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WATER QUALITY MEMORANDUM

Utah Coal Regulatory Program

March 30, 2011

TO: Internal File

THRU: Jim Smith, Permit Supervisor *JS 05 April*

FROM: Steve Christensen, Environmental Scientist *SCC*

RE: 2010 Third Quarter Water Monitoring, West Ridge Resources, West Ridge Mine, Task ID #3643

The West Ridge Mine is currently operational in the Book Cliff Mountain range of Carbon County, UT. Water monitoring data is submitted quarterly to the Division EDI database. Beginning on page 7-34 of the approved Mining and Reclamation Plan (MRP), water monitoring protocols and sampling requirements are provided for surface water, ground water, monitoring wells and UPDES outfalls in Tables 7-1, 7-2, 7-3 and 7-4 respectively.

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

Springs

The approved MRP outlines the monitoring of 10 springs. Four of the springs (SP-12, SP-13, SP-15 and SP-16) discharge from the lower slopes of West Ridge in Whitmore Canyon. Two springs (WR-1 and WR-2) discharge from the upper slope of West Ridge in Whitmore Canyon. One spring (SP-8) discharges in the upper drainage of C Canyon. Hanging Rock Spring (S-80) is located near the northwest corner of the permit area and discharges from the east slopes of Whitmore Canyon. Spring 101 monitors Little Spring at the bottom of West Ridge. Spring 102 is located within Spring Canyon.

Data was submitted for all ten of the spring monitoring sites.

Streams

The approved MRP outlines the monitoring of 12 stream sites. Grassy Trail Creek is the only perennial stream in the permit and adjacent areas. Operational sampling is required quarterly for six stream sites (ST-3, ST-8, ST-9, ST-10, ST-13 and ST-15). Sites ST-11 and ST-12 were added to the water-monitoring program based upon field inspections conducted in 2005.

The field inspections were conducted as part of a proposed lease expansion by the Permittee. At the time of the inspections, the Bear Canyon drainage had exhibited measurable flow. As a precaution, sites ST-11 and ST-12 were established within that drainage. Since that time (summer of 2005) neither site has produced appreciable/measurable flow. However, the sites remain as part of the surface water monitoring program and are inspected quarterly.

All 12 stream monitoring sites were accessible and data was submitted for each site.

Wells

Quarterly operational sampling is required for one groundwater-monitoring well (Site DH 86-2).

Monitoring well DH 86-2 was sampled during this quarter and all required data submitted.

UPDES

Operational sampling is required monthly for two active UPDES sites (Permit # UT0025640). Site D001 is the mine sites primary sediment pond discharge to the ephemeral 'C' Canyon drainage. Site D002 is the mine-water discharge to the ephemeral 'C' Canyon drainage. Specific limitations and self-monitoring requirements as outlined in the UPDES permit are presented in the table below:

Effluent Characteristics	Effluent Limitations
Flow, MGD (million gallons per day)	1.0
Total Suspended Solids (TSS), ppm	70
Total Iron, ppm	1.3
Oil & Grease, ppm	10
Total Dissolved Solids (TDS), ppm	2,000
pH	9

Data was submitted for UPDES Outfalls 001 and 002.

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

Surface Water Monitoring Sites: *All required parameters were reported for each of the surface water monitoring sites.*

Groundwater and Well Monitoring Sites: *All required parameters were reported for the spring and well monitoring sites.*

UPDES: *All required water quality parameters were reported for Outfalls 001 and 002.*

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

Surface Water Monitoring Sites-

Of the 12 surface water monitoring sites, six reported no observable flow for the quarter (ST-6A, ST-7, ST-11, ST-12, ST-13 and ST-15).

ST-5- Flow values at monitoring site ST-5 have been historically erratic. The primary source of flow at this ephemeral drainage monitoring site is the mine-water discharge and as a result, is subject to change as mining activity is altered underground. The reported flow at this site has been reported well outside of two standard deviations from the mean for the last three quarters (1,482 gpm, 1,197 gpm and 1036 gpm respectively). As the flow at this site is generated primarily from the mine-water discharge, particular attention has been paid to the TSS and T-Fe values.

The reported TSS value for site ST-5 was 16 ppm. Last quarter the TSS value was 17 ppm (an increase from the 1st quarter's value of 12 ppm). However, these concentrations are significantly lower than what was reported the last three quarters of 2009 (22 ppm, 29 ppm and 28 ppm respectively).

T-Fe values continue to decline at ST-5. The previous two quarters reported T-Fe concentrations of 0.824 (10-1), 0.53 (10-2). The T-Fe value for this quarter was reported as 0.24 ppm.

ST-6- As with site ST-5, the majority of the flow within this drainage comes from the mine-water discharge.

