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State of Utah
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

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TO: File

THRU: Daron Haddock, Permit Supervisor DRH

FROM: James D. Smith, Reclamation Specialist JDS

RE: Technical Analysis of Significant Revision to include federal lease U07064-027821, Canyon Fuel Company, Dugout Canyon Mine, ACT/007/039-98-1, File 2, Carbon County, Utah

SUMMARY

A proposed significant revision to the Dugout Canyon Mine MRP was received by the Division on May 21, 1999. The significant revision is for addition of federal lease U07064-027821 to the permit area. Maps also outline an adjacent Utah State Institutional Trust Lands (SITLA) coal tract that is not part of the current significant revision application but that is an area of possible future expansion east of the federal lease; data for this SITLA tract is in the significant revision submittal also.

The last TA for this mine was in October 1998, when a parcel of BLM land located at the downstream end of the disturbed area was incorporated into the permit to better accommodate a sedimentation pond for the mine pad, water storage tanks were added up the canyon from the main pad area, and coal storage and the electric-power sub-station were expanded.

TECHNICAL ANALYSIS

ENVIRONMENTAL RESOURCE INFORMATION

GEOLOGIC RESOURCE INFORMATION

Regulatory Reference: 30 CFR Sec. 784.22; R645-301-623, -301-724.

Analysis:

Changes, mostly minor, have been made to the text on pages 6-2, 6-4, 6-15 through 6-19, and 6-21 of Chapter 6. Plates 6-1, 6-4, 6-5, 6-6 (Confidential Folder), and 6-7 (Confidential Folder) include federal lease U07064-027821 within the proposed permit boundary; they also include the adjacent SITLA coal tract that is not part of the current significant revision application but that is an area of possible future expansion east of the federal lease. Plate 6-4 is an isopach map of the Rock

Canyon seam overburden thickness and Plate 6-5 is an isopach map of the Rock Canyon to Gilson seam interburden thickness. Plates 6-6 and 6-7 in the Confidential binder are isopach thickness maps of, respectively, the Rock Canyon and Gilson seams. Plates 6-3A and 6-3B, also submitted with the significant revision, are geologic cross sections of the federal lease and SITLA tract.

The geologic map and 6 cross sections in the permit application are based on drill hole data and mapping of surface geology. Fourteen additional drill-hole logs have been submitted with the significant revision, so Appendix 6-1 now contains drill-hole logs for 29 of the holes that have been bored in and adjacent to the permit area: the bore holes are listed on pages 6-2 and 6-4. Collar or ground elevations are included in Appendix 6-1. Drill hole locations and elevations are shown on Plate 6-1.

Some bore holes have been logged from the surface to total depth, for others only the coal seams and adjacent strata have been logged. Together, the logs describe lithologic characteristics and thickness of each stratum from the surface to below the coal seams. Ground water occurrence was not marked on these logs at the time the holes were bored (p. 6-17).

Analysis reports on coal, floor, and roof samples from the Rock Canyon and Gilson seams are in Appendix 6-2 (Confidential binder). No new data have been submitted with the significant revision submittal, just a new title page for Appendix 6-2.

Geologic cross sections D - D', E - E', and F - F' (Plates 6-3A and 6-3B) have been submitted with the significant revision. They show the interval from the Sunnyside coal zone to below the Gilson coal zone in federal lease U07064-027821 and the SITLA coal tract. Together, cross sections A - A' through F - F' show relative positions and thickness of the Rock Canyon, Sunnyside, and Gilson coal seams (and of rider seams associated with the Rock Canyon and Gilson seams) in the proposed permit and adjacent areas.

The current MRP includes a description of the areal and structural geology of the proposed permit and adjacent areas, including federal lease U07064-027821 and the SITLA tract. The description is based on maps and plans required as resource information for the plan, detailed site specific information, and geologic literature and practices. It shows how areal and structural geology may affect the occurrence, availability, movement, quantity, and quality of potentially impacted surface and ground water. Section 624.100 contains descriptions of the stratigraphy and lithology, a discussion of geologic structure, and a very brief but adequate description of the nature, depth, and thickness of the coal seams and the interburden between the Sunnyside, Rock Canyon, and Gilson seams.

