



State of Utah

DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MININGNorman H. Bangerter
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3 Triad Center, Suite 350
Salt Lake City, Utah 84180-1203
801-538-5340

March 23, 1992

Mr. William R. Skaggs
Blue Blaze Coal Company
P.O. Box 784
Price, Utah 84501

Dear Mr. Skaggs:

Re: Technical Deficiencies Related to Ground Water Report Submitted by Earthfax Engineering, Blue Blaze Coal Company, Blue Blaze Mine, PRO/007/020, Folder #2, Carbon County, Utah

Enclosed please find the technical deficiencies related to the technical report submitted by Earthfax Engineering on March 11, 1992. These deficiencies are for this report only and do not constitute a review of the plan. There are still inconsistencies in the permit application package related to ground water that must be addressed.

If you have any questions, please call me.

Sincerely,

A handwritten signature in cursive script that reads "Pamela Grubaugh-Littig".

Pamela Grubaugh-Littig
Permit Supervisor

pgl
Enclosurecc: Tom Munson
Earthfax Engineering (faxed March 23, 1992)
Lowell P. Braxton



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March 20, 1992

TO: Pamela Grubaugh-Littig, Permit Supervisor

FROM: Thomas Munson, Senior Reclamation Hydrologist *TM*

RE: Technical Deficiencies (Ground Water), Blue Blaze Coal Company, Blue Blaze Mine, PRO/007/020, Folder #2, Carbon County, Utah

Synopsis

The Division received a Draft Technical Deficiency Document Response from EarthFax Engineering on March 11, 1992, addressing the Technical Deficiencies identified in a January 23, 1992 correspondence that describes ground water technical deficiencies, requirements and need for site-specific ground water characterization. This memo discusses the adequacy of this submittal, in regards to the requirements of the rules. Previous comments from the January 23, 1992 correspondence are italicized in this memo.

Analysis

R645-301-700 HYDROLOGY (TM)

- 731.211. The permit application will include a ground-water monitoring plan based upon the PHC determination required under R645-301-728 and the analysis of all baseline hydrologic, geologic and other information in the permit application. The plan will provide for the monitoring of parameters that relate to the suitability of the ground water for current and approved postmining land uses and to the objectives for protection of the hydrologic balance set forth in R645-301-731. It will identify the quantity and quality parameters to be monitored, sampling frequency and site locations. It will describe how these data may be used to determine the impacts of the operation upon

the hydrologic balance. At a minimum, total dissolved solids or specific conductance corrected to 25 degrees C, pH, total iron, total manganese and water levels will be monitored;

- 731.212. Ground-water will be monitored and data will be submitted at least every three months for each accessible monitoring location. Monitoring submittals will include analytical results from each sample taken during the approved reporting period. When the analysis of any ground-water sample indicates noncompliance with the permit conditions, then the operator will promptly notify the Division and immediately take the actions provided for in R645-300-145 and R645-301-731;

Compliance

The applicant has not provided any long term monitoring of aquifers based on the PHC determination required under R645-301-731.200.

Recommendation

The applicant will provide a plan which identifies a long term monitoring program which relates to the suitability of the ground water for current and approved postmining land uses and to the objectives for protection of the hydrologic balance set forth in R645-301-731.

742.100 Baseline Information: Groundwater

The applicant has presented drill hole information from Century Geophysical Corporation stating that, "A Gamma Ray Probe was used by Century Geophysical Corporation in the LMC drill holes to check for fluid in impervious layers" (page 7-6, PAP). The Division cannot accept this information as a valid explanation for the occurrence of formation water, per the requirements of the rules, "Groundwater quantity descriptions will include, at a minimum, approximate rates of discharge or usage and depth to the water in the coal seam, and each water-bearing stratum above and potentially impacted stratum below the coal seam." The applicant must be made aware that Gamma Logs cannot be used to ascertain the depth to water in the coal seam, and each water-bearing stratum above and potentially impacted stratum below the coal seam. For example, hole LMC 1 water level was determined to be found at 232 feet when in reality all the Gamma log was saying was that the water level in the hole following drilling was 232 feet below the surface. Without the driller's log documenting water

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occurrence and core data this does not indicate that water occurred at this elevation, but shows that the combination of drill fluids and water rose to this level in the hole.

The applicant must provide a verified driller's log documenting water occurrence within each stratum is required.

Applicant's Proposal

The applicant provides a summary of the general characteristics of the various formations within the proposed Blue Blaze permit area (pages 2-4). Four drill holes (LMC 1-4) are described, three of which were left open and water level data collected (pages 4-6). Water rights are discussed on page 7 in regards to approximate rates of discharge or use. Lithologic logs for the drill holes are found Appendix A.

