

0017



# State of Utah

DEPARTMENT OF NATURAL RESOURCES  
DIVISION OF OIL, GAS AND MINING

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June 9, 1997

TO: File #2

THRU: Daron Haddock, Permit Supervisor

FROM: James D. Smith, Reclamation Specialist

RE: North Rilda Area - Response to April 9, 1997 Deficiencies, PacifiCorp, Deer Creek Mine, ACT/015/018 97-1, Folder #2, Emery County, Utah

## SUMMARY

DOGM identified numerous deficiencies to the proposed North Rilda Area Amendment in a Technical Analysis (TA) dated April 9, 1997. PacifiCorp's response to that TA was received by DOGM on May 14, 1997. Deficiencies identified in the Geology and Hydrology sections of the proposed North Rilda Area Amendment by that previous TA have been satisfactorily addressed, and there are no new deficiencies.

New information on the sealing and plugging of drill-holes is included in Chapter 6 - Geology; otherwise, reference is made to the information in the currently approved MRP-Volume 8: Geology.

Most information on the 108 pages of Chapter 7 of the proposed North Rilda Area Amendment is taken verbatim from the current MRP - Volume 9: Hydrology; however, information specific to the North Rilda Area has been added as needed. Appendix I, a US Bureau of Mines report on "The Response of Springs to Longwall Mining at the Deer Creek and Cottonwood Mines, Wasatch Plateau, Utah" has been added.

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## TECHNICAL ANALYSIS

# ENVIRONMENTAL RESOURCE INFORMATION

Regulatory Reference: Pub. L 95-87 Sections 507(b), 508(a), and 516(b); 30 CFR Sec. 783., et. al.

## GEOLOGIC RESOURCE INFORMATION

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

### **Analysis:**

The proposed North Rilda Area amendment makes reference to the currently approved MRP for geologic information. The current MRP includes geologic information in sufficient detail to assist in determining the probable hydrologic consequences of the North Rilda Area 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. Geologic information in the current MRP is sufficient to determine all potentially acid- or toxic-forming strata down to and including the stratum immediately below the coal seam to be mined. There is no surface disturbance planned in the North Rilda Area so geologic information is not needed to determine whether reclamation can be accomplished. The current MRP includes geologic information in sufficient detail to determine whether the proposed operation has been designed to prevent material damage to the hydrologic balance outside the permit area, and to prepare the subsidence control plan.

Geologic information includes a description of the geology of the current permit and adjacent areas, including the proposed North Rilda addition, from the surface down to and including the lower Blackhawk Formation and Star Point Sandstone. The Blackhawk and Star Point are the strata immediately below the lowest coal seam to be mined and act in some parts of the Wasatch Plateau as a regional aquifer. Areal and structural geology of the permit and adjacent areas are described, including how the areal and structural geology may affect the occurrence, availability, movement, quantity, and quality of potentially impacted surface and ground water. The description is based on maps and plans required as resource information for the plan, detailed site specific information, and, geologic literature and practices.

Strata above the coal seam to be mined will not be removed, so samples have been

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collected and analyzed from test borings or drill cores to provide logs of drill holes that show: lithologic characteristics, including physical properties and thickness of each stratum that may be impacted; the location of ground water where encountered; chemical analyses for acid- or toxic-forming or alkalinity-producing materials in the strata immediately above and below the coal seam to be mined; chemical analyses of the coal seam for acid- or toxic-forming materials, including the total sulfur and pyritic sulfur; and the thickness and engineering properties of clays or soft rock in the stratum immediately above and below each coal seam to be mined.

The Division has not determined it necessary to require the collection, analysis, and description of additional geologic information to protect the hydrologic balance, to minimize or prevent subsidence, or to meet performance standards.

The applicant has not requested that the Division waive in whole or in part the requirements of the borehole information or analysis required of this section.

**Findings:**

Geologic resource information submitted in the proposed North Rilda Area Amendment to the Deer Creek Mine MRP 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, -301-724.

**Analysis:**

**Sampling and analysis.**

Water-quality sampling and analyses of samples collected by PacifiCorp will be done according to the "Standard Methods for the Examination of Water and Wastewater" (p. 55).

**Baseline information.**

The Division has not required additional baseline information for the North Rilda Area.