The Gilson and Rock Canyon seams are sufficiently developed to allow for economic mining of one or the other in much of the proposed permit area; however, multiple seam mining will be limited to the vicinity of Dugout Canyon. The Gilson seam is generally not of minable thickness west of Dugout Canyon. East of Dugout Canyon the sulfur content of the Rock Canyon coal increases and renders it unmarketable. In addition, interburden between the two seams thins east of the canyon, making multiple seam mining difficult, dangerous, and uneconomical. Coal in the Rock Canyon seam ranges from 5 to 8 feet in thickness, except for a want in the north-central part, where coal thins to under 3 feet (p. 6-16). Plate 6-7 indicates the Gilson seam is up to 16 feet thick in federal lease

U07064-027821; however, this is near the outcrop and recovery of this thickest coal may not be practical. Most Gilson coal in the federal lease is between 6 to 10 feet thick. The R2P2 for the logical mining unit that includes Soldier Canyon and Dugout Canyon Mines and federal lease U-07064-027821 is in the Confidential binder.

Maximum subsidence can be projected as 4.2 to 7.0 feet, based on 6 feet being the minimum and 10 feet being the maximum thicknesses to be mined (R2P2) and on the assumption that the surface will subside up to 70% of the thickness of the extracted coal. Where the Rock Canyon coal seam is minable, overburden thickness ranges from 500 feet in the south to over 2,400 feet in the north (Section 627 and p. 7-45). Overburden consists of the upper Blackhawk Formation, the Castlegate Sandstone, and the Price River, North Horn, and Flagstaff Formations, which are described in Section 624.100. Gilson to Rock Canyon interburden thickness is 30 to 80 feet over the proposed permit area (Plate 6-5).

The application includes geologic information in sufficient detail to assist in determining the probable hydrologic consequences of the operation upon the quality and quantity of surface and ground water in the permit and adjacent areas, including the extent to which surface and ground water monitoring is necessary, and determining whether reclamation as required by the Utah Coal Mining Rules can be accomplished and whether the proposed operation has been designed to prevent material damage to the hydrologic balance outside the permit area.

At this time the Division does not require the collection, analysis, and description of additional geologic information to protect the hydrologic balance, to minimize or prevent subsidence, or to meet the performance standards. The applicant has made no request the Division to waive in whole or in part the requirements of the bore hole information or analysis required of this section. The applicant has requested that the information in Appendices 6-1 and 6-2 be kept confidential.

Findings:

Information on geologic resources is considered adequate to meet the requirements of this section.

HYDROLOGIC RESOURCE INFORMATION

Regulatory Reference: 30 CFR Sec. 701.5, 784.14; R645-100-200, -301-720.

Analysis:

Baseline information.

Ground-water information.

Water monitoring data that potentially met the minimum requirements of SMCRA and the Utah Coal Mining Rules was done at only 13 (6 springs and 7 in-mine locations) of the 97 sites listed in the initial PAP. On average only 3 samples were analyzed for those 13 sites, so determination of baseline

seasonal quality was minimal for specific sites; however, overall baseline ground-water quality and quantity information was considered sufficient to characterize baseline ground-water conditions for the permit area.

Water-quality samples were to have been collected during 1997. October 1997 data at SC-65, SC-100, and SP-20 were mistakenly collected as field parameters only rather than water-quality parameters, and no data at all were collected at SC-14 that month. The permittee collected no water samples nor made any determinations of field parameters during the first quarter of 1998, but by agreement with UDOGM monitoring was done early in the third quarter as representative of the second quarter. Unfortunately field parameters only, rather than water-quality parameters, were determined for these samples.

Springs SC-65, SP-20 (same as S-30), SC-14, and SC-100 were to have been monitored for operational water quality and quantity beginning the third-quarter of 1998. The permittee selected these springs because they were considered reasonably accessible and representative of conditions within their respective formations (page 7-54); however, there is actually little historic data for these springs and it is necessary to rely on data from the Soldier Canyon Mine and surrounding springs to extrapolate baseline information. Because of the dearth of baseline water-quality and -quantity data, the operator was asked to provide a commitment to 2 years of quarterly water-quality and -quantity monitoring, at a minimum the operational parameters listed in Table 7-4 of the MRP, for these four springs. Pages 7-53 and 7-54 of the current MRP contain a commitment to monitor these springs quarterly, when accessible, for at least 2 years and to analyze the water samples for the parameters listed in Table 7-4; the significant revision does not contain this commitment.

