WATER QUALITY
M E M O R A N D U M

Utah Coal Regulatory Program

January 4, 2005

TO: Internal File

THRU: D. Wayne Hedberg, Permit Supervisor

FROM: Dana Dean, P.E., Senior Reclamation Hydrologist

RE: 2004 Third Quarter Water Monitoring, Canyon Fuel Company, Soldier Canyon Mine, C/007/0018-WQ04-3, Task # 2102

1. Was data submitted for all of the MRP required sites? YES ☒ NO ☐
Identify sites not monitored and reason why, if known:

2. On what date does the MRP require a five-year resampling of baseline water data.
See Technical Directive 004 for baseline resampling requirements. Consider the five-year baseline resubmittal when responding to question one above. Indicate if the MRP does not have such a requirement.

Resampling due date

There is no commitment in the MRP to resample for baseline parameters.

3. Were all required parameters reported for each site? YES ☒ NO ☐
Comments, including identity of monitoring site:

4. Were irregularities found in the data? YES ☒ NO ☐
Comments, including identity of monitoring site:

The dissolved magnesium at G-5 (71.8 mg/L) was 2.87 standard deviations greater than the mean of 42.64 mg/L. The dissolved magnesium value has a slight upward trend, though it has been fluctuating up and down according to flow. There is no standard for magnesium, but it contributes to the hardness of the water. However, the water at G-5 has always fallen into the hard or very hard categories during the entire sampling history, except for one sample in March

of 2003. Therefore the increased magnesium level has not harmed the water quality.

The sulfate at G-5 (280 mg/L) was 3.98 standard deviations higher than the mean of 110.34. There is no upward trend in the sulfate value, it fluctuates up and down with the flow level. The standard for domestic use is that the sulfate should be less than 250 mg/L. This is the first time the sulfate has risen above 250 mg/L at G-5. If an upward trend develops, and the sulfate stays above 250 mg/L, it wil be important to identify why,and mitigate if possible. However, at this time, there is no need for any action other than scheduled monitoring.

Some routine Reliability Checks were outside of acceptable values. They were:

Site	Reliability Check	Value Should Be…	Value Is…
G-5	Mg/(Ca + Mg)	<40 %	67%
G-5	Conductivity / Cations	>90 & <110	78
G-5	Ca/ (Ca + SO4)	> 50 %	33%
G-5	Na/(Na + Cl)	> 50 %	30%
G-6	Conductivity / Cations	>90 & <110	78
G-6	Mg/(Ca + Mg)	<40 %	59%
G-6	Ca/ (Ca + SO4)	> 50 %	44%

The Permittee should work with the lab to make sure that samples pass all quality checks so that the reliability of the samples does not come into question. These inconsistencies do not necessarily mean that a sample is wrong, but it does indicate that something is unusual. An analysis and explanation of the inconsistencies by the Permittee would help to increase the Division's confidence in the samples. The Permittee can learn more about these reliability checks and some of the geological and other factors that could influence them by reading Chapter 4 of *Water Quality Data: Analysis and Interpretation* by Arthur W. Hounslow.

5. Were DMR forms submitted for all required sites?

1st month, YES ☒ NO ☐
2nd month, YES ☒ NO ☐
3rd month, YES ☒ NO ☐

All DMRs reported "no flow".

6. Were all required DMR parameters reported? YES ☒ NO ☐

Comments, including identity of monitoring site:

All DMRs reported "no flow".

7. Were irregularities found in the DMR data? YES ☐ NO ☒

Comments, including identity of monitoring site:

All DMRs reported "no flow".

8. Based on your review, what further actions, if any, do you recommend?

No further actions are necessary at this time.

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