**Ground-water information.**

The location of existing wells, springs, and other ground-water resources for the North Rilda Area and adjacent areas is shown on map HM-9 and information on location and water rights is on pages 10 to 43 in the North Rilda amendment and in Volume 9 of the Deer Creek Mine MRP. Information on seasonal quality and quantity of ground water is in the Annual Hydrologic Monitoring Reports. Water-quality descriptions include, at a minimum, total dissolved solids or specific conductance corrected to 25°C, pH, total iron, and total manganese. Ground-water quantity descriptions include, at a minimum, approximate rates of discharge or usage and depth to the water in the coal seam and water-bearing strata above and below the coal seam.

**Surface-water information.**

The locations of surface-water bodies, namely streams, in the North Rilda Area are shown on map HM-9. Descriptions and information on names, water rights and usage, and location are also on pages 44 to 54 in the proposed North Rilda amendment and in Volume 9 of the Deer Creek Mine MRP. There are no lakes or impoundments in the North Rilda Area and no discharge into any surface-water body in the North Rilda Area and adjacent areas. Information on surface-water quality and quantity is in the Annual Hydrologic Monitoring Reports and is sufficient to demonstrate seasonal variation. Water-quality descriptions include, at a minimum, baseline information on total suspended solids, total dissolved solids or specific conductance corrected to 25°C, pH, total iron, and total manganese. There is little potential for acid drainage from the proposed mining operation in the North Rilda Area, but baseline acidity and dissolved carbonate and bicarbonate have been determined. Water-quantity descriptions include, at a minimum, baseline information on seasonal flow rates.

**Baseline cumulative impact area information.**

Hydrologic and geologic information for the cumulative impact area necessary to assess the probable cumulative hydrologic impacts of the proposed operation and all anticipated mining on surface- and ground-water systems has been obtained from appropriate Federal or State agencies and also from the applicant.

**Modeling.**

No modeling has been used in the proposed North Rilda Area Amendment.

**Probable hydrologic consequences (PHC) determination.**

A PHC determination that includes the North Rilda Area is included in the currently approved Deer Creek Mine MRP. The proposed North Rilda Area Amendment contains a PHC determination of the proposed operation that provides some additional information and discussion specific to the North Rilda Area, based upon the quality and quantity of surface and ground water under seasonal flow conditions for the North Rilda Area and adjacent areas, including the currently permitted Deer Creek Mine. The PHC utilizes baseline and operational hydrologic, geologic, and other information collected for the North Rilda Area and the currently operating Deer Creek Mine. The PHC does not rely on data statistically representative of the site. The PHC determination includes findings that data collected by PacifiCorp over a fifteen-year period indicate subsidence has not produced any detectable impacts to surface streams and that subsidence should not cause significant impacts to the surface-water system.

Flow in Deer Creek is greater than before mining began because of discharge from the mine, and during low flow the higher TDS content of the mine discharge water is likely causing some degradation of water quality in the stream.

No acid-forming or toxic-forming materials that could result in the contamination of surface- or ground-water supplies are present. There is to be no surface disturbance associated with mining in the North Rilda Area so there will be no impact on sediment yield, acidity, total suspended and dissolved solids or other water quality parameters of local impact, flooding, or streamflow alteration from a disturbed area.

Four springs belonging to North Emery Water Users Association (NEWUA) lie within or immediately adjacent to the North Rilda amendment area. There are also two seeps in the area. None of the seeps and springs directly overlie the proposed mining operation. Some recharge to these seeps and springs could be intercepted by cracks or fractures opened by subsidence. Based on studies of the springs and observation wells and after negotiations with NEWUA, PacifiCorp constructed a slow sand water treatment plant to mitigate potential impacts to the North Rilda springs. A copy of the agreement between PacifiCorp and NEWUA is in Volume 9 - Appendix G. The plant was placed on-line in November 1994 utilizing the Rilda Canyon springs as one of the water sources (p. 84).

Ground water intercepted by mine workings is water that has been held in storage in the rock, principally in perched, fluvial-channel sandstone systems. Data from surface monitoring and the hydrologic characteristics of the Blackhawk Formation and Starpoint Sandstone indicate that the interception of this ground water produces only a minor reduction of natural discharge from the ground-water systems. Long-term monitoring of water

producing zones in the Deer Creek and Wilberg-Cottonwood Mines has established that in-mine flows decrease in volume with time and are not subject to seasonal or yearly fluctuations (p. 85).

