



GARY R. HERBERT
Governor

SPENCER J. COX
Lieutenant Governor

State of Utah

DEPARTMENT OF NATURAL RESOURCES

MICHAEL R. STYLER
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Division of Oil, Gas and Mining

JOHN R. BAZA
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January 24, 2019

Bart Hyita, President
Bronco Utah Operations, LLC
P.O. Box 527
Emery, Utah 84522

Subject: Approval of Second Left Panel Full Extraction, Task #5847, Bronco Utah Operations, LLC, Emery Deep Mine, C/015/0015

Dear Mr. Hyita:

The above-referenced amendment is approved effective January 24, 2019. The Division has completed a Technical Analysis of the change and found that it meets the requirements of the Utah Coal Rules. A stamped incorporated copy of the amendment is enclosed for your copy of the Mining and Reclamation Plan.

If you have any questions, please feel free to call me at (801) 538-5350.

Sincerely,

Steve Christensen
Permit Supervisor

SKC/sqs
Enclosure
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Technical Analysis and Findings

Utah Coal Regulatory Program

PID: C0150015
TaskID: 5847
Mine Name: EMERY DEEP MINE
Title: SECOND LEFT PANEL FULL EXTRACTION REVISION

Summary

On January 9th, 2019, the Division of Oil, Gas and Mining (the Division) received an application from Bronco Coal, LLC (the Permittee) to revise the Emery Deep Mine's Mining and Reclamation Plan (MRP).

The amendment proposes the addition of full extraction mining in what's been identified as the 2nd left panel. The 2nd left panel is located due west of the Emery Mine No. 2 box cut facility. The relevance of this is that the 2nd left panel and the area adjacent to it were evaluated during the review and subsequent permitting of the Emery No. 2 Mine (Task ID #5362- final approval granted 02/10/2017).

As part of the permitting of the Emery No. 2 Mine, a baseline study area was established by the Permittee. The baseline study area was utilized in obtaining information (e.g. cultural resources, biological resources, hydrology etc.) required by the State of Utah R645 Coal Mining rules. The baseline study area was considerably larger than the ultimate configuration of the Emery No. 2 box cut facility. The Permittee chose a larger baseline study area because at the time baseline data collection efforts began, it was not yet known what the final configuration of the Emery No. 2 box cut would be.

It should also be noted that the location of the 2nd left panel is located in an area that is currently approved for first mining only. As the Permittee is proposing second mining (i.e. planned subsidence), the area needed to be re-evaluated relative to the subsidence and the potential implications of that on the various portions of the State of Utah R645 rules.

No surface disturbance is proposed with the second mining of the 2nd left panel. The proposed coal mining and reclamation activity will be exclusively underground. As a result, a technical review for soils information is not required. Additionally, the current MRP has right of entry documentation that allows for coal mining and reclamation activity in the area of the proposed 2nd left panel.

schriste

Environmental Resource Information

Fish and Wildlife Resource Information

Analysis:

The amendment meets the State of Utah R645-301-322 requirements for fish and wildlife information.

This amendment does not propose any new surface disturbance. This area was previously examined as part of the Emery Phase II Additional Permit Boundary amendment (Task ID #5299) and was cleared by the DOGM biologist in

2016 for coal mining and reclamation activities. Additionally, in Chapter VIII, Appendix VIII-8 of the MRP, there is a report from Mt. Nebo Scientific which performed a survey of the area in 2010 and 2016 and concluded that “[n]o TES [threatened, endangered, or sensitive] species were found within the new permit area boundary.” Table 28 of Mt. Nebo’s report examines the potential threat to protected species including the southwestern willow flycatcher, black-footed ferret, humpback chub, bonytail, Colorado pike minnow, razorback sucker, yellow-billed cuckoo, Canada lynx, and Mexican spotted owl and concludes none of the named federally protected species is likely to be impacted by coal mining and reclamation activities in this survey area. Maps for elk, mule deer, and black bear can also be found in this same appendix.

tmiller

Hydro Baseline Information

Analysis:

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

The proposed full extraction of the 2nd left panel is located in an area due west of the Emery Mine No. 2 box cut facility in an area currently approved for first mining. The relevance of this is that the proposed full extraction 2nd left panel and the area adjacent to it was thoroughly evaluated during the review and subsequent permitting of the Emery No. 2 Mine (Task ID #5362- final approval granted 02/10/2017). At the time of that review (i.e. Task #5362), hydrologic resources were reviewed relative to coal mining and reclamation activity in the area of the proposed Emery No. 2 box cut and adjacent area (including the area of the 2nd left panel).

