

#3743

OK

# WATER QUALITY MEMORANDUM

## Utah Coal Regulatory Program

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August 23, 2011

TO: Internal File

FROM: April A. Abate, Environmental Scientist III *AAA 8/23/2011*

THRU: Steve Christensen, Permit Supervisor *SC for*

SUBJECT: 2011 1st Quarter Water Monitoring: Bear Canyon Mine, C/015/0025,  
Task ID # 3743

The monitoring plan is described on pages 7-48 through 7-60A of the MRP. It includes Tables 7-12 through 7-17. The mine is now operating under a permit held by Castle Valley Mining, LLC.

**1. Were data submitted for all of the MRP required sites?**

**In-mine**

YES  NO

A total of two in-mine samples are listed in the Bear Canyon water monitoring plan: SBC-9A and SCC-3. The Mohrland Portal, sample SCC-3 is sampled for field parameters only in May, August and October of each year. The Hiawatha Seam sample, SBC-9A is sampled for operational parameters in February, May, August, and October (quarterly). In-mine sample SBC-9A was sampled on February 15, 2011.

**Springs**

YES  NO

Most of the spring samples in and around the Bear Canyon mine are sampled for field, or either operational or expanded list parameter once every five years prior to permit renewal. Active springs requiring operational parameter sampling during the months of February, May, August, and October include: SBC-4 Big Bear Springs, SBC-5-Birch Spring, SBC-17 (16-7-24-4). SBC-14 requires operational monitoring in May, August and October only. Currently active springs requiring field parameter only measurements during the months of May, August and October include: SBC-12, SBC-15, SBC-16, SBC-16A, SBC-16B.

During the 1st quarter, the required springs SBC-4, SBC-5, and SBC-17 were monitored during the month of February. SBC-17 was not accessible due to high snow.

**Streams**

YES  NO

Active stream samples required for quarterly operational monitoring include: BC-1, BC-2, BC-3, BC-4, CK-1, CK-2. Stream location FC-1 is sampled for field parameters only during the months of May, August and October. No flow was reported during the 1st quarter from stream samples BC-3 and BC-4. Stream location CK-1 was inaccessible due to snow.

**UPDES**

YES  NO

Five stations are monitored for the Bear Canyon UPDES permit on a monthly basis. None of these stations reported any monthly flow data from the five stations during the 1st quarter of 2011 with the exception was discharge point UTG040006-004 - Mine Water to Bear Canyon Creek, which reported bi-monthly discharges during the 1st quarter of 2011. Flow from this point averaged this quarter at 44 gallons per minute (gpm) and TDS concentrations averaged 1,279 mg/L. The Permittee appears to be having difficulty meeting their required TDS permit limits of 500 mg/L average over a 30 day period. The Bear Canyon UPDES permit requires that if one outfall cannot meet the 30-day average of 500 mg/L at a discharge point then the sum of all permitted outfalls must meet 2,000 lbs per day limit.

**Wells**

YES  NO

Three wells are monitored at the mine. SBC-3 (Creek Well) is monitored for operational parameters on a quarterly basis. MW-114 and MW-117 are gauged for depth to water level only during the 2<sup>nd</sup>, 3<sup>rd</sup> and 4<sup>th</sup> quarters. SB-3 was monitored as required for operational parameters during this quarter.

**2. Were all required parameters reported for each site?**

**In-mine**

YES  NO

The TDS parameter for all in-mine locations is no longer sampled for per the revision to the groundwater Table (table 7-13) in the Bear Canyon water monitoring plan. According to rule 645-301.724.100 it is permissible to collect TDS samples *or* specific conductance corrected to 25 degrees Celsius.

**Springs**

YES  NO

The TDS parameter for all spring locations is no longer sampled for per the revision to the groundwater Table (table 7-13) in the Bear Canyon water monitoring plan for the same reason as stated above.

**Streams** YES  NO   
**UPDES** YES  NO

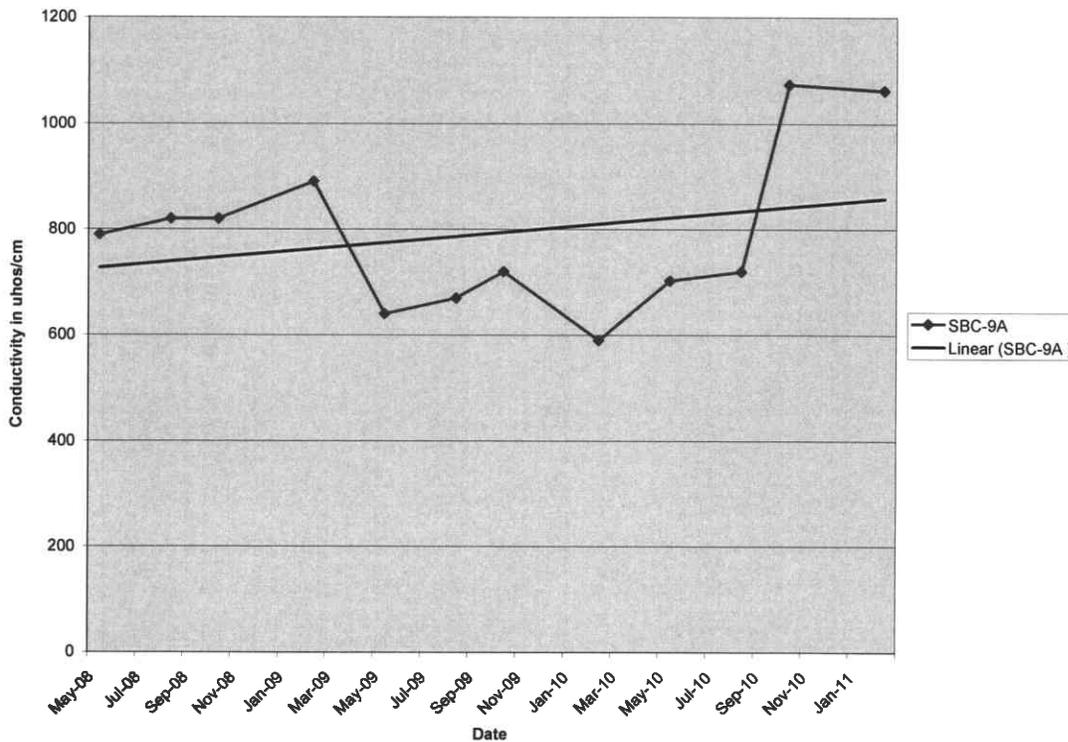
Flow was not reported on January 28, 2011. No data was reported on February 16, 2011 either other than TDS. Is this information in the discharge monitoring report (DMR) report?

