

WATER QUALITY MEMORANDUM

Utah Coal Regulatory Program

August 26, 2005

TO: Internal File

THRU: D. Wayne Hedberg, Permit Supervisor

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

RE: 2004 Fourth Quarter Water Monitoring, Plateau Mining Company, Willow Creek Mine, C/007/0038-WQ04-4, Task #2078

- 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:

Some readings were more than 2 standard deviations higher than average values. They were:

Site	Parameter	Value	Std. Dev. Above Avg.	Average
B5	Conductivity	783 umhos/cm	2.40	470.32 umhos/cm
B5	Dissolved Magnesium	34.8 mg/L	2.20	23.19 mg/L
B5	Sulfate	85 mg/L	2.39	45.16 mg/L
B6	Conductivity	788 umhos/cm	2.31	476.92 umhos/cm
B6	Dissolved Magnesium	34.7 mg/L	2.07	23.71 mg/L
B6	Sulfate	84 mg/L	2.42	46.71 mg/L

Conductivity has fluctuated up and down at these two sites over the sampling period, with a weak negative correlation to flow values. Since the TDS/conductivity value is also outside of the standard range, the conductivity reading could be in error, but not necessarily. The operator may want to check the calibration on the conductivity meter just to be sure.

The dissolved magnesium also has weak negative correlations to flow, at both B5 and B6. At B5, the four highest recorded magnesium readings (38.9 mg/L, 34.8 mg/L, 32.7 mg/L, 31 mg/L) are associated with flows in the lower third (33%) of all recorded flows.

The sulfate also has weak negative correlations to flow, at both B5 and B6.

Several routine reliability checks were outside of standard values. They were:

Site	Reliability Check	Value Should Be...	Value is...
B3N	Mg/(Ca + Mg)	< 40 %	57%
B3N	Ca/ (Ca + SO4)	> 50 %	50%
B5	TDS/Conductivity	>0.55 & <0.75	0.51
B5	Mg/(Ca + Mg)	< 40 %	48%
B5	Na/(Na + Cl)	> 50 %	25%
B6	TDS/Conductivity	>0.55 & <0.75	0.49
B6	Mg/(Ca + Mg)	< 40 %	48%
B6	Na/(Na + Cl)	> 50 %	25%
B151	Mg/(Ca + Mg)	< 40 %	52%
B151	Na/(Na + Cl)	> 50 %	28%

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. One reference the Permittee may read to learn more about these reliability checks and some of the geological and other factors that could influence them is Chapter 4 of *Water Quality Data: Analysis and Interpretation* by Arthur W. Hounslow.

5. Were DMR forms submitted for all required sites?

1 st month,	YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>
2 nd month,	YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>
3 rd month,	YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>

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 actions are necessary at this time.