

# TECHNICAL MEMORANDUM

Utah Coal Regulatory Program

September 23, 2005

TO: Internal File

THRU: Stephen J. Demczak, Environmental Scientist III/Engineering, Team Lead

FROM: David W. Darby, Environmental Scientist III/Hydrologist

RE: Full Extraction Pillar 1<sup>st</sup> South, Consolidation Coal Company, Emery Deep Mine, C/015/015, Task ID #2321

## **SUMMARY:**

The Division received an application from Consolidation Coal Company's (Consol), dated August 26, 2005 for full extraction of the First South Panel. The panel is located within the current mining and reclamation plan area and the cumulative impact area (CIA). This review evaluates the hydrology sections of incidental boundary change (IBC) application.

## **TECHNICAL ANALYSIS:**

## **ENVIRONMENTAL RESOURCE INFORMATION**

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

### **GENERAL**

Regulatory Reference: 30 CFR 783.12; R645-301-411, -301-521, -301-721.

#### **Analysis:**

The Permittee states that coal will be extracted from the I-J coal zones in the Ferron Sandstone using room and pillar mining methods. The overlying strata are relatively shallow ranging from 80 to 400 feet. The Permittee proposes to conduct full seam extraction in the First South panel. Subsidence is planned except under the stream. The Permittee has stated that no secondary mining will take place within 100 feet of Christensen Wash.

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### **Findings:**

Information submitted by the Permittee meets the minimum requirements of the General regulation of the Environmental Resource Information section.

### **PERMIT AREA**

Regulatory Requirements: 30 CFR 783.12; R645-301-521.

### **Analysis:**

The Permittee submitted Plate V-5, which shows the permit area and mine plan.

### **Findings:**

Information submitted by the Permittee meets the minimum requirements of the Permit Area section of the regulations.

### **CLIMATOLOGICAL RESOURCE INFORMATION**

Regulatory Reference: 30 CFR 783.18; R645-301-724.

### **Analysis:**

Climatological information for the Emery Mine and 4<sup>th</sup> East Portal areas is already provided in the MRP.

### **Findings:**

The applicant has previously addressed this information.

### **GEOLOGIC RESOURCE INFORMATION**

Regulatory Reference: 30 CFR 784.22; R645-301-623, -301-724.

**Analysis:**

Geologic resource information is provided in the MRP. Nothing changes with this application. Only the I-J coal seams will be mined for this application.

**Findings:**

The Permittee has submitted sufficient information to address the Coal Resource Information section of the Regulations.

**HYDROLOGIC RESOURCE INFORMATION**

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

**Analysis:**

**Sampling and Analysis**

Consol has conducted sampling over the Emery Deep Mine site at planned sampling stations for the past 20 years. The applicant does not propose additional monitoring sites for this change.

**Baseline Information**

Plate V-5 identifies the Christiansen Wash and the 100 ft. corridor where secondary mining will not take place. Surface drainage for the proposed site flows south to Christiansen Wash. With the introduction of full extraction to this panel, there is a good chance that subsidence will take place. Subsidence may cause some local ponding and even fracturing on the surface.

**Baseline Cumulative Impact Area Information**

Baseline information was collected over 25 years for springs and ground water levels in the mine. The information was used to establish a model of the groundwater impacts. Updated information was submitted with the 4<sup>th</sup> East mine portal proposal. The PHC was updated to include changes of groundwater flow and effects and changes during periods when the mine was not operating.

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**Modeling**

The Permittee has supplied an early model showing the draw down of the groundwater as coal is mined and the mine water is pumped from the mine to Quitchupah Creek.

**Probable Hydrologic Consequences Determination**

A probable hydrologic consequences determination was submitted with the application for the 4<sup>th</sup> East Portal submittal. The PHC included a long-term summary of the groundwater changes as mining expanded over the past 20 years. Subsidence has been planned for these areas.

**Groundwater Monitoring Plan**

The Permittee is currently conducting a groundwater monitoring plan, which includes measuring and sampling springs, wells and mine water discharges (UPDES point source discharge) on and adjacent to the permit area. The information is input into the DOGM Coal Mining database.

