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State of Utah  
DEPARTMENT OF NATURAL RESOURCES  
DIVISION OF OIL, GAS AND MINING

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November 23, 1998

TO: File

THRU: Daron Haddock, Permit Supervisor *DGH*

FROM: Sharon Falvey, Reclamation Specialist *SFF*

RE: Incidental Boundary Change (IBC) Federal Coal Lease U-06039, Energy West Mining Co., Deer Creek Mine, ACT/015/018 98-A, Folder #2, Emery County, Utah

**SUMMARY**

The proposed lease area IBC changed the approved mining plan in the following manner:

- The permit area is increased with an additional 50 acre parcel in Section 20 SE1/4 NW1/4 and, E1/2E1/2SW1/4NW1/4.
- Projected mining under the Right Fork of Rilda Canyon was relocated further east. This increased the overburden at the channel, above the Blind Canyon panels, from 97.8 - 132 feet (drill hole EM-158 and EM-159) to approximately 148 - 200 feet (drill holes EM-160 and EM-162 drawing DU1687E 9/30/98).
- The projected Mill Fork Fault Graben west fault zone is believed to diminish south of Beaver Creek No. 4 Mine, however, exhibit 23 Amendment to Application for Second Modification of Federal Coal Lease U-06039 "The location and geologic characteristics of the Mill Fork Canyon Fault together with the western margin of the Blind Canyon and Hiawatha coal seams are not totally known...".
- The plan now projects mining across the western projected Mill Fork Fault where the mine ramps down to the lower seam.
- Rilda Canyon was proposed to be monitored above RCF#1 at a point upstream of the Blind Canyon Seam stream crossing. This monitoring point is proposed to be removed.
- The existing plan committed to conducting baseline sampling for a two year period 1997-98 for MCF-1 and MCF-2. The proposed change states baseline was conducted in 1997. This is potentially a violation of the existing permit and is being

reviewed by the inspector.

The focus of this review is on the PHC and CHIA and determining whether the existing PHC and CHIA are adequate for the changes contemplated in the amendment. The following areas of concern identified in previous reviews should be considered in the IBC analyses:

- Potential for escarpment failure. Potential extent of subsidence.
- Location of raptors on escarpments.
- Acceptance by the B.M. lease modification to include Section 20 SE 1/4 NW 1/4.

## **TECHNICAL ANALYSIS**

### **ENVIRONMENTAL RESOURCE INFORMATION**

Regulatory Reference: Pub. L 95-87 Sections 507(b), 508(a), and 516(b); 30 CFR Sec. 783., et. al.

### **HYDROLOGIC RESOURCE INFORMATION**

Regulatory Reference: 30 CFR Sec. 701.5, 784.14; R645-100-200, -301-724.

#### **Analysis:**

##### **Baseline information.**

Baseline information on the Mill Fork Graben is located in Volume 11, Deer Creek Mine North Rilda Area.

Information from previous mining at the Beaver Creek No 4 mine along the southern most fault indicate the Mill Fork Graben displacement was 20 feet down dropped on the north west side. Where the fault crosses East Mountain it is displaced 30 feet down on the north west side. Other faults in the graben have relative displacement up on the north west side.

##### **Ground-water information.**

The southern Mill Fork Graben Fault was crossed by mining in Beaver Creek No. 4 Mine to the north of the proposed IBC area at an elevation between 7,800 and 7,850 feet. A few isolated roof drippers were the only water associated with mining in this area of the Mill Fork Fault system. The graben is intersected by the Mill Fork Drainage at approximately 7,750 to 7,800 feet and by the Little Bear Canyon at approximately 7,550 feet. The drainages

limit the recharge area to the graben and may discharge ground water that moves along the graben. The coal formation is located above the elevation where the drainage intersects the graben.

The Right Fork in Rilda Canyon intersects the graben at approximately 8,200 to 8,400 feet. The coal outcrop at the Hiawatha seam is approximately 7,800 feet. The potential recharge zone is larger than that observed in the Beaver Creek Number 4 Mine. The coal is located below the elevation where the drainage intersects the graben, increasing the potential to capture and store water that would discharge to the surface. However, the relative location, (up-gradient) reduces the potential for water collecting in this region and results in lowered potential impacts.

Drill holes EM-158 through EM-164 and EM-56 were drilled to delineate the graben. According to the amendment significant changes in elevation across bedding formations were not evident from these drill holes.

#### **Surface-water information.**

Existing baseline surface water resource information described for the proposed IBC area should not need to be changed with this amendment.

