



State of Utah
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

1594 West North Temple, Suite 1210
PO Box 145801
Salt Lake City, Utah 84114-5801
801-538-5340
801-359-3940 (Fax)
801-538-7223 (TDD)

Michael O. Leavitt
Governor
Lowell P. Braxton
Division Director

July 16, 1998

TO: File
THRU: Daron Haddock, Permit Supervisor *DQH*
FROM: Michael Suflita, Reclamation Hydrologist *MS*
RE: Permit Application Package (PAP), West Ridge Resources, Inc., West Ridge Mine, PRO/007/0041, Folder 2, Carbon County, Utah

SUMMARY:

On January 26, 1998 West Ridge Resources submitted a PAP for the subject mine. Additions were received on June 10, 1998. This Technical Analysis is limited to the hydrology portion and primarily for the Reclamation aspects of the plan, with additional comments on the Operation aspects.

RECLAMATION PLAN

HYDROLOGIC INFORMATION

Regulatory Reference R645-301-731.510

Analysis:

No discharges are expected during the operation or reclamation phases of the mine. Reference page 7-20 and 7-36 and 7-37.

Finding:

The PAP meets minimum regulatory requirements for discharges into and underground mine.

Regulatory Reference R645-302-731.520

Analysis:

The mine portals are located in a canyon at the uppermost elevation of the coal seam and the seam dips at a 14 degree angle to the northeast. Thus, the mine itself is at a lower elevation than the mine outlets and lower than the surrounding countryside. No gravity discharges are possible.

Finding:

The PAP meets minimum regulatory requirements for gravity discharges from an underground mine.

Regulatory Reference R645-301-720

Analysis:

The reclamation channels are appropriately designed for the 100-year, 6-hour storm. However, there is some confusion regarding the designation of the reclamation channels. Appendix 7-4, Tables 20, 21, 22, & 23 summarize these channels but their location is not shown as would be expected. Specifically, Map 5-9, Mine Site Reclamation, shows only three of the eight channels designated. Some inferences can be made using Map 7-2, Mine Site Drainage Map, but that is not clear.

On pages 5-48 and 7-36 a commitment is made to construct a turnaround at the end of the county road during reclamation. The Mine Site Reclamation Map, M 5-9 does not show such a turnaround.

Map 7-5, Hydrology Map appears to have a typographic error in the legend block. It reads "1985-1896 Monitoring Stations".

There is some confusion as to whether any structures will be left after reclamation. Several references in the text mention permanent structures to be left after reclamation. These include page 7-36, para. one, and page 5-48, para. 542.400. Other references indicate no structures will be left after reclamation. These include page 5-44, para. five and six, and page 5-48, para. 542.300. There may be other references that conflict. It needs to be resolved and made consistent as to whether structures remain after reclamation. Map 5-9, Mine Site Reclamation shows no structures remaining.

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Page 7-37, para. two refers to "the water supply well for the mine" while other places, including Map 5-5, Surface Facility Map, describe the water line from East Carbon City supplying water to the mine. The conflict needs to be resolved. Also, related to well closure, the description on page 7-20, para. five needs to have the detail provided on page 7-37.

Page 7-20, para. three really makes no sense whatever with regard to reclamation at this site. It appears to be simply out of place in this MRP. Similarly, page 5-47, the last paragraph is very confusing, especially the beginning of the paragraph.

Chapter 7, page iv, there are no page numbers for the figures.

Page 7-6 para.3 references the "northwesterly dip of the rocks" while the geologic maps 6-1 and 6-1A show them dipping to the northeast.

Map 7-3, Water Rights is not complete. Map 4-1 contains surface water rights also and these should be all on the one Map 7-3.

Page 7-26. para. five indicates "no visible faults or fractures that would impair the operation and stability of the (sediment) pond." This is consistent with the geology map, Map 6-1. However, H. H. Doelling's monograph, Central Utah Coal Fields, Vol. 3 shows a fault cutting across the NE corner of section 15 in the very region of the sediment pond. Also, one of the DOGM evaluators believes there is a fault in that area. This needs to be confirmed or refuted after a field visit to determine actual conditions, and any necessary plan revisions incorporated.