No faulting is projected within the North Rilda Area, so interception of ground water from faults and fractures is not anticipated. Geologic structure is an influence on ground-water systems to the south of Rilda Canyon, but the less complex geologic structure of the North Rilda Area, as compared to the permit area to the south, is not expected to influence ground water occurrence or movement.

#### **Supplemental information.**

Results of pump tests in observation wells in Rilda Canyon and a discussion of potential impacts of mining on the NEWUA springs located there are in the proposed North Rilda Area Amendment and the current MRP.

#### **Ground-water monitoring plan.**

The proposed North Rilda Area Amendment includes a ground-water monitoring plan based upon the PHC determination and the analysis of all baseline hydrologic, geologic, and other information in the permit application. The plan provides for the monitoring of parameters that relate to the suitability of the ground water for current and approved postmining land uses and to the objectives for protection of the hydrologic balance.

Parameters to be analyzed are those listed in the Division's guidelines for water quality monitoring, which include TDS or specific conductance corrected to 25°C, pH, total iron, total manganese. Water levels are to be monitored quarterly in the five piezometers in Rilda Canyon. Information on quantity and quality parameters to be monitored, sampling frequency, and site locations is in Volume 9 - Appendix A of the current MRP.

Data from monitoring is to be submitted to the Division every 3 months. Annual reports will contain summaries of all hydrology data. The Division has not required additional monitoring as a condition of approval of this proposed North Rilda Area Amendment. Quarterly operational monitoring will be done to delineate seasonal variations and assess changes in water quality.

The applicant has not requested that monitoring of any water-bearing stratum in the proposed North Rilda Area be waived. Therefore, the Division has made no waiver of monitoring.

**Surface-water monitoring plan.**

The proposed North Rilda Area Amendment includes a surface-water monitoring plan based upon the PHC determination and the analysis of all baseline hydrologic, geologic, and other information in the permit application. The plan provides for the monitoring of parameters that relate to the suitability of the ground water for current and approved postmining land uses and to the objectives for protection of the hydrologic balance. There will be no discharges in the North Rilda Area and therefore effluent limitations are not a direct or specific concern of this amendment. Ground water intercepted by coal-mine operations in the North Rilda Area should have no impact on the operator's ability to control quality or quantity of water discharged from the mine at locations outside Rilda Canyon.

Information on quantity and quality parameters to be monitored, sampling frequency, and site locations is in Volume 9 - Appendix A of the current MRP. Parameters to be analyzed are those listed in the Division's guidelines for water quality monitoring, which include TDS or specific conductance corrected to 25°C, total suspended solids, pH, total iron, total manganese, and flow.

Data from monitoring are to be submitted to the Division every 3 months. Annual reports will contain summaries of all hydrology data. Quarterly operational monitoring will be done to delineate seasonal variations and assess changes in water quality.

The Division has not required additional monitoring as a condition of approval of this proposed North Rilda Area Amendment.

**Findings:**

Hydrologic resource information submitted in the proposed North Rilda Area Amendment to the Deer Creek Mine MRP is considered adequate to meet the requirements of this section.

## **MAPS, PLANS, AND CROSS SECTIONS OF RESOURCE INFORMATION**

Regulatory Reference: 30 CFR Sec. 783.24, 783.25; R645-301-323, -301-411, -301-521, -301-622, -301-722, -301-731.

### **Analysis:**

#### **Coal Resource and Geologic Information Maps**

Map HM-9 shows surface geology and faults in the North Rilda and adjacent areas. The outcrops of the Blind Canyon coal seam and of the Castlegate Sandstone are highlighted. HM-10 shows a cross section along the bottom of a portion of the Right Fork of Rilda Canyon that shows the strata down to the Star Point Sandstone. HM-11 is a cross section at a right angle to HM-10 and shows the riparian-buffer zone and angle-of-draw projections. Other required geologic information is in the current MRP.

#### **Mine Workings Maps**

Location and extent of know workings of active, inactive, or abandoned underground mines are shown on HM-9. The Division's AML section closed the surface openings and reclaimed the disturbed areas of three mines in the North Rilda Area in 1988, and the locations of those closed portals are also shown on HM-9.

#### **Monitoring Sampling Location Maps**

Elevations and locations of test borings and of monitoring stations used to gather data on water quality and quantity for the proposed North Rilda Area Amendment are shown on map HM-9

#### **Subsurface Water Resource Maps**

Map HM-9 indicates that the only bore holes in the North Rilda Area that encountered measurable ground water are located along the Right Fork of Rilda Canyon. Water was found in the alluvium.