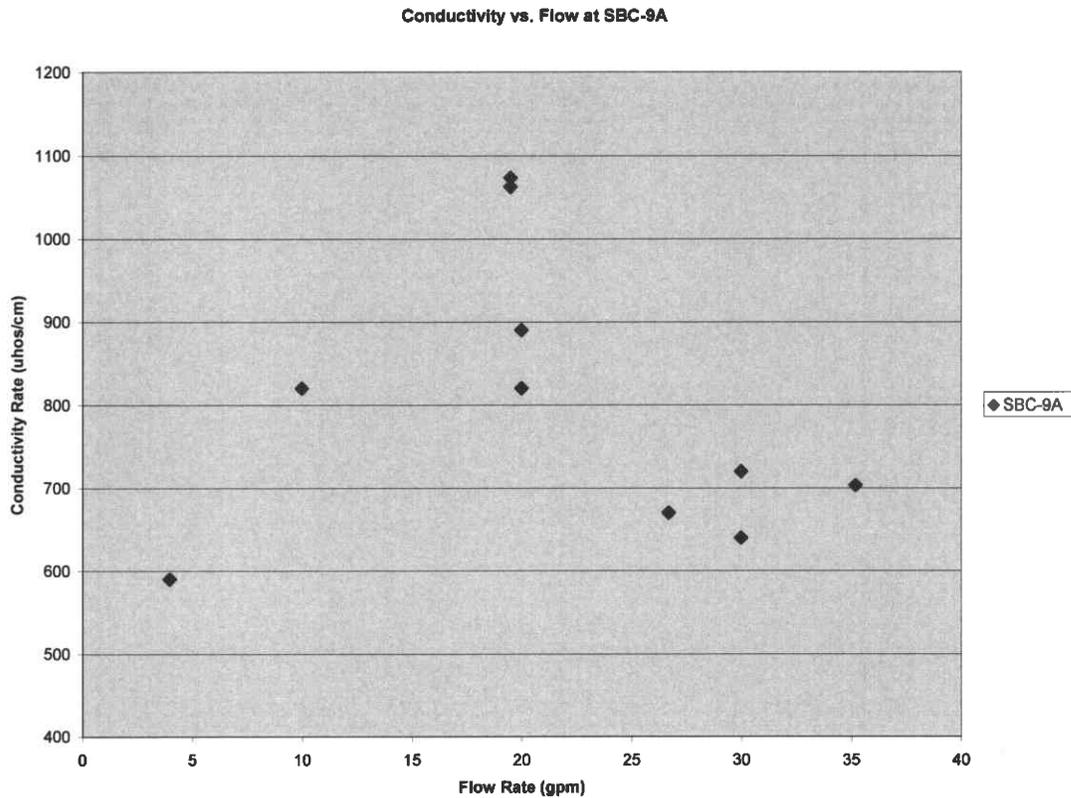
**3. Were any irregularities found in the data?**

**In-mine** YES  NO

Conductivity rates in water samples have increased over the past two quarters while flow rates have decreased. This sometimes indicates a correlation since conductivity measures the water's capability of conducting an electrical current. The relationship between total dissolved solids (TDS) and conductivity is a function of the type and nature of the dissolved cations and anions in the water. In general, TDS in parts per million (ppm) usually ranges from 0.5 to 1.0 times the electrical conductivity.

Conductivity vs. Time in In-Mine Sample SBC-9A





Although there is a trend showing an increase in conductivity on the first chart, the second scatter plot chart (above) indicates that conductivity rates in this sample do not increase with flow in sample SBC-9A.

**Springs** YES  NO

**Streams** YES  NO

All stream samples for total dissolved solids detections during this quarter were well below the state water quality standards of 1,200 mg/L.

**UPDES** YES  NO

Mine water from Bear Canyon Creek at Outfall 004 was the only point that discharged this quarter. Mine water has been consistently discharging from this location since May 2009.

**Wells** YES  NO

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

Baseline parameters are to be taken in August of year 5 prior to each permit renewal. The parameters are referred to as the "Expanded List" in Tables 7-13 and 7-17 of the MRP. Permit renewal date was November 02, 2010.

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

The Division has expressed interest in visiting the mine to observe sample locations and collect random samples at water monitoring locations to be determined. This is currently being coordinated with the operator. Additionally, geospatial location data for several of the water monitoring locations should be reconfirmed at that time so that the Division's database can be updated accordingly.

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

Please submit additional data relating to flow and other required parameter data from the January 28, 2011 and February 16, 2011 sampling events at UPDES monitoring location UTG040006-004.

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

None.

**8. Did the Mine Operator submit all the missing and/or irregular data?** YES  NO

See item #6.