

# WATER QUALITY MEMORANDUM

## Utah Coal Regulatory Program

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September 23, 2014

TO: Internal File

THRU: Steve Christensen, Permit Supervisor 

FROM: Keenan Storrar, Hydrologist *Keenan Storrar*

RE: Fourth Quarter of 2013 Water Monitoring, PacifiCorp, Deer Creek Mine. C/015/0018, Task ID #4472

The Deer Creek Mine monitoring plan is described in Appendix A of Volume 9 of the MRP.

1. **Were data submitted for all of the MRP required sites?** YES  NO
2. **Were all required parameters reported for each site?** YES  NO
3. **Were any irregularities found in the data?**

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

**Springs** YES  NO

79-2 October – pH  
89-60 October – dissolved sodium, total dissolved solids  
89-65 October – temperature  
89-68 October – dissolved calcium, acidity  
91-72 October – bicarbonate  
Burnt Tree October – pH, dissolved sodium  
Em Pond October – pH  
JV-9 October - temperature  
MF 213 October – dissolve sodium  
MF 7 October – dissolved sodium  
MFR-10 July – pH  
NEWUA Meter-3 December – temperature  
RR 15 October - bicarbonate  
Sheba Springs October – pH, dissolved calcium  
SP1-26 October – bicarbonate

SP1-29 October – bicarbonate, total hardness, total dissolved solids  
UJV 101 October – dissolved magnesium, sulfate  
UJV 206 October – bicarbonate, sulfate, total alkalinity