Compliance

Table I is presented showing depths of the coal seams found in each of the holes and the measured depths to water. The important point to be ascertained from this table is that the applicant has not obtained the depth to water in the coal seam, and each water-bearing stratum above and potentially impacted stratum below the coal seam because the drill holes were plugged to depths above the Castlegate "A" and Hiawatha seams in holes LMC 1, 2 and 3. In regards to the Star Point sandstone, no data was provided from the drill holes.

Table I. Drill Hole Evaluation

HOLE ID	DATE DRILLED	DEPTH DRILLED	DEPTH of PLUG	MEASURED DEPTH	CASTLEGATE DEPTH *	HIAWATHA DEPTH *
LMC 1	Sept. 1976	900 ft.	600 ft.	599 ft.	793 ft.	856 **
LMC 2	Oct. 1976	568 ft.	50 ft.	None	369.9 ft. ***	435 ft. ***
LMC 3	Nov. 1976	836 ft.	665 ft.	664 ft.	630 feet	701.9 ft.
LMC 4	Jan. 1980	430 ft.	220 ft.	217 ft.	105.2 feet	139.2 ft.

* From drill logs provided in EarthFax Report: Response to Technical Deficiencies, Blue Blaze Coal Company, Blue Blaze Mine.

** Drill log indicates Gordon Coal seam at 856 feet.

*** Drill log indicates Castlegate A seam replaced by channel sands, Gordon coal Seam at 435 feet.

Recommendation

The applicant has not provided the groundwater quantity descriptions that include, at a minimum, approximate rates of discharge or usage and depth to the water in the coal seam, and each water-bearing stratum above and potentially impacted stratum below the coal seam, as demonstrated by the above table. The applicant must address the requirements of this rule by providing site-specific information on water levels in the coal seam, and each water-bearing stratum above and potentially impacted stratum below the coal seam.

724.500 Supplemental Information

The applicant has chosen to use data collected in September 1976 from four logged drill holes to describe groundwater conditions on the Blue Blaze permit area. This information is referenced on pages 7-6 and shown on Figure 1. This information is considered the supplemental information necessary to evaluate the probable hydrologic consequences of mining on groundwater but is inadequate.

Such supplemental information may be based upon drilling, aquifer tests, hydrogeologic analysis of the water-bearing strata, flood flows, or analysis of other water quality or quantity characteristics. The applicant must submit site-specific data so that an assessment of the Probable Cumulative Impacts of all anticipated coal mining and reclamation operations on the hydrologic balance in the cumulative impact area can be made. A determination that the proposed operation has been designed to prevent material damage to the hydrologic balance outside the permit area must also be made using site-specific groundwater information.

The applicant must provide a survey that shows whether aquifers or areas for the recharge of aquifers exist within the permit and adjacent area and whether subsidence, if it occurred, could cause material damage or diminution of reasonably foreseeable use of aquifers or areas for the recharge of aquifers. Renewable resource survey information must be incorporated into the subsidence control plan as required by R645(R614)-301-525.

Applicant's Proposal

The applicant has provided some discussion on recharge areas on pages 9-10 of the submittal.

Compliance

The applicant has not provided any additional detail on maps or plates showing recharge areas for aquifers potentially affected by subsidence. All formations above the Blackhawk will be considered potential recharge areas.

Recommendation

The applicant provide a plate which depicts recharge areas for aquifers within the permit area and adjacent areas potentially affected by subsidence.

728. Probable Hydrologic Consequences (PHC) Determination

The applicant has not provided accurate groundwater information from drill holes LMC 1-4 explained in the deficiency of R-614-301-724.100. Until this information is submitted, the PHC cannot be considered complete and accurate and, therefore, cannot be reviewed.

Applicant's Proposal

The applicant states on page 13 of his response that the probability of impacting ground water resources is low based on 1) the water level monitoring of three drill holes, finding them dry; and 2) personal communications with Mr. Harvey, stating that these holes were dry during drilling.

Compliance

As was previously stated, the drill holes are not indicative of water levels in the coal seams and the aquifers or aquifer below the coal seam because of reasons previously explained. In regards to Mr. Harvey's personal communication, further documentation regarding drilling methods, more detailed explanation regarding hole completion and a certified letter explaining his role in the drilling process is required. It must be noted that the Gamma log data presented in the original submittal from Century Geophysical Corporation does not indicate a dry hole following drilling in drill hole LMC 1.

Recommendation

The applicant must provide seasonal baseline groundwater data both quantity and quality on all potentially impacted aquifers and identify potential adverse impacts which may occur to the hydrologic balance both within and outside the permit area based on the collection of this site specific groundwater data.

The applicant will provide further documentation regarding drilling methods, more detailed explanation regarding hole completion (i.e. why holes were plugged and with what materials). A certified letter will be required explaining Mr. Harvey's role in the drilling process and his interaction on site during completion of LMC 1-4, regarding examination of drill cuttings and monitoring of drill fluids. Mr. Harvey will be required to explain how he determined these holes to be devoid of ground water.

jbe
BBTD