The existing plan commits to conducting baseline sampling for a two year period 1997-1998. The amendment proposes baseline was conducted in 1997. This is potentially a violation of the exiting permit and is being reviewed by the inspector.

#### **Baseline cumulative impact area information.**

Hydrologic and geologic information acquired to understand the probable cumulative hydrologic impacts for the proposed operation and all anticipated mining on surface- and ground-water systems is incorporated into the plan with the revisions to Deer Creek Mine North Rilda Area, Volume 11 September, 30 1998.

**Probable hydrologic consequences (PHC) determination.**

The information provided in the revisions to Deer Creek Mine North Rilda Area, Volume 11 dated September 30, 1998 suggest the potential for impact associated with mining in the IBC area is low and the Mill Fork Graben is believed to diminish south of Beaver Creek No. 4 Mine, however, in exhibit 23 *Amendment to Application for Second Modification of Federal Coal Lease U-06039* it is stated "The location and geologic characteristics of the Mill Fork Canyon Fault together with the western margin of the Blind Canyon and Hiawatha coal seams are not totally known...".

The PHC and earlier proposed mining sequence and layout did not consider the mine workings crossing through the projected Mill Fork Graben. However, the discussions in the plan commits the permittee to install permanent seals to control ground water that may be present should mining intersect faulting related to the Mill Fork Graben.

Projected mining under the Right Fork of Rilda Canyon was relocated further east. This increased the overburden between the stream bed and the Blind Canyon Seam from 97.8 - 132 feet (drill hole EM-158) to approximately 148 - 200 feet (drill holes EM-160 and EM-162 drawing DU1687E, 9/30/98). The amendment indicates the overburden is increased from 120 to 200 feet.

A 15 degree angle of draw from the Hiawatha Coal Seam was previously used and approved to delineate the stream buffer zone. Although the amendment indicates the overburden is increased from 120 to 200 feet, the minimum overburden between the Blind Canyon Seam and the stream channel between 148 to 200 feet (drill holes EM-160 and EM-162 drawing DU1687E, 9/30/98).

According to the amendment on page 103 and other pages "The stream buffer zone delineates the area restricted to full extraction mining." However, in R645-301-500 Appendix 1, page 3 the plan indicates the area is restricted from full extraction mining. These statements were carried over from the previous plan and was not changed as part of this amendment. The Division interprets the intent to mean the area delineated is the area in where no-subsidence will take place.

Entries underlying the Rilda Canyon Right Fork Area. Five-entry mains consists of 20 feet wide entries and cross cuts driven on 80 feet x 130 feet pillar centers. In the stream crossing area the crosscut locations were staggered and pillars were 60 feet wide by 110 feet long to improve long term stability. These features in the mine plan layout were previously approved and implemented.

**Supplemental information.**

Should water be intercepted along fault and fractures sampling should be conducted immediately to characterize that water which has the potential to be more "mobile" within the fracture voids. This sample should include chemical composition and characterization for stiff diagrams as well as tritium and carbon dating. The amendment indicates additional sampling could include isotopic parameters.

**Findings:**

The permittee must provide the following prior to approval in accordance with the requirements of:

**R645-301-121.200.** According to the amendment page 103 and other pages "The stream buffer zone delineates the area restricted to full extraction mining." However, in R645-301-500 Appendix 1, page 3 the plan indicates the area is restricted from full extraction mining. The Division interprets the intent to mean the area delineated is the area in where no-subsidence will take place but, the plan should be clear.

**R645-301-724.** The existing plan committed to conducting baseline sampling for a two year period 1997-98 in the Mill Fork Drainage. The proposed change states baseline was conducted in 1997. This is potentially a violation of the exiting permit and is being reviewed by the inspector. No justification or reasoning for reducing the 2-year baseline term was identified. The permittee should re-incorporate the commitment for collecting baseline information.

## **OPERATION PLAN**

### **HYDROLOGIC RESOURCE INFORMATION**

Regulatory Reference: 30 CFR Sec. 701.5, 784.14; R645-100-200, -301-724.

#### **Ground-water information.**

According to this amendment, the development below the Right Fork of Rilda Canyon, in the 5<sup>th</sup> North Mains, did not intercept any groundwater and has remained "dry" since initial development.

**Surface-water information.**

The existing plan committed to conducting baseline sampling for a two year period 1997-98. The proposed change states baseline was conducted in 1997. This is potentially a violation of the exiting permit and is being reviewed by the inspector. Mill Fork was proposed to be monitored above RCF#1 at a point upstream of the stream crossing. This monitoring point is proposed to be removed. However, the operator has not indicated that the requirements of R645-731.224 were met.

