

TECHNICAL MEMORANDUM

Utah Coal Regulatory Program

July 21, 2009

TO: Internal File

THRU: James D. Smith, Permit Supervisor *JS 08/05/09*

FROM: Steve Christensen, Hydrologist *SKC*

RE: Midterm Review, Canyon Fuel Company, Soldier Canyon Mine, C/007/0018,
Task ID #3306

SUMMARY:

The mid-term review for the Soldier Canyon Mine was initiated on June 4th, 2009 and assigned Task ID #3306 for tracking purposes. As part of the review, an analysis of the MRP was conducted to ensure that the plan contains commitments for application of the best technology currently available (BTCA) to prevent additional contributions of suspended solids to stream flows outside of the permit area. In addition, a field visit was conducted on July 21st, 2009 to inspect the sediment control measures at the site and their effectiveness.

As of June 1999, mining operations have been terminated and the mine has entered into cessation. The surface facility has been cleared of any usable equipment/machinery/supplies etc. The main structures of the facility are still standing, however they have been emptied of their contents and are not currently being utilized by the Permittee.

As part of the midterm review (and as identified in the June 4th letter), Division staff evaluated hydrologic elements of the site and approved Mining and Reclamation Plan (MRP). One hydrologic element that was reviewed was the commitment and utilization of the best technology currently available (BTCA) to prevent additional contributions of suspended solids to stream flows outside of the permit area. In addition, Division staff reviewed the commitments located in the approved MRP in order to insure that Canyon Fuel Company (the Permittee) had adequately addressed/complied with said commitments (including electronic database water monitoring reporting).

The following is the hydrologic analysis of the Soldier Canyon Mine midterm review. No deficiencies were identified during the analysis.

TECHNICAL MEMO

TECHNICAL ANALYSIS:

OPERATION PLAN

HYDROLOGIC INFORMATION

Regulatory Reference: 30 CFR Sec. 773.17, 774.13, 784.14, 784.16, 784.29, 817.41, 817.42, 817.43, 817.45, 817.49, 817.56, 817.57; R645-300-140, -300-141, -300-142, -300-143, -300-144, -300-145, -300-146, -300-147, -300-147, -300-148, -301-512, -301-514, -301-521, -301-531, -301-532, -301-533, -301-536, -301-542, -301-720, -301-731, -301-732, -301-733, -301-742, -301-743, -301-750, -301-761, -301-764.

Analysis:

Ground and Surface Water Monitoring

The Permittee outlines the considerations and details of the ground and surface water-monitoring plan for the mine on page 7-156. Monitoring locations are depicted on Exhibit 7.21-1. As outlined in the MRP, the Permittee has submitted the required quarterly ground and surface water monitoring data to the Division via the electronic database as required.

Water-Quality Standards And Effluent Limitations

The Permittee is authorized to discharge mine water under Utah Pollutant Discharge Elimination System (UPDES) permit #UT 0023680. The permit authorizes discharge at Outfalls 001, 002, 003 and 004. However, at this time, only Outfalls 001 and 003 are active in the Division's electronic water monitoring database. Outfall 001 last discharged on 12/13/1991 with Outfall 003 producing a measurable discharge on March 16th, 1998.

The Permittee has maintained compliance with the water quality standards outlined in the UPDES permit. No violations or non-compliance citations have been issued either by the Division or the Dept. of Water Quality (DWQ) since permit renewal.

The effluent limitations set by UPDES Permit #UT 0023680 are listed on page 5-39 of the MRP.

Diversions: General

Storm water runoff is controlled at the main mine facilities with a system of ditches, berms, culverts and ASCA's. Exhibit 7.32-1, *Runoff Control Map*, depicts the components and linkages of the surface drainage plan. During the field inspection, Division staff examined the diversions and found them to be functioning as designed. No signs of cutting or erosion were

noted relative to the operation of the diversion channels (both disturbed and un-disturbed drainage). Specific design considerations and calculations for the runoff control system are provided in Appendix 7-A and in Figure 7.42.7.

The Permittee installed an approximately 885-foot stream bypass culvert for the Soldier Creek stream channel. The bypass culvert was necessary to facilitate the construction and subsequent expansion of the main surface facilities and to minimize the potential for water quality degradation. The design details for the Soldier Creek bypass culvert are provided in Appendix 7D. The inlet/headwall of the bypass culvert is riprapped in order to improve the hydraulic performance as well as to provide protection from erosion. The outlet of the bypass culvert has also been armored with riprap.

The Permittee was required to obtain a stream alteration permit from the Division of Water Rights (DWRi) in order to construct the Soldier Creek bypass. The stream alteration permit issued by DWRi is provided in Appendix 10 of the MRP.

