



GARY R. HERBERT  
Governor

GREGORY S. BELL  
Lieutenant Governor

# State of Utah

## DEPARTMENT OF NATURAL RESOURCES

MICHAEL R. STYLER  
Executive Director

### Division of Oil, Gas and Mining

JOHN R. BAZA  
Division Director

*Outgoing*  
C/0250005  
#3998  
R

February 29, 2012

Kirk Nichols, Resident Agency  
Alton Coal Development, LLC  
463 North 100 West, Suite 1  
Cedar City, Utah 84720

Subject: Alluvial Groundwater Management Plan, Alton Coal Development, Coal Hollow Mine, C/025/0005, Task #3998

Dear Mr. Nichols:

The Division has reviewed your application to implement an alluvial groundwater management plan.

The Division has determined that there are some deficiencies that must be addressed before a determination can be made that the requirements of the R645 Coal Mining Rules have been met, and an approval can be granted. For organization purposes, the deficiencies have been categorized by features discussed in your design plan. Those deficiencies are listed as an attachment to this letter.

We will meet to discuss your plan on March 9, 2012 at the Division offices in Salt Lake City. At that time, you will have an opportunity to address the deficiencies outlined with the staff. The plans as submitted are denied. Please resubmit the entire application.

Sincerely,

Daron R. Haddock  
Coal Program Manager

DRH/AAA/sqs  
Attachment  
O:\025005.COL\WG3998\3998\_DEFICIENCIES.DOC

## **Deficiency List**

**Task No. 3998**

**Task Name: Alluvial Groundwater Management Plan**

The members of the review team include the following individuals:

**April Abate**

**Pete Hess**

**James Owen**

### **Groundwater Investigation**

- **R645-301.724.100.** The applicant must provide ground water quantity descriptions with details of approximate rates of discharge and flow within the alluvium. These estimates should be based on a worst-case precipitation event using the thickest section of alluvium that can be treated by a trench conveyance system and based on a 100-year, 24-hour precipitation event.

### **Exclusion Berm**

- **R645-301.532; 742.122.** The applicant states that the trench impoundment is not intended or designed to convey surface runoff waters and that surface-water exclusion berms will keep surface water (save direct precipitation) from entering the trench impoundment. If the exclusion berm is directing surface water away from the trench, it is acting as an embanked diversion. The plan does not include; designs for berm construction or stability, description of material used for berm construction, information on the amount of surface water the exclusion berm will redirect, where the surface water will be re-directed to, or how the re-directed water will be treated.
- **R645-301.742.122.** The applicant should provide an updated surface water map that includes surface flow changes that result from the construction of the exclusion berm.

### **Trench Impoundment**

- **R645-301.533.110.** The applicant states that the "intercept trench" will be constructed with a 2% gradient and that water collected at the down-gradient end will be transferred by pipe to the "sump pond". The "intercept trench" and "sump pond" should both be categorized as impoundments according to definitions with the Utah Coal Mining Rules, and will therefore be referred to as "trench impoundment" and "mine-water impoundment". As an impoundment, the trench will need to be appropriately designed. This should include specifications for safety factor (for any portions of the trench that are not in-sized, i.e. the inner slope of the exclusion berm), trench wall stability, expected capacity, etc. The applicant states that the trench impoundment will be appropriately sized to pass anticipated volumes. The Division needs information on what criteria will be used to determine the appropriate size as well as estimates of the anticipated volumes the trenches will hold (maximum). The applicant states that the designs of the trenches may vary, which is reasonable. However, there should be a set of criteria defined that the applicant is using to determine the design. Comparing this criteria to what is being done on the ground will allow the Division to

determine (during inspection) if the trenches are truly being constructed according to good engineering practices, as the applicant states. A standard design should be provided with detailed calculations, drawings, cross sections, etc. The Division will expect that variations to the standard design may be required based on site specific conditions. Since the trench is acting as an impoundment, it must be appropriately designed.