**Surface-Water Monitoring Plan**

The Permittee is currently conducting a surface water monitoring plan, which includes measuring and sampling streams and ponds (UPDES) on and adjacent to the permit area. The information is input into the DOGM Coal Mining database.

**Findings:**

The Permittee has supplied sufficient information to meet the minimum requirement of the regulations.

**MAPS, PLANS, AND CROSS SECTIONS OF RESOURCE INFORMATION**

Regulatory Reference: 30 CFR 783.24, 783.25; R645-301-323, -301-411, -301-521, -301-622, -301-722, -301-731.

**Analysis:**

### **Affected Area Boundary Maps**

The affected area boundary is shown on Plate V-5.

### **Coal Resource and Geologic Information Maps**

Coal resource and geological maps are submitted in Chapter 6 of the MRP for the old permit area. Some of the coal resource maps cover the proposed panel as Plate V-19, V-20, and V-21.

### **Existing Structures and Facilities Maps**

The current structural geological maps are provided in Chapter 6 of the MRP. Plates V-19, V-20, and V-21 show the geology and structure of the area and coal Isopach for the J, IU, and L11 seams.

### **Existing Surface Configuration Maps**

Several maps in Chapters 6 and 7 show the existing surface configuration.

### **Mine Workings Maps**

Plate XII-1 shows the proposed mine plan and timing sequence of mining.

### **Monitoring and Sampling Location Maps**

Plate VI-3 shows the monitoring and sampling locations for surface and groundwater monitoring sites. There is a monitoring site at the confluence of Quitchupah and Christiansen Wash.

### **Area Boundary Maps**

Permit boundary, which includes the IBC, is shown on Plate XII-1. All geology and hydrology maps should be updated to show the IBC in relationship to those features.

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### **Subsurface Water Resource Maps**

The Permittee has updated the potentiometric surface map for the IBC area within the Upper Ferron aquifer. The last map submitted identified the potentiometric surface in 1979.

### **Surface and Subsurface Manmade Features Maps**

There are no known manmade hydrologic features other than what has been mentioned under the Monitoring and Sampling locations map.

### **Surface Water Resource Maps**

Plate VI-3 shows the monitoring and sampling locations for surface monitoring sites.

### **Well Maps**

Plate VI-3 shows the monitoring and sampling locations for groundwater monitoring sites including wells.

### **Findings:**

The permittee has met the minimum R645 requirements to address the Maps, Plans, and Cross-sections for the Resource Information section of the regulations.

## **OPERATION PLAN**

### **COAL RECOVERY**

Regulatory Reference: 30 CFR 817.59; R645-301-522.

### **Analysis:**

The Permittee supplied information to describe how the First South panel will be mined to maximize economic recovery. Only the I-J coal seams will be mined for this application.

**Findings:**

The Permittee has submitted sufficient information to address the Coal Recovery Information section of the Regulations.

**HYDROLOGIC INFORMATION**

Regulatory Reference: 30 CFR Sec. 773.17, 774.13, 784.14, 784.16, 784.29, 817.41, 817.42, 817.43, 817.45, 817.49, 817.56, 817.57; R645-300-140, -300-141, -300-142, -300-143, -300-144, -300-145, -300-146, -300-147, -300-147, -300-148, -301-512, -301-514, -301-521, -301-531, -301-532, -301-533, -301-536, -301-542, -301-720, -301-731, -301-732, -301-733, -301-742, -301-743, -301-750, -301-761, -301-764.

**Analysis:**

**Groundwater Monitoring**

The Permittee has collected baseline groundwater information for the IBC area in conjunction with the existing monitoring program. The data and map in the MRP shows that the potentiometric surface in the Ferron Sandstone has been drawn down, since Plate VI-9 was developed using 1979 water levels. Monitoring wells will still be monitored, as well as, the mine discharge. Monitoring information is reported to the Coal-Water Quality Database each quarter.

**Surface Water Monitoring**

All surface water monitoring sites will continue to be monitored. Monitoring information is reported to the Coal-Water Quality Database each quarter.