The 2nd left panel is located within the currently approved area of hydrologic evaluation as shown on Plate VI-4, Ground Water Monitoring Well and Surface Water Monitoring Site Location Map. The proposed underground mine workings are contained within this area. As a result, the historic and current hydrologic monitoring data are applicable in characterizing the ground and surface water systems both within and adjacent to the 2nd left panel.

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

A small unnamed channel is the closest surface water resource to the proposed 2nd left panel. The 2nd left panel is approximately ¼ mile west of the Emery No. 2 box cut and the unnamed channel. The unnamed channel drains a watershed of approximately 1/3 of a square mile and is tributary to Quitchupah Creek. The unnamed channel enters Quitchupah Creek approximately 1,500 downstream of the confluence with Christiansen Wash. The Emery No. 2 amendment (Task # 5362) provided a characterization of the unnamed channel in Appendix VI-22, Baseline Investigation of Unnamed Ephemeral Wash Affected by Emery 2 Surface Facilities (drainage report). The drainage report was prepared by JBR Environmental Consultants Inc.

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

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

In 1979 and 1980, a comprehensive spring and seep survey was conducted. No seeps and springs were identified during that survey near the proposed 2nd left panel. Groundwater data collected from monitoring well AA as well as the numerous other monitoring wells historically and actively monitored provides information as to the groundwater characteristics in the area of proposed 2nd left panel and adjacent area. Groundwater in the Emery Deep Mine area is confined within three zones, known as the upper, middle and lower Ferron Sandstone. Historically, the potentiometric surface of these sandstone units has been above the ground surface over much of the area. However; the overlying

Mancos Shale prevent the groundwater from discharging to the surface in the majority of the permit and adjacent area, including the proposed mine expansion. As indicated above, the lack of any identifiable springs and seeps in the area of the 2nd left panel would indicate that the unnamed channel does not receive recharge from groundwater sources, but rather only produces flow during precipitation events and snow melt during the spring.

Additionally, the Natural Resources Conservation Service soil survey of 2009 indicates that the water table in and adjacent to the unnamed channel is more than 200 centimeters below ground surface and that there are no hydric soils present along the channel indicative of a groundwater source. The Permittee hired Long Resource Consultants in the fall of 2009 to conduct an Order II soil survey of the proposed mine expansion area including the area of the 2nd left panel. This detailed soil survey confirmed the absence of any hydric soils along the unnamed channel.

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

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

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

Ground water monitoring well AA provides abundant baseline information. Monitoring well AA has four completions with screened intervals within the Blue Gate Shale (AA-B), the Lower Ferron Sandstone (AA-L), the Middle Ferron Sandstone (AA-M) and the Upper Ferron Sandstone (AA-U). Historical data from all four of these well completions dates back to 1980. The wells were monitored quarterly from 1993 until 2012. Monitoring of these wells was curtailed in 2012 due to lack of any mining activity. However, the numerous years of quarterly data provide ample baseline information to characterize the ground water systems in the aforementioned geologic units. The Permittee resumed quarterly monitoring of these wells with the approval of the Emery No. 2 Mine (Task #5362).

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

schriste

Probable Hydrologic Consequences Determination

Analysis:

The amendment meets the State of Utah R645 requirements for Probable Hydrologic Consequences Determination (PHC).

The Permittee revised the Probable Hydrologic Consequences Determination section of the approved MRP (See Section VI.2.8.3) with the submission of the Emery No. 2 mine (Task #5362). As part of the permitting process for the development of the Emery No. 2 mine, the Permittee evaluated hydrologic resources within a study area that was much larger than the final as-built condition of the facility. The proposed 2nd left panel is located within the area that has previously been evaluated for hydrologic resources (See Plate VI-4, Ground Water Monitoring Well and Surface Water Monitoring Site Location Map).

Coal in the Emery Deep Mine and proposed 2nd left panel is located in the Ferron Sandstone Member (upper, middle and lower units) of the Mancos Shale. As the mine encounters ground water, the flow patterns within the Ferron Sandstone are altered. Ongoing water monitoring has shown significant declines in several monitoring wells completed primarily within the Upper Ferron Sandstone. In order to evaluate the extent of drawdown as a result of mining activity in the Ferron Sandstone, the Permittee has performed several analyses including a mass balance approach model,

MODFLO modeling analyses as was the Hantush equation which assumes the Ferron Sandstone aquifer to be homogenous, isotropic and pumped at a constant rate.

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

Impacts to surface water quantity and quality as a result of mining activity in the immediate area of the 2nd left panel are considered to be minimal. The proposed second mining of the 2nd left panel does not contemplate any additional surface disturbance. As discussed previously, the nature of the unnamed wash (closest surface water resource relative to the 2nd left panel) is ephemeral and as such only flows sporadically in response to local, high-intensity precipitation events.