### **Surface Water Resource Maps**

Locations of spring collection boxes, pipelines, and meters belonging to the North Emery Water Users Association (NEWUA) are shown on map HM-9, which was submitted as part of the proposed North Rilda Area Amendment. That map also shows locations of streams, springs, and seeps within the proposed North Rilda amendment area and adjacent areas.

### **Well Maps**

There are no gas and oil wells or water wells within the proposed North Rilda amendment area and adjacent areas.

### **Certification**

Maps HM-9, HM-10, and HM-11, which were included in the proposed North Rilda Area Amendment, are were prepared by or under the direction of, and certified by a qualified, registered, professional engineer (p. 4).

### **Findings:**

Maps, plans, and cross sections that were submitted for the proposed North Rilda Area Amendment to the Deer Creek Mine MRP to show resource information on coal resources, geologic information, mine workings, monitoring sampling locations, subsurface water resources, surface-water resources, and wells are considered adequate to meet the requirements of this section.

## **OPERATION PLAN**

### **FISH AND WILDLIFE INFORMATION**

Regulatory Reference: 30 CFR Sec. 784.21, 817.97; R645-301-322, -301-333, -301-342, -301-358.

#### **Analysis:**

##### **Protection and enhancement plan.**

The Utah Division of Wildlife Resources (UDWR) has reviewed the proposed amendment and made several comments on how mining and any related subsidence could directly or indirectly affect wildlife resources. Areas of concern are the riparian zones along the Right and Left Forks of Rilda Canyon and the Castlegate Sandstone escarpments. Only the Right Fork is in the North Rilda Area. The riparian areas are possibly moose habitat and the area is classified as Critical Elk Summer and Winter Range. Although there were no active raptor nests found in the area in 1996 (letter from John Kimball (UDWR) to Jim Carter (UDOGM) dated March 5, 1997), the area has significant historical use by raptors with the Castlegate escarpments providing nesting sites.

A monitoring well and a water monitoring station with a flume are located immediately downstream of the proposed entries beneath the Right Fork of Rilda Canyon. These monitoring stations should detect any significant loss of water from the surface and alluvium into the underground workings at this location.

UDWR is of the opinion that no mining should be allowed where subsidence has the potential, as indicated by angle-of-draw, to affect the riparian areas. Neither should subsidence be allowed to disturb active raptor nests if any are found.

No full-extraction mining is planned under the riparian areas. However, part of one longwall panel will be within 200 feet of the Right Fork of Rilda Canyon riparian area. The relative thinness of overburden where planned longwall panels will be closest to the riparian area increases the possibility for subsidence induced fractures to reach the surface. But the relative thinness of overburden also reduces the likelihood that subsidence effects will extend laterally into the riparian area. To protect the alluvial-colluvial system in the Right Fork a stream buffer zone has been established based on the extent of the riparian zone and a 15 degree angle-of-draw from the Hiawatha Seam, the lowest seam to be mined. Longwall-mining induced subsidence and related impacts are not projected to reach the North Rilda

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riparian areas, as shown on HM-9 and HM-11.

Longwall mining is projected under most of the Castlegate escarpments in the North Rilda Area, and it can be assumed there will be some subsidence effects to the escarpments.

**Findings:**

Information in the proposed North Rilda Area Amendment to the Deer Creek Mine MRP is considered adequate to meet the requirements of the fish and wildlife protection and enhancement plan.

## **GEOLOGIC OPERATION INFORMATION**

Regulatory Reference: R645-301-630, -640

**Analysis:**

Exploration holes and other bore-holes have been managed or will be managed to prevent acid or other toxic drainage from entering ground and surface waters; to minimize disturbance to the prevailing hydrologic balance; and to ensure the safety of people, livestock, fish and wildlife, and machinery in the permit and adjacent areas. Over 110 exploratory drill-holes have been drilled from the surface on the East Mountain properties. Upon completion of each hole, drilling fluids and cuttings have been disposed of properly and each hole sealed or plugged from total depth to the surface collar with cement or cement and bentonite (p.1 - Geology). Detailed information on procedures used to plug the seventeen exploration bore-holes in the North Rilda Area is given in Appendix 1 of Chapter 6 of the proposed North Rilda Area Amendment.

