

WATER QUALITY M E M O R A N D U M Utah Coal Regulatory Program

May 23, 2011

TO: Internal File

THRU: James D. Smith, Permit Supervisor *JS 05/25/11*

FROM: Kevin Lundmark, Environmental Scientist II *kw*

RE: 2010 Fourth Quarter Water Monitoring, Hidden Splendor Resources, Inc.,
Horizon Mine, C/007/0020 WQ10-4, Task ID #3683

The Horizon Mine is operational and mining coal. The water-monitoring plan is outlined in Chapter 7 - Hydrology of the MRP, which was most recently updated in June 2005. Surface and groundwater monitoring is required for the Horizon Mine under the operation plan, and monitoring procedures and parameters are discussed in MRP Section 7.1.5 (groundwater) and Section 7.2.2.3 (surface water). UPDES permit UTG040019 authorizes discharges from two outfalls and expires on April 30, 2013.

This report was prepared from monitoring data queried from the UDOGM database. The data that support this report were collected and submitted to the database by the Operator. The data were downloaded into file O:\007020.HZN\Water Quality\Spreadsheets\HZN_WQ.xls for this review.

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

Springs YES [X] NO []

Springs SP-1, SP-2, SP-4, SP-9 (Jewkes Spring), 2-6-W (Homestead Spring) and GV-70 will be monitored once each calendar quarter (when the springs are accessible) during the operational and reclamation phases. Ground water quality parameters to be checked are outlined in Table 7-2 of the MRP.

Springs SP-1, SP-2, SP-4, and 2-6-W were reported with "No Flow" during fourth quarter 2010 based on monitoring performed on 11/5/2010. Flows reported for springs GV-70 and SP-9 on 11/5/2010 were 2 gpm and 3 gpm, respectively.

Streams YES [X] NO []

Stations SS-3, SS-5, SS-7, SS-8, SS-10 and SS-11 will be monitored once each quarter (as access conditions permit). Surface water quality parameters are outlined in Table 7-5 of the MRP.

Stream sites SS-5, SS-11 and SS-12 were reported with no flow for fourth quarter 2010 based on monitoring performed on 11/5/2010. Flow rates at the other stream sites ranged from 20 gpm at SS-10 (Jump Creek tributary below future mining) to 350 gpm at SS-3 (Jewkes Creek below mine).

Wells **YES [X]** **NO []**

Water level data will be collected during the operational and reclamation phases from wells HZ-95-1, HZ-95-1S, HZ-95-2, HZ-95-3 and HZ-01-06-1 once each quarter, when accessible.

Water levels were reported for wells HZ-95-1, HZ-95-1S, HZ-95-2 and HZ-01-06-1. Well HZ-95-3 was reported as "Dry".

UPDES **YES [X]** **NO []**

Monthly monitoring is required for the UPDES outfalls associated with the sedimentation pond (001) and the mine discharge (002).

UPDES sites were monitored monthly for the quarter and all required data were submitted. No flow was reported from the sedimentation pond. Discharge from the underground mine ranged from 315 to 350 gallons per minute.

2. Were all required parameters reported for each site?

Springs **YES [X]** **NO []**

Streams **YES [X]** **NO []**

Wells **YES [X]** **NO []**

UPDES **YES [X]** **NO []**

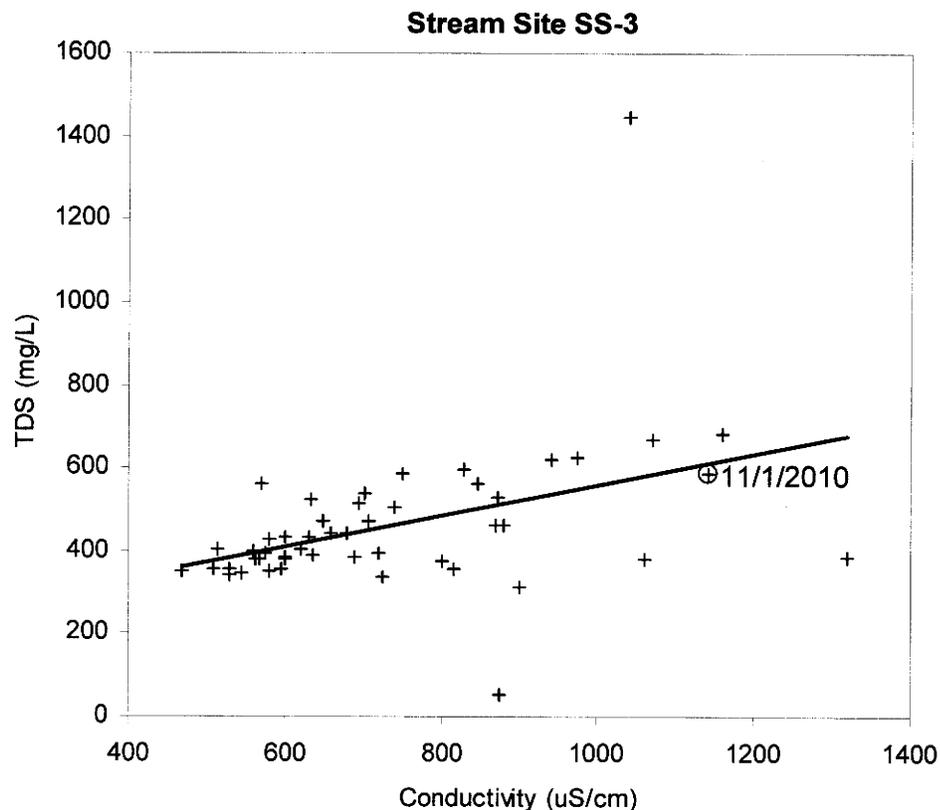
3. Were irregularities found in the data?