The surface drainage system for the Emery No. 2 Mine has been designed to prevent impacts to hydrologic resources by utilizing a storm water conveyance system that includes berms, catch basins, culverts, ditches, swales and sedimentation ponds. The diversion ditches will route runoff from the disturbed area to existing sedimentation pond 3. Pond 3 is permitted as an outfall under the State of Utah Division of Water Quality's Utah Pollutant Discharge Elimination System Permit (#UT0022616). Additionally, the drainage features of the conveyance system meet the design standards of the State of Utah R645 coal mining rules. The drainage system has been designed to prevent additional suspended solids from entering the downgradient undisturbed drainage.

The approval of the Emery No. 2 Mine established the water source the Permittee would utilize to facilitate on-going mining activity. The Permittee provided the Division with an Order of the State Engineer that approves a temporary change application for water right number 94-1178. The temporary change application revises the point of diversion and place of use for this water right. The water right identifies 0.5 cubic feet per second (cfs) or 166.6 acre-feet (af). The water had been utilized for irrigation. The temporary change application revises the use to "year-round mining purposes". The place of use has been changed to all or portions of Sections 30, 31, 32 and 33, T22S, R6E (including the 2nd left panel).

The approved MRP discusses water right 94-285. Upon review of the State of Utah Division of Water Rights (DWri) database, 94-285 was found to be in good standing. The DWri information identifies three points of diversion associated with this water right located directly adjacent to the existing surface facilities. Additionally, the water right identifies an approved volume of 5.0 cubic feet per second (cfs).

The proposed full extraction mining in the 2nd left panel poses minimal impact potential to alluvial valley floors. Chapter XI and Plate XI-1, Alluvial Valley Floor (AVF) Along Upper Quitcupah Creek discusses and identifies the AVF's within the area of hydrologic evaluation. No AVF's are located near the proposed 2nd left panel. The closest AVF area that has not been historically mined is well over one mile away

schriste

Operation Plan

Protection Public Places

Analysis:

The amendment meets the State of Utah R645-301-411 requirements for protection of historic places.

A cultural resource report titled "Cultural Resource Inventory of Consolidated Energy's Emery 2 Mine Near Quitcupah Creek (T22S, R6E, Sec. 32 and 33) Emery County, Utah" was made by Montgomery Archaeological Consultants, Inc. in 2009. This report can be found in Appendix 5-12 of the MRP. The report summarizes a survey which singled out 4 NRHP-eligible sites (42EM1311, 42EM1314, 42EM1315, and 42EM4179) that are located in the area of this current proposal. The report recommends avoiding the four sites by a minimum of 100 ft. in order to avoid disturbance to the sites. With these avoidance measures, a recommendation of No Historic Properties Affected was made, which DOGM and SHPO concurred with as indicated by a letter from SHPO to DOGM dated September 9, 2010.

The current 2nd Left Panel Full Extraction amendment involves a portion of land located within the boundaries of this previously studied area. The avoidance measures apply to this current proposal and include potential impacts related to subsidence. Confidential Plate X.A-1 shows the limits of potential subsidence in relation to the locations of these 4 NRHP-eligible sites. They are located well beyond 100 ft. from the limit of potential subsidence. However, there is concern due to the proximity of the panel's potential subsidence limit to the edge of the survey boundary. As such, in addition to avoiding the 4 known sites, full extraction mining is prohibited where it may result in subsidence less than 100 ft. from the edge of the study boundary indicated on Plate X.A-1 until such time that a complete cultural resources inventory can be made of the area adjacent to the study area.

tmiller

Relocation or Use of Public Roads

Analysis:

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

R645-301-521.123: Various Plates that depict the surface topography and structures overlying the proposed mining areas depict a series of Jeep trails that occur above the 2nd Left Panel. The Permittee provides a narrative in Chapter III page 15e, and Chapter IV page 8d that clarify these roads as historic pre-mine roads that now occur on lands no longer accessible to the Public, and will not be replaced upon cessation of mining operations.

jeatchel

Air Pollution Control Plan

Analysis:

The amendment meets the Air Pollution Control Plan requirements of the State of Utah R645 rules.

R645-301-420, -422 requires that coal mining and reclamation operations will be conducted in compliance with the requirements of the Clean Air Act and any other applicable Utah or federal statutes and regulations containing air quality standards. Chapter X of the approved Mining and Reclamation Plan (MRP) contains the air quality information for the Emery Deep Mine.