Since 1997 there has been repeated failure to perform planned monitoring. There always seems to be a justification, but it seems the underlying cause is an unclear, ambiguous monitoring plan. The ground-water monitoring schedule needs to be clearly specified in detail, and preferably in tabular form (such as Tables 7.31-1 through 7.31-4 in Canyon Fuel Company's Soldier Canyon Mine MRP or Tables 7-2 through 7-5 in Canyon Fuel Company's SUFCO Mine MRP), in order:

- to reduce confusion;
- to help assure that the monitoring plan is followed for:
    - sites monitored,
    - frequency of monitoring,
    - parameters to be monitored,
    - and collection of appropriate samples for water-quality analysis; and
- to facilitate the Division's inspections of water-quality data.

The significant revision adds springs SC-116, 200, 203, 227, 259, and 260 to the operational monitoring list: 200, 203, 259, and 260 are in the SITLA tract. Baseline data are scarce in the vicinity of the Dugout Canyon Mine, so these springs are to be monitored quarterly for 3 years and water samples analyzed according to the Division's guidelines (p. 7-56), referring to UDOGM directive Tech 004.

Surface-water information.

Data from 1978 and 1979 for PC-1 and 1978 to 1980 for PC-1a are in the revised Appendix 7-

7: some of these samples were adequately analyzed for baseline parameters. Appendix 7-7 has adequate baseline data for the first 2 quarters of 1999 for PC-1a, PC-2, and RC-1: Rock Canyon was dry both quarters while flow in Pace Canyon appears to be seasonal and to originate from springs in the Flagstaff and North Horn Formations. Baseline data will continue to be obtained from PC-1a, PC-2, and RC-1 for 3 years prior to initiating operational monitoring; however, the monitoring protocols in the MRP are vague.

Probable hydrologic consequences determination.

A PHC determination prepared by Mayo and Associates in 1996 is in Appendix 7-3. Information on geology, hydrology, and hydrogeology and data on discharge, sediment, and other surface and ground water parameters were compiled from previous studies, and 17 ground- and surface-water samples were collected in 1995 for chemical and isotopic analyses. In spite of the seemingly large data base, most analyses lacked information on seasonal variation and on the basic parameters required by the Coal Mining Rules and SMCRA. The PHC determination in Section 728 of the MRP is based on the Mayo and Associates PHC and additional data collected in 1996 and 1997. Potential impacts covered in the PHC in Section 728 are:

- Ground water and surface-water availability;
- Contamination from acid- and toxic-forming materials;
- Sediment yield;
- Acidity, total suspended solids, and total dissolved solids;
- Flooding or streamflow alteration;
- Ground-water and surface-water availability;
- Potential hydrocarbon contamination;
- Road salting; and
- Coal haulage.

The area covered by Mayo's PHC (Appendix 7-3) included Pace Creek. The PHC in Section 728 has been revised to include Pace Creek. (The SITLA lease was not included in either PHC, so future expansion into Rock Canyon may require a revised PHC.)

Potential adverse effects to the hydrologic balance from the proposed mining operations are: both decreased and increased stream flows and spring discharges due to capture of surface or ground water by mine-related subsidence, bedrock fracturing, and aquifer dewatering (p. 7-46); increased stream flows due to increased discharge of ground water from the Blackhawk Formation through the mine workings; and increased ground-water recharge from overlying ground water systems. It appears that the Soldier Canyon Mine has not decreased groundwater discharge in overlying or underlying groundwater systems. It is unlikely that coal mining will effect the discharges of any spring as a result of mining in the Dugout Canyon permit and adjacent areas (p. 7-47 and Appendix 7-3).

Considerable seasonal and climatic variability are noted in the hydrographs of springs in the permit and adjacent areas, but data for both Soldier Creek and springs that overlie the Soldier Canyon Mine workings do not show discharge declines that may be attributed to either subsidence or bedrock fracturing (p. 7-46). The Blackhawk groundwater system in the vicinity of mined coal seams is compartmentalized both vertically and horizontally. Coal mining locally dewaters overlying rock layers in the Blackhawk Formation but does not appear to draw additional recharge from overlying or

underlying groundwater systems (p. 7-47).

Subsidence is anticipated where overburden is between 600 and 1,200 feet in the main fork of Dugout Creek and 500 to 2,000 feet in the right fork of Dugout Creek. Subsidence is also anticipated in a small area along the bottom of the Pace Creek drainage. The loss of stream-flow to the mine because of subsidence is highly unlikely and losses to bedrock exposed in or beneath soil in the channel would be short lived because of thick mantles of fine-grained soils, the tendency of fractures in fine-grained rocks of the Blackhawk Formation to close relatively rapidly, and the expected rapid filling of fractures that may occur in channel floors (pages 7-45 and 7-46).

