Due to the discontinuous and perched nature of groundwater in this formation, mapping is not feasible.

Castlegate Sandstone overlying the coal seam is a massive sandstone unit with groundwater flow occurring primarily through fractures, joint systems, and along bedding planes. However, the interbedded mudstone drapes limit groundwater flow in the formation. The typical direction is controlled by local stratigraphic dip, typically toward the north-northwest direction. The Castlegate Sandstone unit is discontinuous due to the presence of shale layers and permeable sandstone strata are not continuous over significant, long, regional-type flow systems. All water flow is typically local in nature with small to moderate qualities discharged. The only surface exposure of the Castlegate is along the rims of the North Fork of Quitchupah, South Fork of Quitchupah, Box Canyon, and Muddy Creek Canyon. Due to the discontinuous nature of this formation, mapping is not feasible. Further, no water rights exist on the Castlegate within the tract and no surface expression is observed. Therefore, the Castlegate Formation does not meet the R645-100-200 definition for "aquifer" as this unit does not transmit water in sufficient quantities for a specific use.

There is no surface expression for the Star point Sandstone Formation within the Tract, therefore the water is not put to a specific use as required by R645-100-200 to qualify as an aquifer. Further, flow within the Star Point Sandstone occurs primarily through joints, fractures, and faults. The internal fifth-order bounding surface restricts horizontal and vertical flow. The Permittee provides information on the bounding impermeable layer below the Blackhawk that separates the Star Point formation, as well as, isotopic evidence to show surface water and groundwater are not in communication. Therefore, the Star Point Formation does not meet the R645-100-200 definition for "aquifer" as this unit does not transmit water for a specific use within the areas expected to be impacted by mining.

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.

Maps Surface Water Resource

Analysis:

The application meets the State of Utah R645 requirements for Surface Water Resource Maps.

The Permittee provides in Plate 7-2 and Plate 7-3 a location of all water resources and water monitoring locations, historic and operational, that are within and adjacent to the Greens Hollow Tract.

aumarva

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.

reinhart

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.

Ireinhart

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

R645-301-521, R645-301-525.420, R645-301-525.450, R645-301-632.100 - Permittee must provide a determination of the degree of subsidence within the Greens Hollow Lease. 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. Additionally, a stipulation in the EIS identifies a commitment to not subside the buffer zones that protect these areas. A map illustrating projected subsidence throughout the Greens Hollow Lease would adequately provide visual evidence that subsidence will not occur or threaten those areas marked for 'no subsidence' under Alternative 3 in the EIS and ROD.

Deficiencies Details:

R645-301-521, R645-301-525.420, R645-301-525.450, R645-301-632.100 - The Permittee must provide a map that illustrates projected subsidence throughout the Greens Hollow Lease in addition to discussing subsidence control measures that will be taken to prevent damage outside of areas designated as 'no subsidence.'

Subsidence Control Plan Performance STD

Analysis:

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

R645-301-525.300 - In January of this year, a deficiency was written by Cheryl Parker outlining a need for additional subsidence monitoring points within the Greens Hollow Lease. This request was addressed in April by follow up narrative in section 5.2.5.1 which stated that subsidence monitoring points will be located and the site surveyed for baseline information sometime in 2017. Although the Permittee previously committed to provide baseline data for the Greens Hollow Lease, subsidence monitoring data is still notably absent in this amendment.

Deficiencies Details:

R645-301-525.300 - Since a previous commitment to include subsidence monitoring points in 2017 has not been fulfilled, Permittee must alter the language within the amendment committing to provide baseline elevation data prior to longwall mining within the Greens Hollow Lease.

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 Quitcupah 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 Quitcupah 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 Quitcupah Creek is provided

Hydrologic Ground Water Monitoring

Analysis:

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

The Permittee's Groundwater Monitoring Plan incorporates new monitoring points that are within and adjacent to the Greens Hollow Tract. The application does not include many monitoring locations in the Castlegate, Blackhawk, and Starpoint Formations. The lack of locations is due to the geology of the region and no outcrops of these formations exist within the Tract boundary. The region is overlain by North Horn and Price River which impede recharge of the Castlegate Formation. The recharge in the Tract boundary is limited to the minimal exposure along ridge outcrops. Due to the lack of surface expression of these formations, the currently proposed operational monitoring plan for groundwater will be sufficient in determining hydrologic impacts within and adjacent to the tract boundary to water for a specific use. The Permittee will drill an in-mine well to address the lack of monitoring of the Starpoint Sandstone water-bearing stratum below the coal strata.

