

**WATER QUALITY  
MEMORANDUM  
Utah Coal Regulatory Program**

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March 29, 2013

TO: Internal File

THRU: Daron Haddock, Permit Supervisor *JDH*

FROM: Steve Christensen Environmental Scientist *SC*

RE: 2012 3<sup>rd</sup> Quarter Water Monitoring, Consolidation Coal Company, LLC,  
Emery Deep Mine, C/015/0015, WQ12-3, Task ID #4174

The Emery Deep Mine is currently an in-active coalmine. The coal mining operation previously utilized room and pillar mining techniques with the use of a continuous miner machine. The mine went into temporary cessation in late 2010. The coal reserves were fully extracted (thus falling into the planned subsidence category).

The approved Mining and Reclamation Plan (MRP) outlines the water monitoring requirements beginning on page VI-28. Table VI-17, Emery Mine Hydrologic Monitoring Program contains a comprehensive list of all groundwater (springs/seeps), surface water, groundwater monitoring wells and Utah Pollutant Discharge Elimination System (UPDES) outfalls. Plate VI-4, Ground Water Monitoring Well and Surface Water Monitoring Site Location Map depicts the locations of the various ground and surface water monitoring sites (including the UPDES discharge/outfall points).

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

**Springs**

The MRP outlines the sampling of 5 springs within the permit and adjacent area. Flow and field parameters are sampled quarterly with water quality samples collected in the 2<sup>nd</sup> and 3<sup>rd</sup> quarters.

For the second consecutive quarter, the Permittee reported a measurable flow for only spring monitoring site SP-11. Spring monitoring sites, SP-10, SP-13, SP-14 and SP-15 did not produce a measurable flow this quarter.

## **Streams**

The MRP outlines the sampling of 8 surface water monitoring stations within the permit and adjacent area.

Six surface water monitoring sites reported a measurable flow (1, 10, 1A, 2, 3, and 4). Sites 5, 8, 9 and 10 reported 'no observable flow' for this quarter.

## **Wells**

The MRP outlines the sampling of 15 ground water monitoring wells within the permit and adjacent area (See Table VI-17). Of the 15 wells, 5 are monitored quarterly for water level only. The remaining 10 wells are sampled for water quality on a quarterly basis with the exception of wells RDA-2, RDA-4, and RDA-6 (sampled annually in the second quarter for both field parameters and water quality).

Data was submitted for all of the water monitoring wells.

## **UPDES**

The Emery Deep Mine's UPDES Permit, #UT0022616, identifies 9 outfalls (001, 002, 003, 004, 005, 006, 007, 008 and 009). The discharges from each of the outfalls ultimately report to Quitchupah Creek, a tributary of Muddy Creek. The receiving waters are designated according to Utah Administrative Code (UAC) R317-2-13.1 as 2B, 3C and 4. Historically, only Outfalls 001 and 003 have ever recorded a discharge. UPDES Outfall 008 is no longer active.

The Water Quality Board for the Division of Water Quality (DWQ) has approved a rule change that would allow for a site specific, in-stream standard for the Emery Deep's effluent limitations. The modified standard will establish an allowable TDS concentration of 3,800 parts per million (ppm) and a 2,000-ppm concentration of sulfate. DWQ representatives have indicated that they are waiting for Environmental Protection Agency (EPA) approval before the permit is modified from its current standard of 2,600-ppm (the 2,600 ppm standard became effective on November 30<sup>th</sup>, 2011). The previous standard for TDS was 3,500 ppm).

DWQ has been in negotiations with the Permittee for several years regarding a modification to their existing UPDES permit. The Permittee has entered into a compliance schedule as allowed under the rules of the Clean Water Act to modify their permit. The compliance schedule would produce a site-specific standard for the Emery Deep UPDES permit.

<b>UPDES Parameter</b>	<b>Established Limit</b>
TSS	70 ppm (daily maximum)
T-Fe	2.1 ppm
Oil/Grease	10 ppm
pH	6.5-9.0
TDS	2,600 ppm as of November 30 <sup>th</sup> , 2011
SO4	2,000 ppm

The Permittee submitted data for all required UPDES sites. Outfall 003 was the only monitoring point to report a discharge for this quarter.

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

**Spring Monitoring Sites**

All required data was submitted for the spring monitoring sites (as outlined in Table VI-17) that produced a flow.

**Surface Water Monitoring Sites**

The Permittee submitted all required water quality data this quarter for the surface water monitoring sites that produced a measurable flow.

**Water Monitoring Wells**

The Permittee submitted the required data for all wells that are accessible.

**UPDES Monitoring Sites**

Outfall 003 was the only outfall that produced a discharge during the quarter. All required parameters were reported for Outfall 003.

