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WATER QUALITY MEMORANDUM
Utah Coal Regulatory Program

March 14, 2012

TO: Internal File

THRU: Steve Christensen, Permit Supervisor SC

FROM: April A. Abate, Environmental Scientist ~~III~~ aaa 3/14/2012

RE: 2011 Third Quarter Water Monitoring, Canyon Fuel Company, LLC, SUFCO Mine, C/041/0002, WQ11-03, Task ID #3922

The SUFCO Mine is an operating longwall mine. Current operations are in the Quitchupah and Muddy Tracts. Water monitoring requirements can be found in Section 7.3.1.2 of the MRP, see Tables 7-2, 7-3, 7-4, 7-5, and 7-5A. Page 7-48 contains the important statement that (non Box-Canyon, non-UPDES) "monitoring sites are sampled three times per year," meaning the second, third, and fourth quarters.

SUFCO has added two additional stream monitoring points to their plan: SUFCO 006A and SUFCO 006B are intended to monitor the upstream and downstream flow along the South Fork of Quitchupah Creek on a quarterly basis and every two weeks while mining is taking place within a 15-degree angle of draw of the stream channel.

Additional monitoring is taking place in the West Lease area with new monitoring locations GW-8 and GW-9 established for Lizonbee Springs, Mud Spring and Broad Hollow Spring.

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

Springs **YES** ☒ **NO** ☐

The MRP requires the Permittee to monitor 29 springs during the second, third, and fourth quarter as per Table 7-2. Some require full laboratory analysis according to Table 7-4, while others simply require field measurements.

All spring locations were monitored during the third quarter of 2011. No flow was reported from SUFCO-89, GW-20, PINES 105, 218, 303, 310, and 311. No flow was observed from Mud Spring but standing water collected inside the spring box was sampled for operational parameters. Springs in the Box Canyon drainage were flowing. Flows at the

Lizonbee Springs (GW-8 and GW-9) appear to be flowing between 0.5 – 1.5 gpm.

Streams **YES** ☒ **NO** ☐

The MRP requires the Permittee to monitor 20 streams during the second, third and fourth quarter as per Table 7-2. Perennial stream monitoring of Box Canyon is required at FP-1 and FP-2 at the beginning of the month of October each year.

No flow was reported at the Link Canyon Drainage locations 001 and 002, PINES 106, USFS 109 and USFS 110. The PINES and USFS locations are intended to measure any flow at the beginning of the perennial reach of Box Canyon.

Wells **YES** ☒ **NO** ☐

The MRP requires the Permittee to monitor water levels for 6 wells. Monitoring wells US-80-2, 89-20-2W, US-81-4, and 01-8-1 are monitored quarterly. Monitoring wells US-80-4 and US-79-13 are monitored annually during the 3rd quarter. Groundwater monitoring at the Waste Rock site occurs three times per year.

All required wells were gauged according to the monitoring plan during the third quarter of 2011.

UPDES

The UPDES Permit/MRP require bi-weekly monitoring of 3 outfalls: UT0022918-001: *mine water discharge to Spring Canyon;* UT0022918-002: *sedimentation pond discharge to Spring Canyon; and* UT0022918-003A*: the mine water discharge to the North Fork of Quitchupah Creek.*

The Permittee submitted all required samples for the UPDES sites. Outfall 001 reported no flow this quarter. The mine water discharge outfall locations that did report data reported the following:

	SED POND Q TO E SPRING CYN Outfall: UT0022918-002	**Mine Water Discharge to N.Fk. Quitchumpah Outfall: UT0022918-003A**
Average Flow (gpm)	51.6	2,779
Average TDS (mg/L)	727	658

All data reported were within the compliance requirements of the UPDES Permit No. UT0022918.

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

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

The following sample locations reported results outside of at least two standard deviations:

Sample ID	Date	Parameter	Value	STD. Deviation
M-SP39	9/26/2011	Conductivity	782 us/cm	<2.62
SUFCO 047	9/22/2011	BiCarb	411 mg/L	>2.12
SUFCO-047A	9/22/2011	D-Ca	96.7 mg/L	<2.05
PINES 403	9/19/2011	Cond (Field)	**805*** us/cm	>2.11
PINES 403	9/19/2011	SO4	180 mg/L	>2.63
UPDES 002	7/26/2011	Flow	121.63 gpm	>4.03
UPDES 002	8/9/2011	Flow	89.55 gpm	>2.82
UPDES 003A	7/12/2011	Flow	987 gpm	<2.44
WRDS-B8	9/22/2011	D-Ca	197 mg/L	>2.72
WRDS-B8	9/22/2011	D-Mg	78.4 mg/L	>3.15

Notes: * result is a maximum based on examination of historic data set.

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?

Discharge from the sediment pond was higher than average this quarter, particularly in July. This is likely attributed to the higher than average amount of water the region experienced during the spring of 2011. This is likely attributed to the good water year for Region 4 with average Palmer Hydrologic Index rates of 5.59 indicating an extremely wet year in Utah.

No recommendations are warranted at this time.