A few wells exist within the SUFCO mine area, 01-8-01 in the Blackhawk, MW-15-5-2 in the Castlegate. (Although MW-15-5-2 has been consistently dry during monitoring), and the new well to be drilled in the Starpoint.

In the event water is encountered in-mine at a rate of 1 cfs, continuously flowing for 60 days, the Permittee commits, on page 7-14, to collect a sample for lab analysis. The sample will be analyzed according to Table 7-2, subcategory D9 which includes C14, C13, and Tritium analysis. The sampling will continue quarterly for one year. The permittee must provide maps of all inflows if encountered and flow rates.

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:

R645-301-731.211, 724.100: The Permittee commits to adding an in-mine well for monitoring the Star point Formation, a water-bearing stratum below the coal seam. The Permittee must provide a timeframe for when drilling will commence. Further, once the well is drilled, the Permittee must include a commitment in the MRP to provide DOGM with the location of this well, groundwater quantity description, depth to water, logs, and any and all relevant well information.

R645-301-731.211: The Permittee must commit to providing maps for all mine in-flows > 1 cfs, if encountered, for 30 days, and a daily flow measurement from those 30 days. The map and flow data must be provided to the Division. The Permittee commits on page 7-14 to collect a sample for lab analysis of water encountered at a rate of 1 cfs for 60 days. The Division believes a commitment of 30 days would allow for better protection and evaluation of the hydrologic balance because at 60 days, mining may have advanced where mine water encountered is no longer accessible due to panel advancement and/or stopping placement.

aumarva

Hydro Surface Water Monitoring

Analysis:

The application does not meet the State of Utah R645 requirements for Surface Water Monitoring.

The Permittee provides only three surface monitoring locations within the Greens Hollow Tract to be monitored, U-Mud (Muddy Creek), STR-4 (Greens Hollow), and STR-6 (Cowboy Creek). The Permittee must address the absence of sufficient surface monitoring points on the major drainages. The Permittee proposes additional monitoring at locations presented in Figure 7-1 in Appendix 7-27 within the Tract to be turned on and off during the course of longwall mining. The Division requests all of these locations be added to the operational plan to be sampled using Protocol C, quarterly when reasonably accessible. Further, Plate 7-10 must only contain sites listed in the Water Monitoring Program.

Further, the Permittee commits to monitoring surface locations for field measurements and/or laboratory measurements limited to total dissolved solids, total suspended solids, total iron, and total manganese. However, the Division requests the operational laboratory measurements described as protocol 2 to be used for monitoring, in addition to field

measurements. This requirement is due to the probable hydrologic consequences relating to subsidence fracturing of bedrock horizons beneath a stream described on page 73 of Appendix 7-28.

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:

R645-301-731.220, -731.221, -731.222: The Permittee must incorporate all locations identified in Figure 1, Appendix 7-27, into the operational monitoring plan with sampling frequency described as Protocol C, instead of Protocol J, as defined in Table 7-3 of the Monitoring Plan on Page 7-44a-. Similarly, laboratory monitoring protocol for surface sites must be updated to Protocol 2.