During the approval of the Emery No. 2 Mine (Task #5362), the Permittee revised Chapter X, Part C: Air Quality to reflect the mine expansion. Chapter X Part C, Appendix X.C-2 (Air Permit Approval Order) was revised with the approved Modification to Approval Order DAQE-AN0229006 for the proposed mine expansion at Emery No. 2. The Approval Order was issued by the Division of Air Quality (DAQ) on December 19th, 2016.

As the proposed 2nd left panel does not contemplate any additional surface disturbance or activity that would potentially impact air quality, the currently approved DAQ Approval Order does not require modification at this time.

schriste

Subsidence Control Plan Renewable Resource

Analysis:

The application meets the State of Utah R645 requirements for Subsidence Control Plans, Renewable Resource.

This application satisfies the minimum requirements of R645-301-525.400 because narrative and a series of Plates propose that mining and associated subsidence will be limited to the 2nd Left Panel just off the West Mains. This panel is a relatively small section that lies just south of Quitcupah Creek, and is included within an area that was previously reviewed by the Division in January 2017 (Task #5362). Included in that task is a comprehensive report compiled by EarthFax Engineering Group, LLC that details several aspects of the Emery 2 expansion areas. Also included in this report are a series of Pre-Subsidence Surveys that documents the status of the Permit area prior to mining: Plate V-1 documents Structures and Utilities, Plate V-2 documents Roadways, Plate V-3 documents Hydrology, and Plate V-4 documents Surface Vegetation. An examination of these Plates certifies that should subsidence occur as a result of full extraction mining in the 2nd Left Panel very little mitigation should be needed since there are no structures, utilities, waterways, nor vegetation, and the only roadway present is a private Jeep trail to which the Permittee has blocked access.

Additionally, an updated Plate V-5 shows the underground workings for the proposed 2nd Left Panel in relation to

surface topography and Permit boundaries. Subsidence monitoring points and additional proposed subsidence monitoring points yet to be installed are superimposed over the mine workings to document the degree of subsidence that may occur once full extraction mining begins.

jeatchel

Hydrologic General

Analysis:

The amendment meets the State of Utah R645 General Hydrologic Information requirements.

As the proposed 2nd left panel does not contemplate any additional surface disturbance, the State of Utah R645 rules relative to storm water design, conveyance, sediment controls etc. are not applicable.

schriste

Hydrologic Ground Water Monitoring

Analysis:

The amendment meets the State of Utah R645 requirements for Groundwater Monitoring.

During the permitting of the Emery No. 2 Mine (Task #5362), the Permittee was directed to revise Table VI-17 to show that monitoring will be conducted in all four completions of monitoring well AA. Table VI-17 had shown that monitoring well "AA" would be monitored quarterly for water level. The Permittee revised the ground water monitoring plan and began monitoring the four completions within monitoring well AA (e.g. AA-B, AA-U, AA-M and AA-L). The completions within the Bluegate Shale (AA-B), Upper Ferron Sandstone (AA-U), Middle Ferron Sandstone (AA-M) and Lower Ferron Sandstone (AA-L) have been monitored quarterly since that time. Monitoring well AA (and its four completions) meets the requirements for ground water monitoring in the proposed 2nd left panel area.

schriste

Hydro Surface Water Monitoring

Analysis:

The amendment meets the State of Utah R645 requirements for Surface Water Monitoring.

During the permitting of the Emery No. 2 Mine (Task #5362), the Permittee was directed to to revise Table VI-17 to show that monitoring would be conducted on two additional surface water monitoring points on the unnamed channel within the proposed expansion area. The Permittee made the required revisions.

As there are no additional surface water resources identified in the area of the 2nd left panel, the currently approved surface water monitoring plan meets the State of Utah R645 requirements.

schriste

Hydrologic Water Quality Standards

Analysis:

The amendment meets the State of Utah R645 requirements for Water-Quality Standards and Effluent Limitations.

As the proposed full extraction mining of the 2nd left panel does not contemplate any additional surface disturbance, the existing UPDES permit (#UT0022616) does not require revising. No additional outfalls or revisions to the currently approved outfalls are proposed at this time.

schriste

Maps Monitoring and Sampling Locations

Analysis:

The amendment meets the State of Utah R645 requirements for Monitoring and Sampling Locations Maps.

R645-301-525.420, -525.440: The Permittee has included updated information on Plate V-5 that shows the locations of various subsidence monitoring locations. Additional subsidence monitoring points are planned and will be installed in strategic locations above the 2nd Left Panel to assist in future pillar sizing calculations.

jeatchel

Reclamation Plan

Hydrological Information Reclamation Plan

Analysis:

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

As the proposed mining activity in the 2nd left panel does not call for any additional surface disturbance, a revision to the Hydrologic Reclamation Plan is required.

schriste