

# WATER QUALITY MEMORANDUM

Utah Coal Regulatory Program

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March 26, 2019

TO: Internal File

FROM: Steve Christensen, Environmental Scientist III



RE: 2018 3<sup>rd</sup> Quarter Water Monitoring, Consolidation Coal Company, Hidden Valley Mine, C0150007, WQ18-3, Task ID #5794

The Hidden Valley Mine is in reclamation. At present, the Permittee has no immediate plans for additional coal mining activity at the site. Two surface-water monitoring sites are established to monitor Ivie Creek, a perennial stream adjacent to the mine site. The sites; Upper Ivie #1, and Lower Ivie #2, have been established to quantify any changes in quality or quantity to the Ivie Creek drainage as a result of coal mining related activity. Due to the lack of springs in the area and the lack of underground development/activity, no ground water monitoring is required at this time by the approved Mining and Reclamation Plan (MRP).

Section UMC 817.52 of the approved MRP discusses the water-monitoring plan. The two surface monitoring sites will be sampled and measured during the months of May and September (2<sup>nd</sup> and 3<sup>rd</sup> quarters only). Field parameters will be measured and water samples collected at the same time. Parameters for water analysis are listed in section UMC817.52 of the MRP. There are no springs, ponds or wells on the site. The monitoring program will continue until bond release is obtained.

The Utah Division of Water Quality (DWQ) has assigned use classifications to Ivie Creek and its tributaries from the confluence with Muddy Creek to Utah highway 10. The classifications are:

- 2B: Protected for secondary contact recreation such as boating, wading or similar uses.
- 3C: Protected for non-game fish and other aquatic life, including necessary aquatic organisms in their food chain.
- 4: Protected for agricultural uses including irrigation of crops and stock watering.

Numeric criteria set forth in Utah Administrative Code (UAC) R317-14, have been established for each of the beneficial use classes assigned to waters in the State. Of the use classifications assigned to the streams in the Western Colorado River Watershed (WCRW), numeric criteria for TDS only apply for agricultural use (beneficial use class 4). Section R317-2

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of the UAC identifies a standard TDS value of 2,600 mg/L for Ivie Creek and its tributaries. The primary factors for increased TDS loads in the lower reaches of the Muddy Creek Watershed are from agricultural irrigation practices, surface runoff and natural geological loadings.

**1. Was data submitted for all of required sites?**

**Streams**

YES  NO

Upper Ivie #1 and Lower Ivie #2 did not report a flow this quarter.

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

**Streams** YES  NO

Upper Ivie #1 and Lower Ivie #2 did not report a flow this quarter.

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

**Streams** YES  NO  NA

A TDS value of 2,600 mg/L is the site-specific standard as established by UAC R317-2, *Standards for Waters of the State*. The TDS values obtained for both Upper Ivie #1 and Lower Ivie #2 were elevated during the 2<sup>nd</sup> quarter of 2014 with reported values of 4,469 mg/L and 4,462 mg/L respectively. TDS values returned to within limits this quarter with values of 1,516 mg/L and 1,684 mg/L respectively for Upper Ivie #1 and Lower Ivie #2 in the 3<sup>rd</sup> quarter of 2014. Elevated levels of TDS were again reported for the 2<sup>nd</sup> quarter of 2015 for both Upper Ivie #1 and Lower Ivie #2 (4,204 ppm and 4928 ppm respectively). TDS concentrations remained high for both monitoring sites this quarter: Upper Ivie #1 reported 2,946 p pm and Upper Ivie #2 reporting 2,002 ppm.

The Price River, San Rafael River and Muddy Creek TMDLs for Total dissolved Solids West Colorado Watershed Management Unit; Utah document (Utah Division of Water Quality, 2004) discusses how seasonal variations in TDS concentrations have been detected.

Based upon previous sampling data, seasonal TDS trends for the Ivie Creek drainage generally produce higher values during the 2<sup>nd</sup> quarter (spring/early summer) as opposed to the 3<sup>rd</sup> quarter (late summer/ fall). Typically as a result of snowmelt, irrigation return flow and increased precipitation during the spring/early summer months, a flushing event is produced that results in higher TDS values during the 2<sup>nd</sup> quarter of the year. The TDS data for this and the

previous quarter reflect that observation.

Due to the general lack of appreciable precipitation for the area (averaging <10"/year annually), the relatively large network of ephemeral drainages in the Ivie Creek watershed remain dry for a majority of the year. As a result, there are significant periods of time where sediments may be deposited in these ephemeral drainages by wind erosion. Following the spring 'flushing event', the data clearly shows that TDS values drop significantly between the 2<sup>nd</sup> and 3<sup>rd</sup> quarter of the year as the sediment has been washed down gradient. This trend continued for this quarters reported values.

Historically, the Ivie Creek drainage has produced TDS levels well above the 2,600-mg/L standard discussed above. However, as the site has been reclaimed and in stable condition, it's highly unlikely that the elevated TDS levels are a result of coal mining related activity at the Hidden Valley Mine site. On-going field inspections by Division staff have documented the site as being in stable condition with no signs of excessive erosion or gullies.

Concentrations for dissolved potassium were elevated the 2<sup>nd</sup> quarter of 2015. Dissolved potassium concentrations for both monitoring sites returned to within the established range the 3<sup>rd</sup> quarter of 2015. Additionally, the carbonate concentration for Upper Ivie Creek #1 returned to within the established range the 3<sup>rd</sup> quarter of 2015.

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

The approved MRP does not outline a five-year baseline re-sampling requirement.

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

NA

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

YES     NO

**6. Follow-up from last quarter, if necessary. Did the Mine Operator submit all the missing and/or irregular data (datum)?**

NA.