Steady-state inflow to the Dugout Canyon mine is expected to be approximately 210 gpm, which is considered by the permittee to be a conservatively high estimate (p. 7-49). After accounting for in-mine consumption, up to 190 gpm (306 acre-feet/yr) could be discharged to Dugout Creek, which would represent an increase of approximately 6% over the average annual flow of 5,100 acre-feet/yr. Estimated maximum discharge from the Dugout Canyon Mine is approximately 400 gpm. If this maximum rate were sustained for a full year there would be a 13% increase in the estimated average annual flow of Dugout Creek (p. 7-50).

Findings:

The hydrologic resource information provided in the PAP is considered adequate to meet the requirements of this section.

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.

Underground mining and reclamation activities are planned to be conducted to minimize disturbance of the hydrologic balance within the permit and adjacent areas, to prevent material damage to the hydrologic balance outside the permit area, and to support approved postmining land uses in accordance with the terms and conditions of the approved permit and the performance standards of this part. The Division has not required additional preventive, remedial, or monitoring measures to assure that material damage to the hydrologic balance outside the permit area is prevented.

Analysis:

By defining terms, stating objectives, and identifying responsibilities, UDOGM Coal Regulatory Program Directive Tech-004 (Tech-004) is meant to clarify the Division's position on what

constitutes an appropriate monitoring program and provides methodology for consistently amending these monitoring programs. Under Tech-004, amendments to monitoring programs will be approved on a site specific basis.

The monitoring plan at Dugout Canyon Mine conforms to the amended monitoring plan approved for the Soldier Canyon Mine, which is based on Tech-004. The amended Soldier Canyon Mine monitoring plan was approved in accordance with the procedure in section 5E of Tech-004:

a. Canyon Fuel Company appears to be the owner of the surface in all areas where monitoring was stopped. Canyon Fuel Company also owns the water rights for the springs that have been removed from the monitoring plan. The only surface-water right involved that is not owned by the mine is upstream of the mine, beyond the area affected by subsidence, and the monitoring point on that reach of stream is to be replaced by one downstream, closer to the mine.
b. Historical quality data show that, except for some problem samples, a good cation/anion balance exists with these data.
c. Data can be used in a regression analysis to demonstrate that conductivity correlates to the specific water quality of that site, as measured by TDS.
d. The site is not critical to the ongoing PHC determination.
e. Monitoring is no longer necessary to achieve the purposes set forth in the approved monitoring plan.
f. Subsidence monitoring information indicates that further subsidence is not likely and that future mining will not occur in adjacent areas that could affect these water sources.

Sites above and below the disturbed areas and discharge points of the Dugout Canyon Mine (DC-1, DC-2, and DC-3) are monitored quarterly for flow and operational field and laboratory parameters. PC-1a, PC-2, and RC-1 are added to the monitoring plan by this proposed significant revision.

Ground-water monitoring.

Locations of wells and springs to be monitored are on Plate 7-1. Operational ground-water quality parameters to be monitored at the Dugout Canyon Mine are listed in Table 7-4 of the MRP. They correspond with the operational parameters in Table 4 of Tech-004 except that total alkalinity and hardness are not included. Operational ground-water monitoring protocols are given on pages 7-53 through 7-57.

For the initial Dugout Canyon Mine MRP, the permittee selected springs SC-65, SP-20 (same as S-30), SC-14, and SC-100 for operational monitoring because they were considered reasonably accessible and representative of conditions within their respective formations (page 7-54); however, there is actually little historic data for these springs and it is necessary to rely on data from the Soldier Canyon Mine and surrounding springs to extrapolate baseline information. Because of the dearth of baseline water-quality and -quantity data, the operator was asked to commit to 2 years of quarterly water-quality and -quantity monitoring at these four springs, (UDOGM TA dated October 16, 1998). Pages 7-53 and 7-54 of the current MRP contain a commitment to monitor these springs quarterly, when accessible, for at least 2 years and to analyze water samples for the parameters listed in Table 7-4; the significant revision does not contain this commitment.