**Streams**

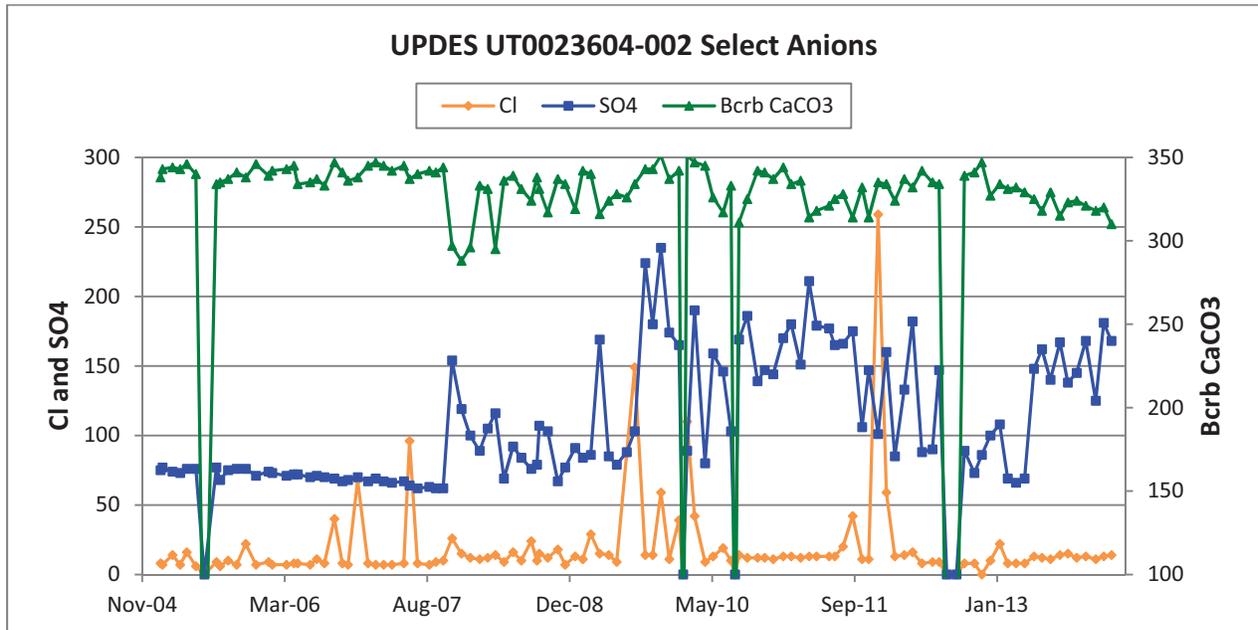
YES  NO

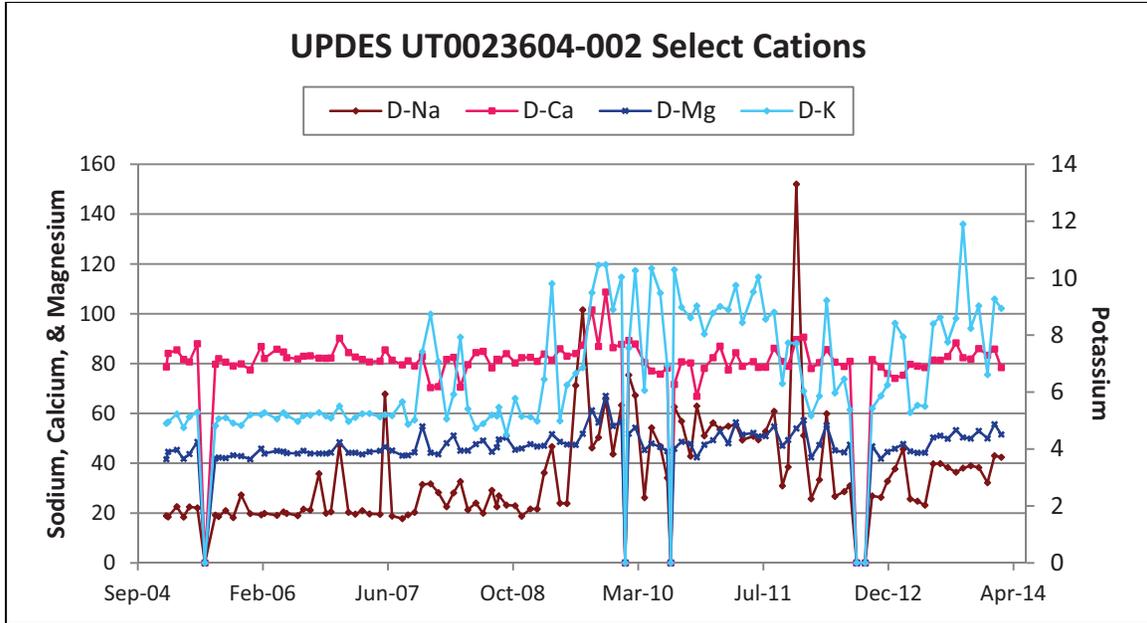
DCR04 November & December – elevated flow  
DCR06 November & December – elevated flow  
ICB October – bicarbonate, total alkalinity

**UPDES**

YES  NO

Recently, potassium values have frequently been outside two standard deviations from the mean at UT0023604-002. The following charts show Cl, D-Na, D-Ca, D-Mg ion concentrations have been trending upwards in recent years, while bicarbonate and D-K have been downward trending.