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

The following samples were reported outside of two standard deviations from the mean:

Sample ID	Date	Type of Site	Parameter	Value	STD. Deviations
SP-11	8/20/2012	Spring	Bicarbonate	406 ppm	2.07
SWMS-1A	8/24/2012	Stream	TSS	2,162 ppm	6.57
SWMS-2	8/24/2012	Stream	SO4	6,246 ppm	2.96
SWMS-2	8/24/2012	Stream	T-Hdns	3,023 ppm	2.18
SWMS-2	8/24/2012	Stream	TDS	9,918 ppm	2.89
SWMS-2	8/24/2012	Stream	T-Mg	464.41 ppm	2.43
SWMS-2	8/24/2012	Stream	T-K	25.3 ppm	2.88
SWMS-2	8/24/2012	Stream	T-Na	1,791.7 ppm	3.09
SWMS-2	8/24/2012	Stream	Cond (fld)	10,070 umhos/cm	3.26
SWMS-2	8/24/2012	Stream	D-Mg	464.41 ppm	2.12
SWMS-2	8/24/2012	Stream	D-K	25.3 ppm	3.05
SWMS-2	8/24/2012	Stream	D-Na	1,791.7	3.04
Outfall 003	9/19/2012	Mine-water Q	T-Fe	1.55 ppm	2.12
H-U	9/6/2012	Monitoring Well	Depth	102.9'	3.72
SM1-3	8/20/2012	Monitoring Well	T-Alkalinity	257 ppm	2.17

The same concentration was reported for several parameters for surface water monitoring site 2 (SWMS-2) during 2<sup>nd</sup> quarter 2012. 1,732 ppm was reported for both dissolved sodium (D-Na) and total sodium (T-Na). 20.55 ppm was reported for both dissolved potassium (D-K) and total potassium (T-K). 487.98 ppm was reported for total magnesium (T-Mg) and dissolved magnesium (D-Mg). The Permittee contacted the lab that conducted the analysis and confirmed that the reported concentrations were accurate.

Water monitoring well H-U continues to show a drop in water level. The water level in monitoring well H-U has developed a downward trend since November 24<sup>th</sup>, 2012. It's unclear as to what is causing the drop in water level.

On October 11<sup>th</sup>, 2012, the Division received a citizen complaint from Mr. Jon Sundstrom. Mr. Sundstrom is a property owner in the area directly adjacent to the Emery Deep Mine permit boundary (T 22 S, R 06 E, SE ¼ of Section 15). Mr. Sundstrom is concerned that mining activity at the Emery Deep Mine may be impacting state appropriated water rights on his property. Mr. Sundstrom indicated that depressions have been forming on his property. On November 27<sup>th</sup>, 2012, the Division conducted a field inspection of the Sundstrom property. At this time, it's uncertain as to whether mining activity is producing impacts on the Sundstrom property. The Division will continue to monitor water levels in well H-U (located in close proximity to the Sundstrom property) and conduct additional field inspections in the spring of 2013.

Several monitoring wells have been reported as dry or having some type of obstruction in them. Monitoring well RDA-6 was reported as being "dry" during the 2<sup>nd</sup> quarter and as having "hit something at 14.5 feet" in the 3<sup>rd</sup> quarter. Additionally, monitoring wells T1-U and USGS 4-1 have been reported as dry. The Permittee was asked to address the condition of these monitoring wells. If the integrity of the wells has been impacted and quality data is not obtainable from these locations, the Permittee must address how they will supplement their ground-water monitoring plan.

The Kemmerer-L well reported a depth to water of zero feet. However, water quality data was reported. It's unclear if the water in the well was at the riser or not.

#### **UPDES Sites**

Historically outfalls 002, 004, 005, 006, 007, 008 and 009 do not produce a discharge. These outfalls did not report a flow again for this quarter. Outfalls 001 and 003 are the primary outlets for discharging the ground water encountered within the mine works.

However, only Outfall 003 reported a flow this quarter. Outfall 001 did not report a flow this quarter. The TSS and T-Fe values reported for Outfall 003 were well within the established UPDES limits of 70 ppm and 2.1 ppm respectively.

A slightly elevated concentration for T-Fe was reported from the September 19<sup>th</sup>, 2012 sampling event. A concentration of 1.55 ppm was reported. Although the concentration was outside of two standard deviations from the mean, the 1.55 ppm value was well below the UPDES limit.

The compliance schedule process (that is ongoing with the Division of Water Quality) has identified a future compliance standard for Emery Deep discharge water into Quitcupah Creek of 2,000 ppm for SO<sub>4</sub>. The reported sulfate concentrations were all within the to-be established limit of 2,000 ppm (average of 1,414 ppm based on 13 sampling events).

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

There is no commitment in the MRP to resample for baseline parameters.

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

Continue to monitor the compliance schedule process currently underway between the Permittee and DWQ.

Follow up with Permittee on status of monitoring wells USGS 4-1, T1-U and RDA-6. Additionally, follow up on the Kemmerer-L 0' depth reading.

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