Stream Buffer Zones

The Permittee discusses Stream Buffer Zones on page 7-168 of the approved MRP. Several areas of the central mine facilities lie within 100 feet of Soldier Creek, a perennial stream. In order to minimize adequate stream protection, the Permittee has installed, maintained and utilized approximately 885 feet of stream culvert and sediment control measures (See Exhibit 7.32-1 for locations of stream buffer zone areas and sediment control).

During the field inspection, the various sediment control measures in use within the designated stream buffer zones were observed to be functioning as designed.

Sediment Control Measures

On page 7-155, the Permittee begins to discuss the components of the mine site's hydrologic balance protection plan and various sediment control measures being utilized at the site. The Permittee commits to "using the best technology currently available" to ensure the protection of ground and surface water resources.

Additional sediment control information begins on page 7-169 of the MRP. The sediment controls utilized at the site include undisturbed area diversion channels, disturbed area diversion channels, sedimentation ponds, containment berms, riprap, straw bales and/or silt fence, revegetation and mulching, road diversions and culverts, stream channel by-pass culverts and natural drainage channels.

TECHNICAL MEMO

As required by the State of Utah R645-Coal Mining Rules, the undisturbed area diversions are designed to safely pass the 10-year, 6-hour precipitation event. The diversions located at the topsoil storage site were designed utilizing a 100-year, 6-hour precipitation event.

Containment berms are being utilized for sediment control at the temporary topsoil storage area as well as disturbed and undisturbed area diversion ditches. The design considerations for the aforementioned sediment control measures are provided in Appendix 7G of the MRP.

Drawing No. A-248, *Typical Straw Bale/Silt Fence Check Dam Installation*, provides a Professional Engineer (P.E.) certified schematic. The drawing depicts how the aforementioned sediment control measures are installed at the site.

The primary sediment control for the central mine site is the sediment pond. The sediment pond was designed utilizing a 10-year, 24-hour precipitation event. Exhibit 7.32-1 provides a schematic of the 'as-built' runoff control plan for the central mine area. The design calculations and pond details are provided in Appendix 7-A of the MRP.

Soldier Creek is diverted through the disturbed area via a by-pass culvert. The by-pass culvert was designed to handle a 100-year, 24-hour precipitation event. The Division as well as the Division of Water Rights (who issued a stream alteration permit allowing the drainage to be diverted) approved the placement of this culvert.

Nine areas within the permit area are designated as Alternative Sediment Control Areas (ASCA's). These areas do not report to a sediment pond. The total area within the permit area designated for ASCA's is 4.90 acres. Table 7.42.2.1-1 provides information on the ASCA's including a description, their location as well as design considerations (design storm, curve number and area). Beginning on page 7-174, the Permittee provides a detailed discussion on each of the nine ASCA's.

Siltation Structures: Sedimentation Ponds

The primary sediment control for the central mine site is the sediment pond. The sediment pond was designed utilizing a 10-year, 24 hour precipitation event. Exhibit 7.32-1 provides a schematic of the 'as-built' runoff control plan for the central mine area. The design calculations and pond details are provided in Appendix 7-A of the MRP.

The sediment pond was inspected during the July 21st, 2009 field visit. At the time of the inspection, the sediment pond was dry. The embankments of the pond as well as the inlet and outlet were inspected and were functioning as designed.

Siltation Structures: Other Treatment Facilities

Nine areas within the permit area are designated as Alternative Sediment Control Areas (ASCA's). These areas do not report to a sediment pond. The total area within the permit area designated for ASCA's is 4.90 acres. Table 7.42.2.1-1 provides information on the ASCA's including a description, their location as well as design considerations (design storm, curve number and area). Beginning on page 7-174, the Permittee provides a detailed discussion on each of the nine ASCA's.

The ASCA's utilized at the main mine facility were observed during the July 21st, 2009 field visit. At the time of the inspection, the ASCA's were observed in adequate condition and appeared to be functioning as designed.

Discharge Structures

Discharge from the main facilities sediment pond is conveyed by two 1.5-foot diameter corrugated metal pipes (CMP). The principal spillway is equipped with a dewatering valve mounted on the side of the riser pipe. The outlet of both of the CMP's is protected with riprap to control erosion and sediment transport. The riprap detail as well as specific design information for the discharge structures is provided in Appendix 7A. Drawing B-127 provides an as-built depiction of the sediment pond.

Findings:

The Soldier Canyon MRP contains commitments to utilize the best technology currently available (BTCA) in order to prevent additional contributions of suspended solids to stream flows outside of the permit area. During the field visit conducted on July 21st, 2009, Division staff inspected the components of the drainage system and found that the various components (diversion ditches, culverts, sediment pond, sediment control measures) were adequate and appeared to be functioning as designed.

RECOMMENDATIONS:

A hydrologic evaluation of the Soldier Canyon MRP has been conducted relative to items #1, #3, #6 and #7 as outlined in the June 4, 2009 mid-term commencement letter. As a result of the evaluation, the Division finds that the approved MRP meets the hydrologic requirements of the State of Utah R645-Coal Mining Rules.