As with monitoring site ST-5, ST-6 has historically produced erratic flow values. With the exception of flow, all reported concentrations of the required water quality parameters were within two standard deviations from the mean. Flow values were again elevated at ST-6. The reported flow value was 1,339 gpm. The average flow is 247.3. The increase in flow represents an increase in mine-water discharge.

ST-3- An increase in TDS and its associated components was reported this quarter. Increases in D-Mg, D-Na, SO₄, T-Alk, T-hdns., TDS, T-Cats, T-Anis were reported. The elevated concentrations will be closely monitored in subsequent quarters to determine if a trend is emerging.

ST-8- A decrease in carbonate was reported this quarter. The reported value was 6 ppm. The average of the data set is 17.4 ppm.

ST-9- Elevated concentrations of D-Na and SO₄ were reported for this stream monitoring site. The concentrations of these parameters had been steadily following historic trends until this quarter. Continued monitoring will be conducted to determine if a trend is emerging.

Groundwater Monitoring Sites-

SP-101- This spring monitoring site had reported elevated levels of D-Na during the 1st quarter of 2010 with an elevated concentration of calcium reported the 4th quarter of 2009. Both of those parameters returned to established historical trends this quarter. However, an increase in specific conductance was reported.

SP-102- Spring monitoring site SP-102 has reported elevated concentrations/values for dissolved for TDS and its associated components for the 2nd consecutive quarter. Additionally, both the field pH and laboratory pH values decreased this quarter.

SP-12- Spring monitoring site SP-12 continues to report elevated concentrations for TDS and its associated components (D-Ca, D-Mg, D-Na, SO₄, D-Ca). Elevated TDS concentrations were reported the 2nd quarter of 2010. The site was inaccessible during the 1st quarter of 2010; however, elevated concentrations of the aforementioned parameters were reported the 3rd and 4th quarter of 2009 (WQ09-3 and WQ09-4).

SP-13- Spring monitoring site SP-13 reported elevated concentrations for D-Ca, D-Na, T-Alk., T-hdns., T-Cats for this quarter. Elevated D-Na concentrations were reported the previous quarter.

SP-15- Spring monitoring site SP-15 had reported elevated concentrations for SO₄ and T-Hardness the previous quarter. This quarter, the reported SO₄ and T-Hardness concentrations returned to within established historical trends.

SP-8- Spring monitoring site SP-8 reported elevated concentrations of D-Na, T-Alk and T-Cats the previous quarter. Elevated concentrations for D-Mg and T-Hardness were reported this quarter.

Monitoring Well DH 86-2 Elevated TDS concentrations were reported the previous three quarters. However; the reported TDS concentrations returned to historical values this quarter. Continued monitoring will be conducted in order to evaluate what may be causing this shift in water chemistry.

UPDES Sites- (UPDES Permit #UT0025640)

Site D001- UPDES outfall D001 (primary sediment pond at mine site) did not report a discharge this quarter.

Site D002- UPDES Outfall 002 water quality data was obtained three times this quarter. The reported concentrations for TSS and TDS were well below the compliance limits as established by the UPDES discharge permit.

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

On page 7-35 of the approved MRP, the Permittee commits to collecting baseline samples *“from each spring in the monitoring program during the low flow (fall) sampling and from each stream monitoring sites during low flow every five years beginning with the first mid-term review.”*

Baseline sampling of ground and surface water sites will be required during the 3rd quarter of 2011.

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

Continue to monitor the data irregularities cited above for any trends.