**Findings:**

Information in the proposed North Rilda Area Amendment to the Deer Creek Mine MRP is considered adequate to meet the requirements for geologic information in the 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-water monitoring.**

There will be no surface disturbance in the North Rilda Area and therefore no earth materials and runoff to be handled in a manner to protect ground-water quality.

Ground-water monitoring is to be conducted according to the ground-water monitoring plan found in Volume 9 - Appendix A. The Division has not found additional monitoring necessary. Ground-water monitoring data will be submitted every 3 months to the Division. Monitoring reports will include analytical results from each sample taken during the reporting period. When analysis of any ground-water sample indicates non-compliance with the permit conditions, PacifiCorp will promptly notify the Division and immediately take actions provided for in R645-300-145 and R645-301-731.

Ground-water monitoring shall proceed through mining and continue during reclamation until bond release. Monitoring will be done at the sites listed on pages 99 and 100: East Mountain Springs; in-mine sites that meet the criteria in the Special Condition Stipulation in the Deer Creek permit renewal of February 6, 1996; the Waste Rock Wells; Rilda Canyon Springs - NEWUA; and Rilda Canyon Wells - NEWUA Spring area. Spring 80-50 is added to the East Mountain Spring Monitoring Program. Details of the monitoring program are in MRP Volume 9 - Hydrologic Section: Appendix A.

The proposed North Rilda Area Amendment contains a discussion of the NEWUA springs and the Wellhead Protection Program established by the Federal Safe Drinking Water Act (p. 80 - Hydrology). A draft form of the Utah Safe Drinking Water Committee's rules was used during the investigation for the NEWUA springs (1989-1990). The final wellhead protection rules were adopted in 1993, and delineation of protection zones and management areas remains unchanged from the draft guidelines in Table HT-11 (Volume 9 of the Deer Creek MRP).

Monitoring equipment and structures used in conjunction with monitoring the quality and quantity of ground water, on- and off-site, will be properly installed, maintained, operated, and removed by PacifiCorp when approved by the Division (p. 98 - Hydrology).

#### **Surface Water Monitoring.**

In order to protect the hydrologic balance, underground mining activities will be conducted according to the approved plan. There will be no surface disturbance in the North Rilda Area and therefore no earth materials, ground-water discharges, and runoff to be handled in a manner to protect surface-water quality, prevent additional contribution of suspended solids to streamflow outside the permit area, or protect surface-water quantity and flow rates.

Surface-water monitoring is to be conducted according to the surface-water monitoring plan found in Volume 9 - Appendix A. The Division has not found additional monitoring necessary. Surface-water monitoring will be submitted every 3 months to the Division. Monitoring reports will include analytical results from each sample taken during the reporting period. When analysis of any surface-water sample indicates non-compliance with the permit conditions, PacifiCorp will promptly notify the Division and immediately take actions provided for in R645-300-145 and R645-301-731. For point source discharges, monitoring will be done in accordance with 40 CFR Parts 122 and 123, R645-301-751 and as required by the Utah Division of Environmental Health UPDES permit.

Surface-water monitoring is scheduled to continue through mining and reclamation until bond release. Monitoring will be done at the sites listed on pages 99 and 100: East Mountain Springs; in-mine sites that meet the criteria in the Special Condition Stipulation in the Deer Creek permit renewal of February 6, 1996; the Waste Rock Wells; Rilda Canyon Springs - NEWUA; and Rilda Canyon Wells - NEWUA Spring area. Spring 80-50 is added to the East Mountain Spring Monitoring Program. Details of the monitoring program are in MRP Volume 9 - Hydrologic Section: Appendix A.

Monitoring equipment and structures used in conjunction with monitoring the quality and quantity of ground water, on- and off-site, will be properly installed, maintained, operated, and removed by PacifiCorp when approved by the Division (p. 100 - Hydrology).

#### **Acid- and toxic-forming materials and underground development waste.**

Acid- and toxic-forming materials and underground development waste will be handled according to the Waste Rock Storage Facility operating plan described starting on page 4-6 in Volume 10.

**Transfer of wells.**

Each well will be cased, sealed, or other wise managed, as approved by the Division (p. 100 - Hydrology).