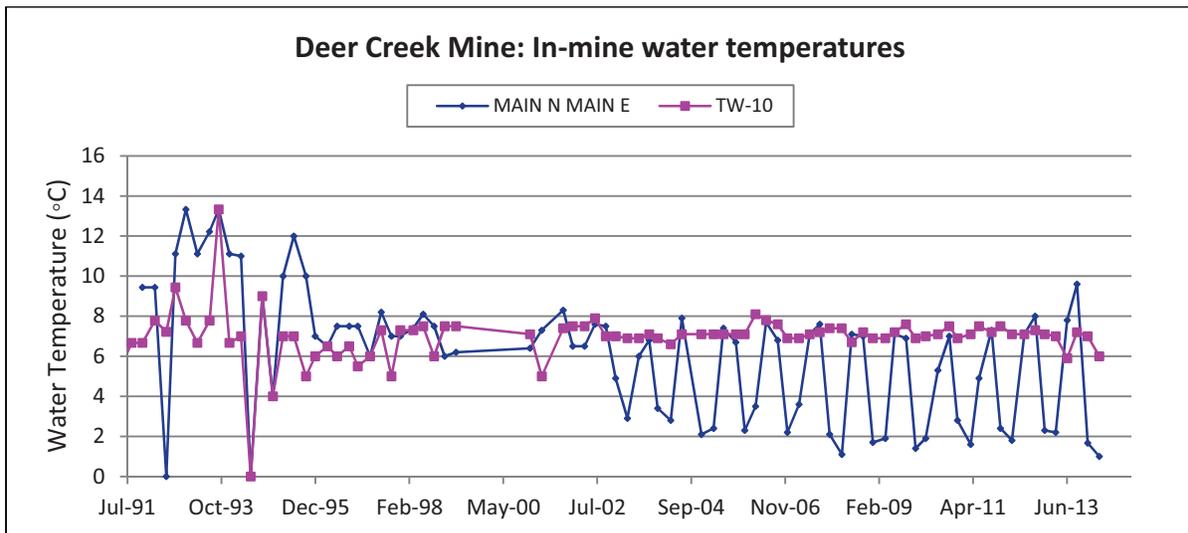




**In-mine**

YES  NO

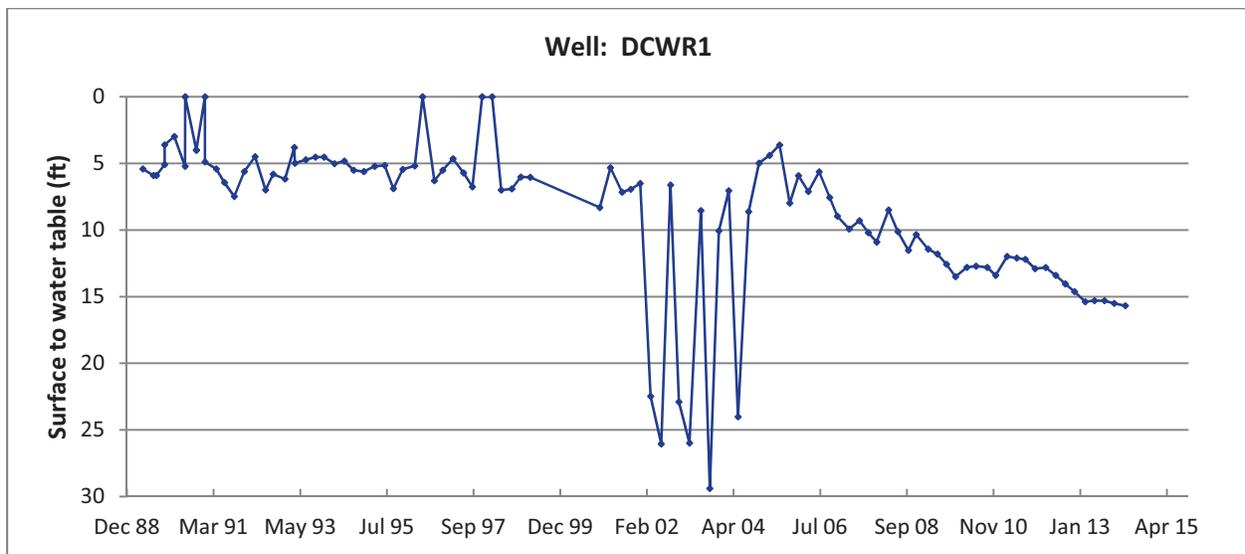
Dissolved sodium and total dissolved solids were more than two standard deviations from the mean at Main N Main E during December. The water temperature at Main North Main East varies seasonally year-after-year (see following chart), indicating that this in-mine source is most likely fed by infiltrating surface water rather than draining surrounding strata. The temperature at TW-10 shows some seasonal variation, but it is not as definitive as at Main North Main East.



**Wells**

YES  NO

Although it hasn't been flagged as varying from the mean by more than two standard deviations, water level at DCWR1 has been dropping since 2006 (following a small rise in 2004-2005). TDS was dropping at a similar rate, but now appears to have stabilized. These changes are probably from factors other than disposal of waste rock at this site: a similar drop in water level is seen at WCWR1 at the Cottonwood/Wilberg Mine Waste Rock Disposal Site.



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

Baseline analyses were performed in 2001, 2006 and 2011 and are to be repeated every 5 years. Baseline analyses will next be conducted in 2016.

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

There is no indication of trends or extremes in any of the parameter values. No further action recommended at this time. However, the operator has requested to cease monitoring at numerous monitoring locations. The Division is evaluating this request and will conduct field visits during the 2014 field season for a selection of locations.

**6. Does the Mine Operator need to submit more information to fulfill this quarter's monitoring requirements?**

YES  NO

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

None.

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

NA.

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