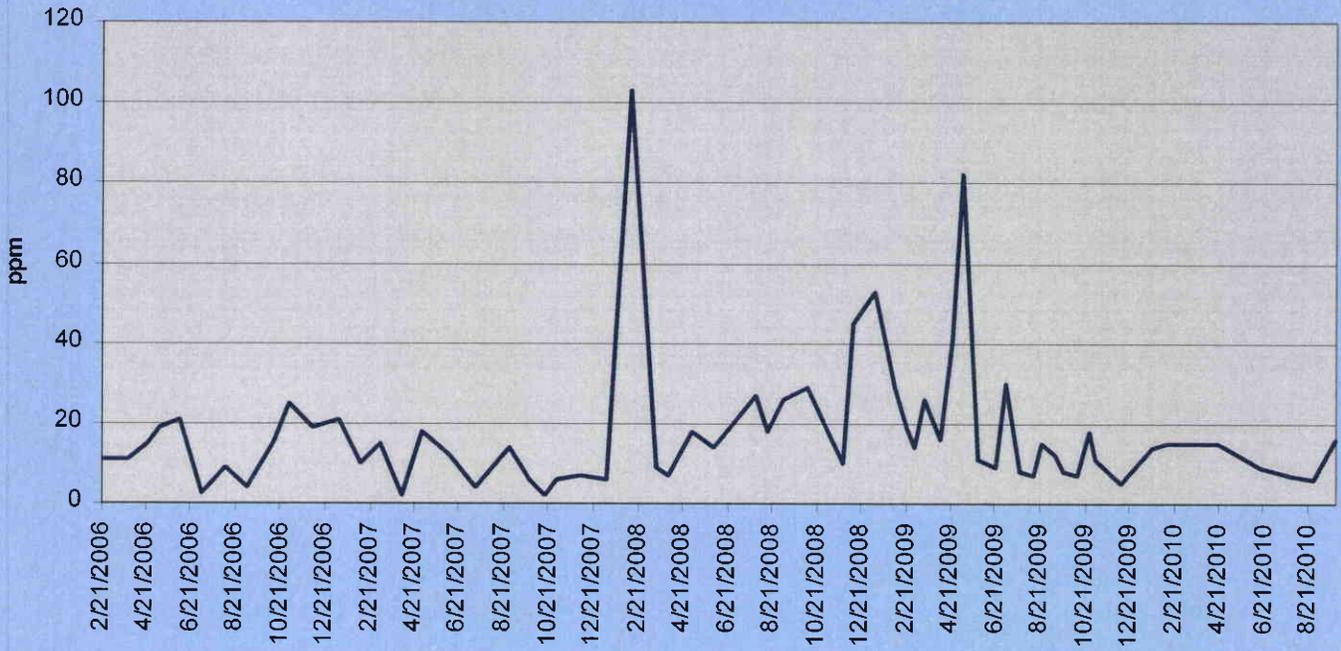
6. Does the Mine Operator need to submit more information to fulfill this quarter's monitoring requirements?

YES NO

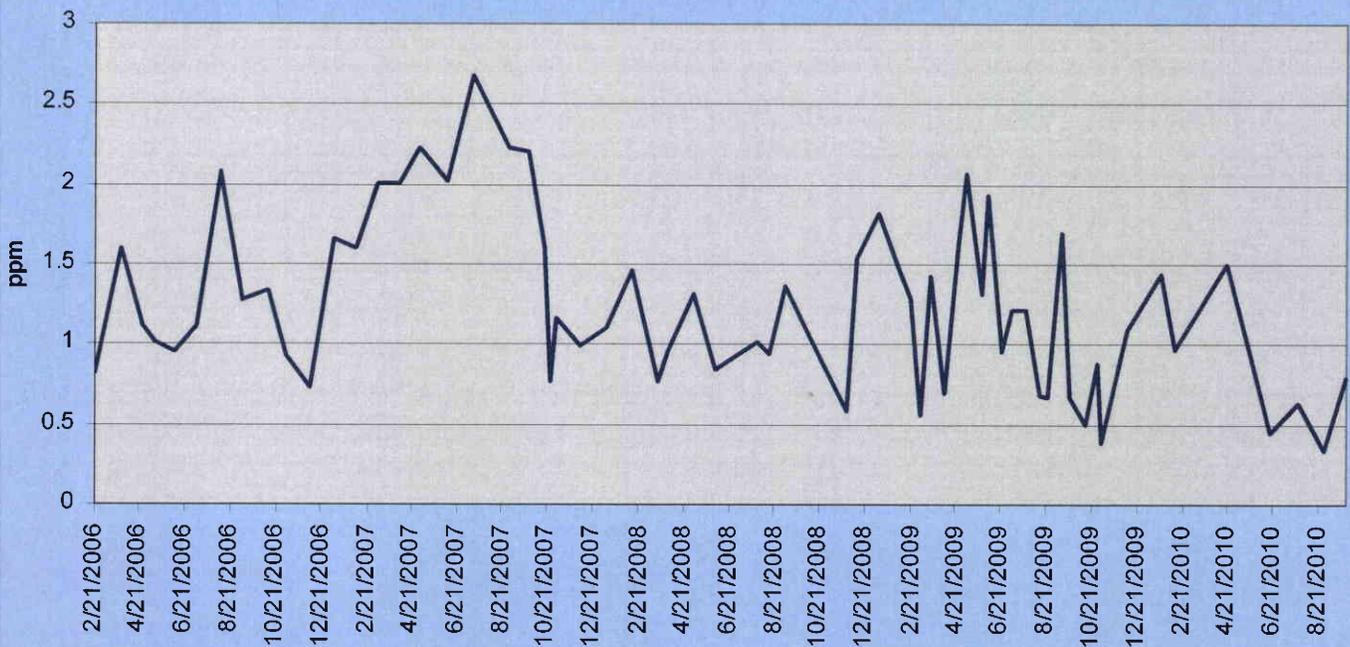
7. Follow-up from last quarter, if necessary.

YES NO

UPDES Outfall D002: TSS vs. Time



UPDES Outfall D002: Total Iron (T-Fe) vs. Time



Monitoring Well DH 86-2