**Discharges into an underground mine.**

No discharges into an underground mine are expected as part of the mining operation in the North Rilda Area. Discharges in other areas are handled according to UPDES information in Volume 9 - Appendix B.

**Gravity discharges from underground mines.**

There are no surface entries or accesses to underground workings planned for the North Rilda amendment area and there is no anticipated gravity discharge of water from the mine. All discharges from the mine are handled according to UPDES information in Volume 9 - Appendix B.

**Water-quality standards and effluent limitations.**

Discharges of water from areas disturbed by underground mining activities will be made in compliance with all applicable State and Federal water quality laws and regulations and with the effluent limitations for coal mining promulgated by the U.S. Environmental Protection Agency set forth in 40 CFR Part 434. UPDES information is in Volume 9 - Appendix B.

**Casing and sealing of wells.**

Each well will be cased, sealed, or other wise managed, as approved by the Division (p. 106).

**Findings:**

Information in the proposed North Rilda Area amendment to the Deer Creek Mine MRP is considered adequate to meet the requirements for hydrologic information in the Operation Plan.

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## **MAPS, PLANS, AND CROSS SECTIONS OF MINING OPERATIONS**

Regulatory Reference: 30 CFR Sec. 784.23; R645-301-512, -301-521, -301-542, -301-632, -301-731, -302-323.

### **Analysis:**

#### **Monitoring and sample location maps.**

The proposed North Rilda Area Amendment contains maps, HM-9 and HM-10, that show the elevations and locations of test borings and of monitoring stations used to gather data on water quality and quantity.

### **Findings:**

Information in the proposed North Rilda Area amendment to the Deer Creek Mine MRP is considered adequate to meet the requirements on hydrologic monitoring and sample location maps in the Operation Plan.

## **RECLAMATION PLAN**

### **GENERAL REQUIREMENTS**

Regulatory Reference: PL 95-87 Sec. 515 and 516; 30 CFR Sec. 784.13, 784.14, 784.15, 784.16, 784.17, 784.18, 784.19, 784.20, 784.21, 784.22, 784.23, 784.24, 784.25, 784.26; R645-301-231, -301-233, -301-322, -301-323, -301-331, -301-333, -301-341, -301-342, -301-411, -301-412, -301-422, -301-512, -301-513, -301-521, -301-522, -301-525, -301-526, -301-527, -301-528, -301-529, -301-531, -301-533, -301-534, -301-536, -301-537, -301-542, -301-623, -301-624, -301-625, -301-626, -301-631, -301-632, -301-731, -301-723, -301-724, -301-725, -301-726, -301-728, -301-729, -301-731, -301-732, -301-733, -301-746, -301-764, -301-830.

#### **Analysis:**

Each well will be cased, sealed, or other wise managed, as approved by the Division (p. 106).

Discharges from areas disturbed by coal mining and reclamation operations will be made in compliance with all federal and Utah water quality laws and regulations and with effluent limitations for coal mining promulgated by the EPA set forth in 40CFR Part 434 (page 101).

#### **Findings:**

Information in the proposed North Rilda Area amendment to the Deer Creek Mine MRP is considered adequate to meet the requirements for general information in the Reclamation Plan.

### **MINE OPENINGS**

Regulatory Reference: 30 CFR Sec. 817.13, 817.14, 817.15; R645-301-513, -301-529, -301-551, -301-631, -301-748.

#### **Analysis:**

There will be no mine openings in the North Rilda Area.

To prevent acid or other toxic drainage from entering ground and surface waters, to minimize disturbance to the prevailing hydrologic balance and to ensure the safety of people, livestock, fish and wildlife, and machinery in the permit area and adjacent area, the operator commits that each well will be cased, sealed, or other wise managed, as approved by the Division (p. 106).

**Findings:**

Information in the proposed North Rilda Area amendment to the Deer Creek Mine MRP is considered adequate to meet the requirements for mine-opening information in the 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:**

There will be no surface disturbance associated with coal mine operations in the North Rilda Area, which will control drainage, minimize disturbance to the hydrologic balance within the permit and adjacent areas, prevent material damage outside the permit area, prevent additional contributions of suspended solids to streamflow, and meet applicable Federal and State water quality laws and regulations. Measures to be taken to avoid acid or toxic drainage from mine wastes and mine discharge are found in the current MRP.