**Acid- and Toxic-Forming Materials and Underground Development Waste**

No surface mining will take. There will be no exposure to acid or toxic forming materials.

**Transfer of Wells**

No wells will be transferred.

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**Discharges Into An Underground Mine**

There will be no underground mine discharges to this panel.

**Gravity Discharges From Underground Mines**

There will be no gravity discharges from the mine.

**Water-Quality Standards And Effluent Limitations**

The mine is discharging groundwater via a current UPDES permit.

**Diversions: General**

There will be no surface disturbance or diversions associated with this proposal.

**Diversions: Perennial and Intermittent Streams**

There is one intermittent stream, Christiansen Wash. It is an irrigation return channel. The flows in Christiansen Wash are constant and can be very high.

**Stream Buffer Zones**

A buffer zone, 100 feet from the stream channel, has been established by the Permittee to protect Christiansen Wash. The buffer zone is where no secondary mining will take place beneath Christiansen Wash.

**Findings:**

The applicant has submitted sufficient information to address Hydrologic Information in the Operation Section.

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

**Analysis:**

**Affected Area Maps**

The affected map area is shown on Plate V-5.

**Mining Facilities Maps**

No mine facilities will be constructed where these activities are proposed.

**Mine Workings Maps**

Plate V-5 was used to identify the location of mine workings.

**Monitoring and Sampling Location Maps**

Plate VI-3 was used to identify the water monitoring and sampling locations.

**Certification Requirements**

All maps are certified by a registered professional engineer.

**Findings:**

The information submitted by the Permittee was sufficient to make geological and hydrologic decisions.

**RECLAMATION PLAN**

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### 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:

There is planned subsidence for this area. The Permittee has submitted subsidence reclamation plans in the MRP. The Permittee has also conducted subsidence mitigation at other locations on the mine in the past.

#### Findings:

The applicant has addressed this section.

### APPROXIMATE ORIGINAL CONTOUR RESTORATION

Regulatory Reference: 30 CFR Sec. 784.15, 785.16, 817.102, 817.107, 817.133; R645-301-234, -301-412, -301-413, -301-512, -301-531, -301-533, -301-553, -301-536, -301-542, -301-731, -301-732, -301-733, -301-764.

#### Analysis:

Surface subsidence is planned over the panel. Pillars will be left to support the overlying strata above Christiansen Wash. The Permittee has a reclamation plan in the MRP to mitigate subsidence impacts and return sites to AOC as necessary.

#### Findings:

The applicant has submitted sufficient information to address this section.

### HYDROLOGIC INFORMATION

Regulatory Reference: 30 CFR Sec. 784.14, 784.29, 817.41, 817.42, 817.43, 817.45, 817.49, 817.56, 817.57; R645-301-512, -301-513, -301-514, -301-515, -301-532, -301-533, -301-542, -301-723, -301-724, -301-725, -301-726, -301-728, -301-729, -301-731, -301-733, -301-742, -301-743, -301-750, -301-751, -301-760, -301-761.

#### Analysis:

### **Hydrologic Reclamation Plan**

The operator has submitted a hydrologic reclamation plan in the MRP. Established water monitoring sites will be monitored throughout the reclamation process.

#### **Findings:**

The Permittee has submitted sufficient information to address this section.

## **MAPS, PLANS, AND CROSS SECTIONS OF RECLAMATION OPERATIONS**

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

#### **Analysis:**

##### **Final Surface Configuration Maps**

Final configuration of the panel surface will be AOC.

##### **Reclamation Monitoring And Sampling Location Maps**

Water monitoring will continue throughout reclamation. Water monitoring data is and will be is sent to the Coal Mining Database on a quarterly basis. There is currently over 25 years of data for most sites in and adjacent to the IBC.

#### **Findings:**

The Permittee has submitted sufficient information to address this section.

## **CUMULATIVE HYDROLOGIC IMPACT ASSESSMENT**

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

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**Analysis:**

Update of the CHIA for this amendment is not necessary.

**Findings:**

The Permittee has provided sufficient information for this section.

**RECOMMENDATIONS:**

This amendment is recommended for approval.