Springs **YES [X]** **NO []**

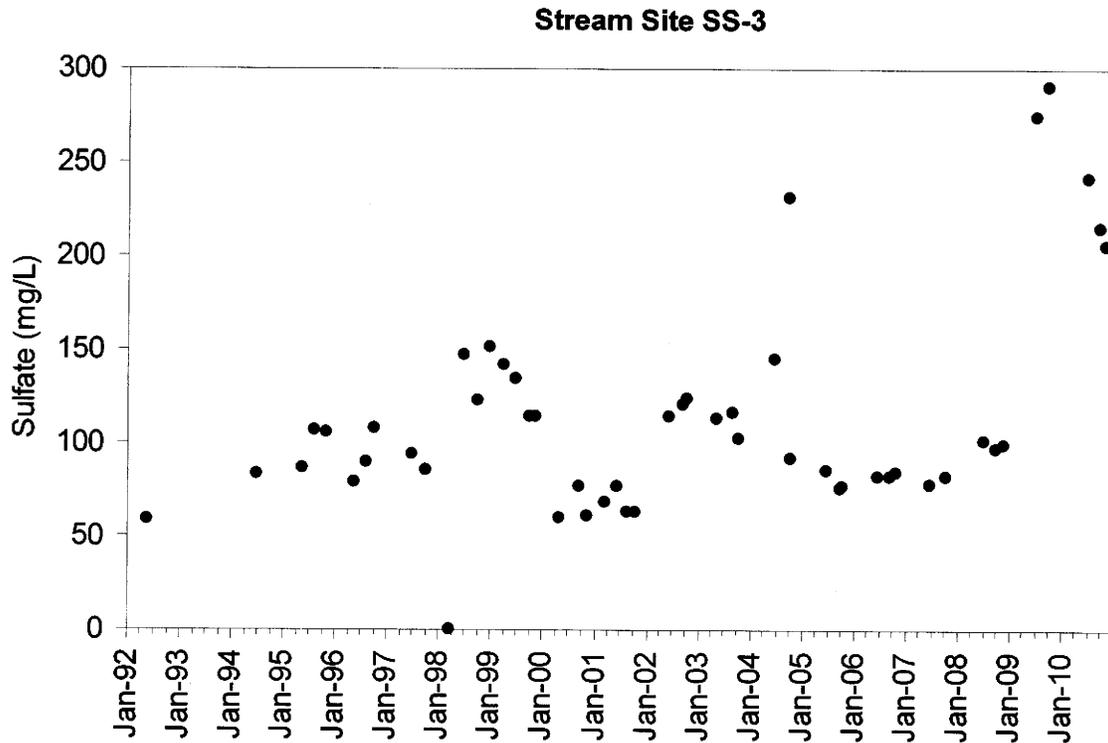
The bicarbonate (371 mg/L CaCO₃) and alkalinity (371 mg/L) results for the sample collected at spring GV-70 on 11/5/2010 were both slightly lower than previous values reported for this site. The previous minimum bicarbonate concentration was 390 mg/L CaCO₃, reported for third quarter 2010, and the previous minimum value for alkalinity was 385 mg/L, reported for third quarter 2002.

Streams YES [X] NO []

The conductivity measured at site SS-3 (Jewkes Creek below mine) on November 1, 2010 was reported at 1140 $\mu\text{S}/\text{cm}$, which is greater than the average value of 699 $\mu\text{S}/\text{cm}$ by 2.39 times the standard deviation of 184.41 $\mu\text{S}/\text{cm}$. As shown in the plot below, the ratio of conductivity to total dissolved solids for fourth quarter 2010 is consistent with the trend line for historical measurements at location SS-3.



Sulfate concentrations at station SS-3 are variable, but appear to have been elevated during recent sampling events (see plot below). The sulfate concentration apparently spiked during second quarter 2009 to a maximum of 290 mg/L during third quarter 2009. Since then, sulfate levels have decreased and the fourth quarter 2010 sulfate concentration was reported as 205 mg/L. The sulfate concentration at SS-3 remains above the concentrations which were reported before the second and third quarter 2009 spike.



Wells YES [] NO [X]

UPDES YES [] NO [X]

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

Re-sampling due date is third quarter, July-September 2012.

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

Groundwater monitoring well HZ-95-3 intercepted the coal seam and was reportedly mined through by a previous permittee. The surface completion for well HZ-95-3 is on a high ridge above Portal Canyon with no road access (Inspection Report No. 2413). The current MRP identifies that monitoring data collected at well HZ-95-3 "...will allow early assessments of mining impacts to be made" (MRP page 7-32). The MRP does not mention that well HZ-95-3 has been mined through. If well HZ-95-3 is no longer operational, then the MRP should be revised to describe the loss of this well, and the Groundwater Monitoring Plan should be updated accordingly. The Operator should either replace the well or demonstrate why monitoring data is no longer necessary to meet the objectives of the groundwater monitoring plan in the MRP (R645-301-731.214). Well HZ-95-3 must be properly abandoned (R645-301-731.215, R645-301-765).

Does the Mine Operator need to submit more information to fulfill this quarter's monitoring requirements? YES [] NO [X]

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

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

None needed.