Springs SC-65, SP-20, SC-14, and SC-100 were to have been monitored for operational water quality and quantity beginning the third-quarter of 1998; however, only field parameters have been collected for these 4 springs. Since 1997 there have been other failures to perform planned monitoring. There always seems to be a justification, but the underlying cause seems to be an unclear, ambiguous monitoring plan. The ground-water monitoring schedule needs to be clearly specified in detail, and preferably in tabular form (such as Tables 7.31-1 through 7.31-4 in Canyon Fuel Company's Soldier Canyon Mine MRP or Tables 7-2 through 7-5 in Canyon Fuel Company's SUFCO Mine MRP), in order:

- to reduce confusion;
- to help assure that the monitoring plan is followed for:
    - sites monitored,
    - frequency of monitoring,
    - parameters to be monitored,
    - and collection of appropriate samples for water-quality analysis; and
- to facilitate the Division's inspections of water-quality data.

After 2 years of operational water-quality data has been collected, quarterly operational monitoring of springs SC-14, SC-65, SC-100, and SP-20 is to be reduced to field parameters (flow, pH, specific conductance, and temperature); this is one notable variation from the recommended schedule in Tech-004.

Operational water-quality parameters for springs SC-14, SC-65, SC-100, and SP-20 will also be determined semi-annually during the first "wet" and "dry" years. Wet and dry years will be defined based on snow-pack measurements as of March 1 for the Price-San Rafael area, a wet year being the first year after permit issuance when the snow pack water content is greater than 110% of normal and a dry year being the first year following permit issuance when the snow pack is less than 70% of normal. These "wet" and "dry" years may occur during the initial 2 years of quarterly operational monitoring. Also during these "wet" and "dry" years, spring flows will be measured weekly between April 1 and August 31 as conditions permit, with the intent of preparing baseflow hydrographs from the data.

The significant revision adds springs SC-116, 200, 203, 227, 259, and 260 to the operational monitoring list: 200, 203, 259, and 260 are in the SITLA tract. Baseline data are scarce in the vicinity of the Dugout Canyon Mine, so these springs are to be monitored quarterly for 3 years and water samples analyzed for baseline parameters as specified in UDOGM directive Tech 004. After completion of baseline monitoring, these springs will be monitored quarterly for field parameters .

Tech-004 recommends that for springs, water-quality samples be analyzed for baseline parameters every fifth year. Page 7-56 includes a commitment to collect one water sample from each monitored spring, at low flow during the year preceding re-permitting (once every five years), that will be analyzed for baseline parameters.

Water depth in wells GW-10-A, GW-11-2, and GW-24-1 will be monitored quarterly. Well GW-24-1 (completed in the Castlegate Sandstone) is currently monitoring ground water levels in federal lease U07064-027821.

During Phase I construction in September 1998, ground water was discovered discharging from the old Gilson coal-seam workings on the east side of Dugout Canyon. This water had been seeping undetected through the alluvium and into the stream channel. Beginning in the fourth quarter of 1998, this water was to be monitored at point MD-1, shown on Plate 7-1 (page 7-56). Data for 1998 and 1999 are with the surface-water information in Appendix 7-7.

Surface-water monitoring.

Operational surface-water monitoring protocols are given on pages 7-57 through 7-59. Sites DC-1 through DC-5 are monitored under the current MRP. Under the significant revision, PC-1a and PC-2 are to be monitored on Pace Creek to evaluate surface-water conditions upgradient and downgradient of the significant revision area and the SITLA tract, and RC-1 in Rock Canyon is to be monitored to obtain baseline data for future mine expansion into the SITLA tract. Monitoring protocols are explicit for DC-1 through DC-5, but are vague for PC-1a, PC-2, and RC-1. The Division recommends that the surface-water monitoring schedule be specified in detail in a table to reduce confusion when the operator or the operator's representative measures field parameters and collects samples for analysis and to facilitate the Division's inspections of water-quality data.

For surface water, Tech-004 recommends one water-quality sample at low flow every fifth year, either during the year preceding re-permitting or at midterm review, to be analyzed for baseline parameters. The MRP contains a commitment to collect one water sample at each sampling point during low flow period every fifth year, during the year preceding re-permitting, to be analyzed for baseline parameters (p. 7-59).

Transfer of wells.

The significant revision contains no plans for boring or construction of wells. Well GW-24-1 (completed in the Castlegate Sandstone) is currently monitoring ground water levels in federal lease U07064-027821. Before final release of bond, exploration or monitoring wells will be sealed in a safe and environmentally sound manner. Ownership of wells will be transferred only with prior approval of the Division, and conditions of such a transfer will comply with State and local laws. Canyon Fuel Company will remain responsible for the management of transferred wells until bond release (Section 731.400).