**Findings:**

The permittee must provide the following prior to approval in accordance with the requirements of:

**R645-731.** The site upstream of RCF#1 to monitor surface/groundwater relationships should be retained as approved in the existing plan. The overburden between the stream bed and the Blind Canyon panels is approximately 148 - 200 feet (drill holes EM-160 and EM-162 drawing DU1687E, 9/30/98) justifies retaining this monitoring location.

**MAPS, PLANS, AND CROSS SECTIONS OF MINING OPERATIONS**

Regulatory Reference: 30 CFR Sec. 784.23; R645-301-512, -301-521, -301-542, -301-632, -301-731, -302-323.

**Analysis:**

CM-10899-DR 3-6 and CM-10900-DR 3-7 are updated to December 31, 1996. Although the Deer Creek Mine lease modification provides the updated information, Maps CM-10899-DR 3-6 and CM-10900-DR 3-7 are proposed to be included following the decision regarding the IBC.

**Findings:**

The permittee must provide the following prior to approval in accordance with the requirements of:

**R645-301-521.140,** the permittee must provide the maps which reflect the proposed changes for the IBC including but not limited to subsidence maps,

underground mining maps (CM-10899-DR and CM 10900-DR), and all other maps showing the permit area boundary.

## **RECLAMATION PLAN**

### **GENERAL REQUIREMENTS**

Regulatory Reference: PL 95-87 Sec. 515 and 516; 30 CFR Sec. 784.13, 784.14, 784.15, 784.16, 784.17, 784.18, 784.19, 784.20, 784.21, 784.22, 784.23, 784.24, 784.25, 784.26; R645-301-231, -301-233, -301-322, -301-323, -301-331, -301-333, -301-341, -301-342, -301-411, -301-412, -301-422, -301-512, -301-513, -301-521, -301-522, -301-525, -301-526, -301-527, -301-528, -301-529, -301-531, -301-533, -301-534, -301-536, -301-537, -301-542, -301-623, -301-624, -301-625, -301-626, -301-631, -301-632, -301-731, -301-723, -301-724, -301-725, -301-726, -301-728, -301-729, -301-731, -301-732, -301-733, -301-746, -301-764, -301-830.

#### **Analysis:**

No changes to the reclamation plan are necessary with this IBC.

#### **Findings:**

The application meets the minimum requirements for this section.

## **CUMULATIVE HYDROLOGIC IMPACT ASSESSMENT**

Regulatory Reference: 30 CFR Sec. 784.14; R645-301-730.

The Division prepared a CHIA for the entire East Mountain area in 1994. The North Rilda Area was included in the CHIA determination. (The leases in the North Rilda Area had been issued to PacifiCorp even though they were not part of the Deer Creek Mine permit at this time). The mine plan characterizes the Mill Fork Graben as having little potential for water interception. The CHIA and the planned 5 year mining sequence did not consider the mine workings crossing through the Mill Fork Graben as is illustrated in the IBC amendment however, it did contemplate delineating the graben. The discussions in the approved plan provide for protection and assessment to minimize impact in locating the graben. Because the overburden of the stream crossing was increased beyond that previously approved in the plan, the mining activities conducted by PacifiCorp were conducted to minimize material damage to the hydrologic balance in the permit area and to prevent material damage to the hydrologic balance outside the permit area.

**Findings:**

The information obtained does not change the findings in the CHIA.

**Recommendations:**

The deficiencies identified should be addressed prior to approval. If approval is granted, the deficiencies identified should be conditions of the permit.

The existing plan committed to conducting baseline sampling for a two year period 1997-98. The proposed change states baseline was conducted in 1997. This is potentially a violation of the exiting permit and is being reviewed by the inspector. No justification or reasoning for reducing the 2-year baseline term was identified. The permittee should re-incorporate the commitment for collecting baseline information.

Stipulation 1 in Attachment A in the permit: **Special conditions for ground water monitoring in the North Rilda Area**, does not allow a description for water that may travel along the graben/fault/fracture systems. The condition should be changed to the following:

1. If during development significant quantities of ground water are encountered which issue from the fault zone, the water volume issuing from this zone should be quantified and initial inflow should be sampled for water quality according to the approved baseline parameters and must also include tritium and carbon dating. Inflows, flowing at 5 gpm or greater, that are sustained for 30 days from any identifiable source area will be monitored for quantity and quality according to the approved ground water monitoring plan.