

TECHNICAL MEMORANDUM

Utah Coal Regulatory Program

May 20, 2004

OK

TO: Internal File

FROM: Gregg A. Galecki, Reclamation Specialist III- Hydrology - Team Lead 

RE: Mathis / Summit Creek IBC, Andalex Resources Inc., Centennial Project / Tower Mine, C/007/0019, Task # 1919

SUMMARY:

On May 7, 2004 the Division of Oil, Gas, & Mining (Division) received an Incidental Boundary Change (IBC) for the Centennial Project / Tower Mine. The IBC is located in the Mathis tract (20 acres) and Summit Creek Lease areas (72.32 acres), respectively. The leases are located on the Deadman Canyon quadrangle in Township 12 South Ranges 10 and 11 East, Sections 31 and 36. The following review addresses only hydrologic regulations germane to the proposed modifications to the currently approved Mine Reclamation Plan (MRP). The proposed change is for underground mining only, which will take place beneath 2,600 to 3,000 feet of cover; no additional surface facilities are proposed. Surface effects such as subsidence and effects to the hydrologic regime are anticipated to be negligible. However, the proposed amendment is currently considered deficient. Modifications cited below need to be addressed prior to incorporation into the existing Mine and Reclamation Plan (MRP) is recommended.

TECHNICAL MEMO

TECHNICAL ANALYSIS:

ENVIRONMENTAL RESOURCE INFORMATION

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

HYDROLOGIC RESOURCE INFORMATION

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

Analysis:

Baseline Cumulative Impact Area Information

Probable Hydrologic Consequences Determination

A separate Probable Hydrologic Consequences Determination (PHC) was prepared by Petersen Hydrologic (Inc.) for Adalex Resources, Inc. specifically addressing the Summit Creek and North Mathis tracts. The current IBC addresses only a small fraction of those two tracts. The determination is consistent with other findings along the Book Cliffs escarpment and Wasatch Plateau. Adverse impacts to the hydrologic balance in the area are extremely unlikely based on the combination of the following: 1) extensive cover (2,600 – 3,000 ft.); 2) extensive barrier walls between panels; 3) shallow groundwater systems and surface-water flows responding rapidly to climate and season; and 4) deep groundwater systems that are not in hydraulic communication with shallow recharge sources or shallow groundwater systems. The Division agrees with this assessment.

Using local streams and springs the PHC illustrates the shallow groundwater systems and surface-water flows respond rapidly to climate conditions and season. Specific R645-301 regulations that were addressed in the PHC include -728.200 (water quality and quantity), -728.310 (adverse impacts to hydrologic balance), -728.310 (acid- or toxic-forming materials), -728.331 (sediment yields), -728.333 (stream flow alteration), -728.334 (groundwater and surface-water availability), and -728.350 (affects to State-appropriated water).

Concerning State-appropriated water supplies, Figure 5 of the Vaughn Hansen Report – Appendix L outlines numerous ground- and surface- Water Rights; none of which are included in the Centennial water monitoring plan. It is important that the MRP acknowledges that if water replacement becomes an issue, Adalex will be responsible for replacement of the flow cited on the Water Right. The Mine may want to consider including a representative number of the Water Rights in the water monitoring plan to accurately reflect actual flows; particularly the

stock watering ponds. There are examples in the Wasatch Plateau where local ranchers are blaming dry stock ponds on the mines below the area.

Findings:

The information provided does not adequately address the minimum requirements of the Hydrologic Resources Information section of the State regulations. The following must be addressed:

R645-301-728.200, The Mine may want to consider including a representative number of the Water Rights in the water monitoring plan to accurately reflect actual flows; particularly the stock watering ponds.

OPERATION PLAN

SUBSIDENCE CONTROL PLAN

Regulatory Reference: 30 CFR 784.20, 817.121, 817.122; R645-301-521, -301-525, -301-724.

Analysis:

Subsidence Control Plan

In 2003 the Division fielded a complaint by a local landowner that their spring had dried up due to mining in the area. The Division's finding of no surface impacts due to mining was based, in part, on the Subsidence Control monitoring stations located in the area. However, subsidence control stations are not always ideally located. Information useful for evaluating surface subsidence would be to combine the Subsidence Monitoring Stations map with the longwall mining plan information.

On Plate 25 – Subsidence Monitoring Stations, provide the Aberdeen seam longwall plan (in a light scale – background) as illustrated in Plate 29. This will provide information to the validity of the location of the Subsidence Monitoring Station relative to potential areas of subsidence. Also, it will provide a useful tool to ground-truth any potential areas of subsidence.

Findings:

The information provided does not adequately address the minimum requirements of the Operation Plan – Subsidence Control Plan section of the State regulations. The following must be addressed:

TECHNICAL MEMO

R645-301-525.110, On Plate 25 – Subsidence Monitoring Stations, provide the Aberdeen seam longwall plan (in a light scale – background) as illustrated in Plate 29.