Findings:

Operations hydrologic information provided in the PAP is considered adequate to meet the requirements of this section.

R645-301-121.200, -731.200 - In a TA dated October 16, 1998, the operator was asked to provide a commitment to 2 years of quarterly water-quality monitoring, at a minimum the operational parameters listed in Table 7-4 of the MRP, for springs SC-14, SC-65, SC-100, and SP-20 (S-30). A commitment to do this is on pages 7-53 and 7-54 of the October 1998 MRP; the significant revision does not contain this commitment.

There have been failures to perform the planned monitoring, and the underlying cause seems to

be that the monitoring plan is unclear and ambiguous. The ground-water monitoring plan needs to be clearly specified in detail, and preferably in tabular form; for example, as in Tables 7.31-1 through 7.31-4 in Canyon Fuel Company's Soldier Canyon Mine MRP or Tables 7-2 through 7-5 in Canyon Fuel Company's SUFCO Mine MRP.

R645-301-121.200, -724, -731.200 - Monitoring protocols are explicit for DC-1 through DC-5, but are vague for PC-1a, PC-2, and RC-1. The Division recommends that the surface-water monitoring schedule be specified in detail in a table.

R645-301-121.200 - Two lines of text have been omitted at the bottom of page 7-62.

RECLAMATION PLAN

HYDROLOGIC INFORMATION

Regulatory Reference: 30 CFR Sec. 784.14, 784.29, 817.41, 817.42, 817.43, 817.45, 817.49, 817.56, 817.57; R645-301-512, -301-513, -301-514, -301-515, -301-532, -301-533, -301-542, -301-723, -301-724, -301-725, -301-726, -301-728, -301-729, -301-731, -301-733, -301-742, -301-743, -301-750, -301-751, -301-760, -301-761.

Analysis:

Surface-water monitoring.

The surface-water monitoring plan is in Section 731.200, pages 7-57 through 7-59. Surface-water data will be collected under the surface-water monitoring program every year until bond release (p. 7-59). Locations of reclamation monitoring sites DC-1, DC-2, DC-3, PC-1a, and PC-2 are on Plate 7-1.

Ground-water monitoring.

Reclamation ground-water monitoring protocols are given along with the operational monitoring protocols in Section 731.200, pages 7-52 through 7-57. Locations of wells and springs to be monitored are on Plate 7-1. Groundwater monitoring of wells and springs will continue during the post-mining period until bond release (p. 7-56).

During the post-mining period, field data and water samples will be collected once each year in September or October, during low-flow season but while the sites are still accessible, at springs SP-20, SC-14, SC-65, SC-100, SC-116, 200, 203, 227, 259, and 260 (p.7-53).

The significant revision contains no change to the reclamation well-monitoring plan. Water levels will be measured in wells GW-10-2, GW-11-2, and GW-24-1, all completed in the Price River Formation or the underlying Castlegate Sandstone, once each year (p.7-56).

Transfer of wells.

The significant revision contains no plans for boring or construction of wells. Well GW-24-1 (completed in the Castlegate Sandstone) is currently monitoring ground water levels in the significant revision area. Before final release of bond, exploration or monitoring wells will be sealed in a safe and environmentally sound manner. Ownership of wells will be transferred only with prior approval of the Division, and conditions of such a transfer will comply with State and local laws. Canyon Fuel Company will remain responsible for the management of transferred wells until bond release (Section 731.400).

Water-quality standards and effluent limitations.

There will be no additional surface disturbance from this significant revision. Discharges of water from disturbed areas will be in compliance with all Utah and federal water-quality laws and regulations and with effluent limitations for coal mining contained in 40 CFR Part 434 (Section 751).

Casing and sealing of wells.

The significant revision contains no plans for boring or construction of wells. Well GW-24-1 (completed in the Castlegate Sandstone) is currently monitoring ground water levels in federal lease U07064-027821. When no longer needed for monitoring or other use approved by the Division and upon a finding of no adverse environmental or health and safety effects, or unless approved for transfer as a water well, each well will be capped, sealed, backfilled, or otherwise properly managed as required by the Division. Permanent closure measures will be designed to prevent access to the mine workings by people, livestock, fish and wildlife, machinery and to keep acid or other toxic drainage from entering ground or surface waters (Section 765).

Findings:

Reclamation hydrologic information provided in the PAP is considered adequate to meet the requirements of this section.