R645-301-731.222, 512.100; 521.111: The Monitoring Plan must include a commitment to provide a quarterly mine progress map highlighting mined out areas with completion dates labeled and the current location of the longwall. These maps will be submitted quarterly to ogmcoal@utah.gov with deadlines correlating with quarterly water monitoring submittals. 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 Plate 7-10 to accurately and clearly reflect the surface sites identified in Figure 1, Appendix 7-27. The current map, Plate 7-10, does not contain all surface monitoring locations and contains sites that are not in the Water Monitoring Program. Sites not pictured include Cowboy Top, Cowboy Middle, Cowboy Bottom, SP60 Creek, CPC Upper, CPC Middle, CPC Lower, North Fork Upper, North Fork Middle, ULGH, URGH, Muddy Creek below Horse, Muddy Creek above Horse, Horse Creek, Pines 206, and Pines 406b. The Permittee also includes two sites of the same location with two different names: North Fork Lower (007) and SUFCO-007. Please Clarify and only choose one name. Further, the Plate 7-10 includes locations that are not on the monitoring plan and must be removed, these include: USP-1, A25-1, D Spring, Spring 99, 94-110,S, Fork Quitchupah Creek Upper, Skutumpah Creek Upper, Divide Spring, A Spring, B Spring, Skutumpah Spring, 94-113, Amanda Spring, Wedge Spring, SUFCO 021, and Pines 214,

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

Maps Mine Workings

Analysis:

The application does not meet the State of Utah R645 requirements for Maps Mine Workings.

The Permittee plans to monitor locations above and below longwall panels and turn locations on and off as mining progresses. However, the Permittee does not provide a commitment to provide a longwall progress map to coincide with this monitoring data.

Deficiencies Details:

The application does not meet the State of Utah R645 requirements for Mine Workings Maps. The following deficiency must be address prior to final approval:

R645-301-731.222, 512.100; 521.111: The Monitoring Plan must include, with relation to specific future monitoring locations above and below longwall panels, a commitment to provide a quarterly mine progress map highlighting mined out areas with completion dates labeled and the current longwall location. These maps will be submitted quarterly to ogmcoal@utah.gov with deadlines correlating with quarterly water monitoring submittals. These commitments must be incorporated into the narrative of the MRP.

aumarva

Maps Monitoring and Sampling Locations

Analysis:

The application does not meet the State of Utah R645 requirements for Maps Monitoring and Sampling Locations.

The permittee plans to drill a new in-mine well into the Starpoint Sandstone Formation for water monitoring purposes. The Permittee has not provided sufficient information regarding the location of this well. The Permittee must provide committee to update maps once well has been installed.

The permittee does not include all monitoring locations on plate 7-10. This Plate should include all sites listed in Chapter 7 Monitoring Plan. The current map does not include surface sites to be added above and below longwall panels. The Figure 1 in Appendix 7-27 should be incorporated into Plate 7-10. Further, Plate 7-10 should only contain sites listed in the Water Monitoring Program.

Deficiencies Details:

The application does not meet the State of Utah R645 requirements for Maps Monitoring and Sampling Locations. The following deficiencies must be addressed prior to final approval:

R645-301-731, -121.200: The Permittee must update the Surface Water Monitoring Plan and Plate 7-10 to accurately and clearly reflect the surface sites identified in Figure 1, Appendix 7-27. The current map, Plate 7-10, does not contain all surface monitoring locations and contains sites that are not in the Water Monitoring Program. Sites not pictured include Cowboy Top, Cowboy Middle, Cowboy Bottom, SP60 Creek, CPC Upper, CPC Middle, CPC Lower, North Fork Upper, North Fork Middle, ULGH, URGH, Muddy Creek below Horse, Muddy Creek above Horse, Horse Creek, Pines 206, and Pines 406b. The Permittee also includes two sites of the same location with two different names: North Fork Lower (007) and SUFCO-007. Please Clarify and only choose one name. Further, the Plate 7-10 includes locations that are not on the monitoring plan and must be removed, these include: USP-1, A25-1, D Spring, Spring 99, 94-110, S. Fork Quitchupah Creek Upper, Skutumpah Creek Upper, Divide Spring, A Spring, B Spring, Skutumpah Spring, 94-113, Amanda Spring, Wedge Spring, SUFCO 021, and Pines 214,

aumarva

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.

Irinhart

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.

Irinhart

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.

Irinhart

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.

Irinhart

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

CHIA

CHIA

Analysis:

The application does not meet the State of Utah R645 requirements for Cumulative Hydrologic Impact Assessment (CHIA).

Deficiencies Details:

R645-301-729: The Permittee must address the outstanding hydrologic deficiencies in order to complete the CHIA.

aumarva