- **R645-301-533.712.** The Division requests clarification, in descriptive narrative, on whether or not the trench impoundment will always be constructed with its base at the top of the tropic shale (as it is depicted in Figure 1). The Division needs to know how deep the trench impoundment will be, in relation to the depth of the alluvium. What is the maximum possible depth of the trench impoundment?
- **R645-301-533.713.** The applicant should include a description of how the trench impoundment will be maintained. Particularly, what will guarantee that the collected alluvial groundwater will remain uncontaminated? How will the sidewalls of the trench be kept stable? Please include a descriptive narrative as well as detailed calculations and drawings.
- **R645-301-742.311.** The application must contain a description of how safety concerns will be addressed relative to the constructed diversion and trench impoundment.
- **R645-301-514.311.** The application must include a statement that the trench impoundment has been inspected by a professional engineer or specialist experienced in the construction of impoundments and will inspect the impoundment during construction, after construction, and at least yearly until removal of the structure. The professional engineer or specialist will report when any potential hazards exist in accordance with -515.200. The impoundment will be inspected and reports submitted as required by R645-301-514.312.
- **R6545-301.743.130.** The applicant must provide an appropriately-sized spillway design for the trench impoundment that will safely pass the maximum flow. The spillway information must address whether a principal and emergency spillway design or a single-open channel spillway will be utilized.

### **Pumping System**

- **R645-301-521.** The applicant states that water collected in the trench impoundment will be pumped to the mine-water impoundment. For completeness, the Division requests additional information on the system that will transfer the water from the trench impoundment to the mine-water impoundment. The applicant should include a plan with a narrative, descriptions, and calculations indicating how the relevant requirements are met in terms of when the trench impoundment will be pumped (at what capacity or period of time), and the adequacy of all pumping, piping, and powering equipment that will be used in the system. The Division requests that when the details of pump size, configuration, etc. are submitted, that adequate calculations are provided indicating that the pumping system will be of sufficient capacity to accommodate the maximum size, length, and flow requirements of the system. Also, please include depictions of the system on Drawing 5-3 and Figure 2.

## **Mine-Water Impoundment**

- **R645-301-733.221.** The applicant must submit an adequate design for the proposed mine-water impoundment which clearly demonstrates that its capacity will provide adequate retention time to remove suspended solids below the established UPDES parameter level.
- **R645-301-751.** The applicant must demonstrate that the effluent can meet UPDES permit standards prior to discharge.
- **R645-301-533.713.** The applicant should include a narrative description of how the mine-water impoundment will be maintained. Particularly, what will guarantee that the collected alluvial groundwater will remain uncontaminated? How will the sidewalls of the mine water impoundment be kept stable? Please include a descriptive narrative as well as detailed calculations and drawings.
- **R645-301-514.311.** The application must include a statement that the mine-water impoundment has been inspected by a professional engineer or specialist experienced in the construction of impoundments and will inspect the impoundment during construction, after construction, and at least yearly until removal of the structure. The professional engineer or specialist will report when any potential hazards exist in accordance with -515.200. The impoundment will be inspected and reports submitted as required by R645-301-514.312.
- **R645-301.743.130 and R645-301-742.112.** The applicant must provide an appropriately-sized spillway design for the mine-water impoundment that will safely pass the maximum flow. The spillway information must address whether a principal and emergency spillway design or a single-open channel spillway will be utilized. The applicant must demonstrate that the compliant effluent in the mine-water impoundment can be discharged to Robinson Creek through permanent spillways designed for the required discharge capacity.
- **R645-301-742.423.2, -744.100.** The applicant must submit an approvable design to minimize the erosive effect of the Lower Robinson Creek temporary diversion channel at UPDES outfall 005, based on the anticipated discharge rate. The design of the temporary channel specified in Appendix 5-2 of the Mining and Reclamation Plan should be modified to include additional armoring of the channel to prevent further down cutting of the temporary diversion channel. Additionally, a commitment must be provided that establishes a reasonable time line (predicated on weather conditions) for constructing the additional erosion controls in the channel.

## **Pit Water Management**

- **R645-301-533.712.** The applicant states that minor quantities of groundwater could potentially be encountered within the coal seam or from the overlying shale and could be managed within the mine pits. The Division requests information on the volume and flow of water that could be managed in the pit, as this directly correlates to the volume and flow of alluvial groundwater that must be re-directed. Specifically, what volume of water needs to be captured by the trench impoundment to create a condition where the remainder of the water is manageable within the pit?

### **Groundwater System Timing**

---

- **R645-301-533.714.** The Division requests information on when and how the impoundment and piping system will be removed as it relates to the mining progress. This system is considered as part of the mining sequence. The description should include a timetable and detailed plans on the removal or advancement of the trench impoundment, piping system, and mine-water impoundment. This information should be incorporated into the reclamation plan section of the MRP.

### **Complete and Concise - Maps**

---

- **R645-301-521.160.** The colors used to depict diversion ditches on Drawing 5-3 should correlate to the colors used in the drawing's legend.