

EXPLORATION TECHNICAL MEMORANDUM

Utah Coal Regulatory Program

March 30, 2004

TO: Internal File

THRU: Peter H. Hess, Environmental Scientist III/Inspector, Team Lead

FROM: Steve Fluke, Environmental Scientist II/Reclamation Hydrogeologist

RE: Minor Coal Exploration – SITLA Muddy Tract, Canyon Fuel Company, LLC, SUFCO Mine, C/041/002, Task ID # 1835

SUMMARY:

This Technical Memo addresses the hydrologic aspects of an application the Utah Division of Oil, Gas and Mining (the Division) received on February 12, 2004, to conduct Minor Coal Exploration. The application was submitted by Ark Land Company (a subsidiary of Arch Coal, Inc.) for a helicopter-assisted wireline core-drilling project to be conducted on the Muddy Coal Tract, located in Sevier County, Utah. The application is for one hole to be drilled on the School and Institutional Trust Lands Administration (SITLA) portion of the Muddy Coal Tract as part of a six-hole exploration plan. The remaining five holes are to be drilled on the Federal portion of the Muddy Coal Tract. All exploration activities will occur on the U.S. Forest Service, Manti-LaSal National Forest surface.

The application does not meet the minimum requirements of the regulations for hydrology and is considered deficient. The items outlined below must be adequately addressed prior to the application being approved.

EXPLORATION TECHNICAL ANALYSIS:

COMPLIANCE DUTIES

Regulatory Reference: 30 CFR 772.13; R645-202.

OPERATIONAL STANDARDS

Regulatory Reference: 30 CFR 772.13; R645-202-100.

Analysis:

Roads

The project will not include any road construction. However, the repair of existing Forest Development Roads is anticipated to include “hauling of gravel to fill rough areas on bedrock ledges and grading rutted areas”. The Division needs additional information on the required repairs and how they may or may not affect surface drainage controls. Describe anticipated modifications to existing surface drainage controls.

Hydrologic Balance

According to the Spring and Seep survey conducted by Cirrus Environmental Solutions, L.C., in 2001, no springs or seeps are located in the vicinity of the proposed project. Map 2 is not at an adequate scale to locate the proposed drill site relative to the nearby Cowboy Creek. The Division needs a drill site location map at a sufficient scale showing the proximity of Cowboy Creek to the disturbed area. The application states that there will be no diversion of overland flows and that all drilling fluids will be contained within portable tanks. However, the Division needs additional information indicating that no adverse impacts will occur to the Cowboy Creek stream channel.

Because no groundwater monitoring sites currently exist within the SITLA Lease area, if groundwater is encountered, the Division encourages the completion of the boring as a groundwater monitoring well to aid in the evaluation of groundwater conditions for future permitting. If any measurable groundwater is encountered during drilling, the depth, geology, and flow/head need to be noted in the drill logs. In consultation with the Division, the conditions should be evaluated as a potential groundwater monitoring well location prior to abandonment and reclamation of the boring.

The application states that if the boring is to be completed as a groundwater monitoring well, a nominal 1.0- to 1.5-inch diameter well screen and steel casing would be installed to below the deepest mineable coal zone. Since the boring is to be nominal 2 3/16-inch diameter to the approximate total depth of 1,500 feet, it is not likely that a proper sandpack can be placed around the screen with such a tight annulus at that depth. The Division needs additional information describing the well design. Upon completion of a groundwater monitoring well, a well completion form should be submitted to the Division.

During drilling of the exploration holes, any water necessary for drilling will be obtained from Quitchupah or Muddy Creeks. No water will be pumped from the creeks without an approved “Temporary Change of Water” permit issued from the Division of Water Rights. A copy of the permit will be forwarded to the Division and will be on-site during drilling activities.

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In the event the drill holes begin making excess water, the application needs to identify the method of treatment/disposal of the water.

Acid- or toxic forming materials

The application indicates that acid- or toxic-forming materials will not likely be encountered during the exploration because none have been previously encountered in the geologic formations. In addition, samples will be taken from the 10-foot interval above and below the Lower Hiawatha seam for analysis of acid- and toxic-forming materials. No drilling fluids or cuttings are to be disposed of at the drill site.

Findings:

The information provided does not adequately address the minimum requirements of the Coal Exploration Compliance Duties – Operational Standards section of the State regulations. The following regulations need to be addressed in accordance with:

R645-202-232, (R645-301-742.423), Provide additional information describing road repairs and potential modifications to surface drainage controls.

R645-202-235, (R645-301-731.121), Provide a drawing indicating the size of the disturbance necessary for the drill pad and its proximity relative to the Cowboy Creek stream channel. Identify the drainage from the drill site and treatment of surface runoff (whether in the drawing or in text).

R645-202-235, (R645-301-624.210), Text needs to commit to keeping geologic logs of the drilling and identify where any appreciable water is encountered, noting depth, geology, flow, etc. These areas will be evaluated for potential water monitoring well installation.

R645-202-235, (R645-301-731.215), Provide additional information describing the well design. Upon completion of a groundwater monitoring well, a well completion form should be submitted to the Division.

R645-202-235, Provide a narrative of the treatment/disposal of water, in the event the drill holes begin making excess water.

RECLAMATION STANDARDS

Regulatory Reference: 30 CFR 772.13; R645-202-200.

Analysis:

Revegetation

On the roads requiring repair, address how road drainage will be addressed in reclamation and whether any portions of these access roads will be reclaimed.

Borehole

The application makes a specific commitment of how the boring will be abandoned once exploration activities are complete in accordance with Federal and State Regulations. If the boring is not completed as a groundwater monitoring well, the boring will be plugged with cement, cement/bentonite slurry, or bentonite chips to their complete depth. Surface casings will either be removed or cut flush with the surface.

Findings:

The information provided does not adequately address the minimum requirements of the Compliance Duties – Reclamation Standards section of the State regulations. The following regulations need to be addressed in accordance with:

R645-202-244.200, On the roads requiring repair, address how the newly disturbed areas will be reclaimed.

RECOMMENDATIONS:

The deficiencies outlined above need to be adequately addressed prior to Division approval.