Page 7-14, last para. indicates ditches around the soil storage piles to have slopes of 1% and slope toward the natural drainage. However, Map 7-2, Minesite Drainage Map shows the ditches around the piles to be at a slope MUCH greater than 1%. Significantly, it also shows the ditches flowing UPhill to reach those natural drainages. One option is to direct flows from around the soils piles into the main culverts under the pad area, similar to culverts UC-DD and UC-FF. Ditches with the slopes shown NEED to have erosion protection.

Reference Map 7-2, Mine Site Drainage Map and notice the drainage at the extreme lowest end of the disturbed area, the southwest end. There is a major drainage to the north that would logically go under the county road. According to the map, this would occur inside the disturbed area. There is no indication of a culvert at that location. Perhaps this is part of the county road, but it is still inside the disturbed area and needs to be addressed in the Operations and Reclamation Plans, similar to culverts DC-12, DC-15, and DC-16.

There is no indication of the Operator having applied for a Stream Alteration Permit from the Utah Division of Water Rights.

The reclamation plan as described beginning on page 5-44 indicates the regraded area will be pocked and roughened. This is not consistent with the land imprinting as described on page 5-50, last paragraph.

Finding:

The PAP does not meet minimum requirements for environmental description of the disturbed area canyon.

Regulatory Reference R645-301-731.214 and 731.224

Analysis:

The surface water and groundwater monitoring plan is unclear. The narrative on page 7-16 describes two stream monitoring points on Grassy Trail Creek and these are shown on Map 7-6, Hydrologic Monitoring Map. However, several other monitoring points are also shown on the map as having occurred in 1986 and 1997. No indication is made on the map of which sites will remain as part of the ongoing monitoring plan for the Operation and the Reclamation Phases of the mine.

The same confusion is true of the spring monitoring points. Seven springs are described in the narrative while four other spring monitoring points are shown on Map 7-6. Again there is no indication of which sites will remain as part of the ongoing monitoring plan for the Operation and the Reclamation Phases of the mine.

Map 7-5, Hydrology Map shows numerous springs identified and apparently monitored to some extent. What was the rationale used to decide on certain springs being selected and others eliminated for the monitoring plan?

On page 7-36, para. six, a commitment is made to monitor a station "below the **reclaimed** disturbed area" yet there is no indication of the designation of that station in the narrative or on the map. Also, is it a stream or spring monitoring station? Significantly, there are no monitoring stations below the disturbed area during the Operation phase of the mine. It would be expected that spring monitoring would be included during the Reclamation Phase until bond release.

On page 5-49, para. four, (part of the Reclamation Section) it indicates, " The

water monitoring well, when deemed no longer necessary for groundwater monitoring, will be filled with concrete....” When will that be, and how does that monitoring well fit into the monitoring during Reclamation?

There is no description of how UPDES points number one and two will have samples taken. While that may not be difficult for the sediment pond (No.1) it needs to be described and since No.2 is inside a buried culvert, that will need a description too. Given the consideration of acid-toxic materials on page 7-9, para. 728.320, the permit should include testing for iron.

The surface and groundwater monitoring is a significant part of the Mining and Reclamation Plan and needs to be well defined. The present monitoring plan needs significant clarification, including the summary Table 7-1 on page 7-17.

Finding:

In its present form, the groundwater and surface water monitoring plans do not meet regulatory requirements.

Regulatory Reference R645-301-742.300

Analysis:

Page 7-24, paragraph one, indicates the only stream protection at the outlet of the main canyon bypass culvert will be riprap to “slow the outlet velocity and prevent erosion”. The flow velocity for a given quantity of water in corrugated metal pipe is significantly higher than the same quantity of water in a natural stream channel. Water exiting the pipe will be going much faster than would be the case without the culvert and significant erosion will result. While the riprap immediately below the pipe will protect that small portion of the natural channel, the riprap will not slow the water velocity. Erosion below the riprap will result. There are 5471 feet of culvert in this project and an energy dissipator is needed at the culvert outlet.

Finding:

The plan does not meet the regulatory requirements for diversions, particularly with regard to additional contributions of suspended solids.

RECOMMENDATION

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The Permit Application Package should not be approved in it's present form.
Several areas, as detailed above, need to be corrected, revised, or modified.

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