

WATER QUALITY MEMORANDUM

Utah Coal Regulatory Program

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#3197

April 16, 2009

TO: Internal File

THRU: Daron Haddock, Permit Supervisor *DH*

FROM: James D. Smith, Environmental Scientist III *JDS* 04/16/09

RE: 2008 First Quarter Water Monitoring, Canyon Fuel Company, LLC,
Skyline Mine, C/007/0005, Task ID #3197

The Skyline Mine is an operating longwall mine. Current operations are in the North Lease area of the mine. Many mined-out areas of the mine have been sealed-off. Water monitoring requirements can be found in Section 2, especially pages 2-36, 2-36a, 2-36b, 2-37, 2-37a, and 2-39aa of the MRP.

1. Were data submitted for all of the MRP required sites? YES NO

First Quarter monitoring requires information from 15 sites.

In-mine

The MRP requires First Quarter sampling of 6 "in-mine, roof drippers", although all six are actually monitored at the surface. CS-12, CS-14, 3, MD-1, and SRD-1 are mine discharge stations; CS-13 is a french drain; and ELD-1 is the combined output of JC-1 and JC-3. The Permittee submitted all required information for the in-mine sites.

Springs

The MRP does not require First Quarter sampling for springs.

Streams

The MRP requires First Quarter sampling at 4 stream-sites: CS-6, VC-6, VC-9, and VC-10. The Permittee submitted all required information for the stream sites.

Flow at sites NL-1 through NL-42 is measured monthly for 12 months before, during, and 12 months after being undermined by the longwall and reported in the Annual Hydrologic Report (Sec. 2.4.4) and is submitted to the database. The Permittee commits to measuring the flow monthly in June through October; flow will be measured during other months if the sites are accessible. Flow was reported for NL-21, NL-22, and NL-23 during the First Quarter 2008.

Wells

For the First Quarter, only monthly flow measurement is required at JC-1 and JC-3 (the combined flow from these two wells is reported as ELD-1, an in-mine, roof dripper). No other wells are monitored during the First Quarter. The Permittee submitted all required information for the well sites.

UPDES

The UPDES Permit/MRP requires weekly monitoring of 3 outfalls: 001, Sedimentation Pond Discharge to Eccles Creek at the Portal; 002, Sedimentation Pond Discharge to Eccles Creek at the Loadout; and 003, the Sedimentation Discharge at the Waste Rock Disposal Site. DMR parameters are reported to the database as operational parameters; those parameters that are not included in the operational parameter lists in the MRP - such as sanitary wastes, visible foam, and floating solids - are not reported in the electronic submittal to the Division.

Well JC-3 is permitted as a UPDES point by PacifiCorp; for JC-3, Skyline reports only monthly flow during the 1st quarter, and monthly flow and quarterly field parameters, TSD, TSS, and T-P during the 2nd, 3rd, and 4th quarters. JC-3 has not discharged since July of 2004.

The Permittee submitted all required information for the UPDES sites for the First Quarter. Only outfall 001 had reported flow.

2. Were all required parameters reported for each site? YES NO

SITE	DATE	MISSING PARAMETERS
UT0023540-001	3/14/08	Water temperature, field specific conductivity, and total Fe
UT0023540-001	1/8, 1/24, 2/13, 2/26, and 3/27/08	Total Fe

3. Were any irregularities found in the data? YES NO

Listed parameters were more than two standard deviations from the mean.

CS-13: bicarbonate as CaCO₃.

Cation/anion balance was within 5% for all samples that were analyzed for the appropriate ions.

The Division calculated the following Reliability Checks, based on previous

Water Quality Reports for the Skyline Mine (for further information on Reliability Checks, see Chapter 4, *Water Quality Data: Analysis and Interpretation* by Arthur W. Hounslow.)

- TDS/Conductivity
 - Out of 18 samples for which both field specific conductivity and TDS were determined, only 5 have TDS/Conductivity ratios < 0.76 , and only one has a ratio < 0.6 ; 7 have a ratio > 0.8 . This ratio is typically between 0.55 and 0.76
 - All 6 samples for which both field specific conductivity and total cations were determined have a Conductivity/Cations ratio of 0.91 or less; this ratio should be close to 1.00.

These two Reliability Checks may be indicating that the meter used to measure field specific conductivity is reading low and that the Permittee needs to calibrate it more frequently, or possibly replace it.

- For CS-13, VC-9, CS-12, CS-6, CS-14, and VC-6, the Division calculated Reliability Checks that involve dissolved Ca, Mg, K, Na, Cl, and SO₄. There were not data on dissolved ions at other sites.
 - Ideally the Mg/(Ca + Mg) ratio is $< 40\%$.
 - Of the 6 samples, 5 have a ratio $< 40\%$
 - The CS-12 ratio is right at 40%.
 - All 6 have a Ca/(Ca + SO₄) ratio $< 50\%$.
 - Ideally the ratio is $> 50\%$.
 - Because Mg/(Ca + Mg) values are within the expected range, SO₄ values may bear watching.
 - The K/(K + Na) ratio should be $< 20\%$.
 - At CS-14 it is 23%.
 - At the other 5 sites, the ratio ranges from 7 to 13%.
 - The Na/(Na + Cl) ratio should be $> 50\%$.
 - At CS-13 it is 38%
 - The ratio is 54% to 93% at the 5 other sites.

When Reliability Checks do not meet the target value, it does not necessarily mean that the analyses are in error; however, it does indicate the collection and analysis procedures might benefit from some extra scrutiny by the Permittee. An analysis and explanation of the inconsistencies by the Permittee would help to increase the Division's confidence in the procedures used for sample collection and analysis. 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.

UPDES

The UPDES permit in effect during the First Quarter (dated Nov. 23, 2004) allows for a DML for TDS of 1,310 mg/l and a 30-day average of 500 mg/l. There is no tons/day DML unless the 30-day average exceeds 500 mg/l; then a 7.1 tons/day limit is imposed.

For the First Quarter of 2008, the discharge at UPDES Permit discharge point UT0023540-001 Permittee did not exceed the DML for TDS; however, the 30-day average remained well above 500 mg/l and the tons/day load during the First Quarter averaged over 13 tons/day (calculated from the TDS and flow data in the database). Because of such ongoing exceedences, Canyon Fuel Company participates in the Salinity Offset Plan that was approved by DWQ on January 5, 2005 (retroactive to September 2004).

4. On what date does the MRP require a five-year re-sampling of baseline water data.

Beginning in 2010 and every five years thereafter, baseline analyses are to be done on samples collected during the 3rd Quarter (MRP p. 2-44).

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

No further actions are necessary at this time.

6. Does the Mine Operator need to submit more information to fulfill this quarter's monitoring requirements? YES NO

Several parameters are missing from data for UPDES discharge point UT0023540-001: dissolved Fe is missing from 5 samples, and total Fe, water temperature, and field specific conductivity from one.

7. Follow-up from last quarter, if necessary.

None.

8. Did the Mine Operator submit all the missing and/or irregular data (datum)?

There were no missing or irregular data.