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

No springs or seeps were sampled during the 2001 and 2003 surveys, which illustrates the dry conditions currently being experienced in the region. This is indicative of the shallow groundwater systems and surface-water flows responding rapidly to climate and season. During wet climatic conditions, groundwater naturally discharges from the Flagstaff and North Horn Formation in the area, although in small quantities for short periods of time. Seeps and springs in the area show rapid response to both season and climate, suggesting short flow paths and shallow circulation depths. This is illustrated by the lack of data for the majority of water monitoring sites in the area. Due to dry conditions, the little moisture that is received is critical to livestock and wildlife. Numerous water rights exist on stock ponds that are fed by springs or streams. It may be prudent to include documentation to whether any of the ponds retain water in the event subsidence does occur in the area.

A total of two (2) additional springs are proposed for monitoring as part of the current amendment. Spring B261 has a total of five (5) samples collected from 1996 through 2001. Spring B362 has only one (1) sample (May 2001) collected from 1997 through 2002. The existing water quality information for springs B261 and B362 will need to be submitted electronically to the Division database.

Page 8 of the Petersen Hydrologic report indicates tritium and radiocarbon data exists in Table 3. However, no Table 3 has been provided in the Division's copy of the report.

Surface Water Monitoring

During sampling in both 2001 and 2003 no springs, seeps, or streams were found to be flowing, likely demonstrating the current drought conditions and the ephemeral nature of the streams in the area. Of the three (3) proposed additional surface water monitoring sites, two (AC-1 and SC-1) are new sites with no baseline data provided; if these sites have had no flow, that information needs to be documented. It will be a few years before these two sites provide

any useful information. Stream site B263 has been monitored since 1996 and has a total of 10 samples collected from 5/96 – 10/02. The existing data from site B263 will need to be input into the Division electronic database.

Water-Quality Standards And Effluent Limitations

There are areas in the existing MRP that need clarification concerning the UPDES monitoring locations. On Page 7-2 and 7-5 of the currently approved MRP, the plan indicates three (3) UPDES sites exist. However, according to the UPDES permit, 4 sites exist. Discharge apparently from the Pinnacle mine is not represented. Clarification needs to be provided in both the text and maps to how many UPDES sites exist and their location.

Findings:

The information provided does not adequately address the minimum requirements of the Operation Plan – Hydrologic Information section of the State regulations. The following must be addressed:

R645-301-731.212, The existing water quality information for springs B261 and B362 will need to be submitted electronically to the Division database.

R645-301-731.212, Provide Table 3 from the Petersen Hydrologic report (not currently provided)

R645-301-731.222.2, Clarification needs to be provided in both the text and maps to how many UPDES sites exist and their location.

R645-301-731.223, Provide any existing data for sites B263, AC-1 and SC-1 electronically into the Division database.

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:

Monitoring and Sampling Location Maps

On Plate 21 – Surface Geology, the strike and dip numbers should be included on the map. At a minimum, provide the strike and dip numbers in the legend.

TECHNICAL MEMO

Figure 5 - Surface and Ground Water Rights of the Vaughn Hansen Associates report refers to the 'Water Use Claim Number' and the proper naming convention is the 'Water Rights Number'.

Figure IV-11 needs the additional modifications in the legend: 1) the IBC needs to be correctly identified as the Mathis/Summit Creek IBC; 2) the symbol designation of streams and springs/wells needs to be included; and 3) all four (4) UPDES sites need to be identified.

Findings:

The information provided does not adequately address the minimum requirements of the Operation Plan – Maps, Plans, and Cross Sections of Mining Operations section of the State regulations. The following must be addressed:

R645-301-724.300, On Plate 21 – Surface Geology, the strike and dip numbers should be included on the map. At a minimum, provide the strike and dip numbers in the legend.

R645-301-721, Figure 5 - Surface and Ground Water Rights of the Vaughn Hansen Associates report refers to the 'Water Use Claim Number' and the proper naming convention is the 'Water Rights Number'.

R645-301-731.212, -.222, -.222.2, Figure IV-11 needs the additional modifications in the legend: 1) the IBC needs to be correctly identified as the Mathis/Summit Creek IBC; 2) the symbol designation of streams and springs/wells needs to be included; and 3) all four (4) UPDES sites need to be identified.

CUMULATIVE HYDROLOGIC IMPACT ASSESSMENT

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

Analysis:

The Division has evaluated the PHC provided by the Mine Operator and determined that the addition of the Mathis/Summit Creek IBC will not have an adverse affect on the cumulative hydrologic regime in the area based on the information provided and the analysis articulated above. The Cumulative Hydrologic Impact Assessment (CHIA), produced by the Division, will be updated in the near future. The update is not prompted by the proposed IBC. The assessment remains the same, however the CHIA has not been updated since 1990 and an additional 14 years of hydrologic data is available.

Findings:

The information provided adequately addresses the minimum requirements of the Cumulative Hydrologic Impact Assessment section of the State regulations.

RECOMMENDATIONS:

The proposed amendment is considered deficient and should not be incorporated into the current MRP until the above-cited modifications are addressed.