Water treatment facilities have been built in Huntington Canyon as mitigation for potential lose of NEWUA water from springs in Rilda Canyon. The operator commits on page 103 to replace water determined to have been lost or adversely affected as a result of the mining operations if such impact occurs prior to final bond release. The water will be replaced from alternate sources in sufficient quantities to maintain current and post-mining land uses.

There are to be no stream channel diversions or other diversions, sedimentation ponds, or impoundments within the proposed North Rilda Area so there will be no postmining rehabilitation for such facilities.

There will be no permanent sedimentation ponds, diversions, impoundments, and

treatment facilities in the North Rilda Area. Water treatment facilities built in Huntington Canyon by PacifiCorp are not to treat water to meet water quality standards or effluent discharge limitations, such as those set forth in 40 CFR Part 434, but rather to provide culinary water to NEWUA to replace NEWUA-owned spring water that may potentially be lost because of mining operations in the North Rilda Area.

Operational ground-water monitoring of springs, wells and piezometers, and in-mine flows is discussed in the proposed North Rilda Area Amendment. Monitoring of ground-water resources will proceed through mining and continue during reclamation until bond release. Removal of the ground-water monitoring structures will be approved by the Division in conjunction with the Utah State Division of Water Rights.

The only temporary structures definitely identified in the proposed North Rilda Area Amendment are piezometers and flumes. The proposed North Rilda Area Amendment contains a commitment to case, seal, or otherwise manage wells, which includes the piezometers in the North Rilda Area. Monitoring will continue through mining and during reclamation. Monitoring will be done at the sites listed on pages 99 and 100: East Mountain Springs; in-mine sites that meet the criteria in the Special Condition Stipulation in the Deer Creek permit renewal of February 6, 1996; the Waste Rock Wells; Rilda Canyon Springs - NEWUA; and Rilda Canyon Wells - NEWUA Spring area. Spring 80-50 is added to the East Mountain Spring Monitoring Program. Removal of structures will be done following approval by the Division in conjunction with the Utah State Division of Water Rights (p.98).

Post-mining monitoring of surface-water will continue at representative stations determined with the aid of the Division. Representative stations will be monitored during high and low flow until release of the reclamation bond, or an earlier date determined through consultation with local, state, and federal agencies (p. 70). The hydrologic monitoring plan in Volume 9 - Appendix A indicates Parshall-style flumes are installed at long-term surface-water monitoring sites, including those in Rilda Canyon. Monitoring equipment and structures used in conjunction with monitoring the quality and quantity of surface water, on- and off-site, will be properly installed, maintained, operated, and removed by PacifiCorp when approved by the Division (p. 100).

**Findings:**

Information in the proposed North Rilda Area amendment to the Deer Creek Mine MRP is considered adequate to meet the requirements for hydrologic information in the Reclamation Plan.

## **MAPS, PLANS, AND CROSS SECTIONS OF RECLAMATION OPERATIONS**

Regulatory Reference: 30 CFR Sec. 784.23; R645-301-323, -301-512, -301-521, -301-542, -301-632, -301-731.

### **Analysis:**

#### **Reclamation monitoring and sampling location maps**

Map HM-9 shows locations of surface-water monitoring points used for baseline and operational monitoring in the North Rilda Area. Post-mining monitoring of surface-water will continue at representative stations determined with the aid of the Division. Representative stations will be monitored during high and low flow until release of the reclamation bond, or an earlier date determined through consultation with local, state, and federal agencies (p. 70).

Ground water resources in and adjacent to the North Rilda area will be monitored through mining operations and continue during reclamation until bond release. Map HM-9 shows locations of springs and piezometers used for ground-water monitoring in the North Rilda Area. Details of the monitoring program are in MRP Volume 9 - Hydrologic Section: Appendix A.

### **Findings:**

Information in the proposed North Rilda Area amendment to the Deer Creek Mine MRP is considered adequate to meet the requirements for maps, plans, and cross sections of reclamation operations in the Reclamation Plan.

## **CUMULATIVE HYDROLOGIC IMPACT ASSESSMENT**

Regulatory Reference: 30 CFR Sec. 784.14; R645-301-730.

The Division prepared a CHIA of the entire East Mountain area in 1994. The North Rilda Area was included in the CHIA determination because the leases in the North Rilda Area had been issued to PacifiCorp even though they were not part of the Deer Creek Mine permit. The CHIA is sufficient to determine, for purposes of approval of the proposed North Rilda Area Amendment, that the proposed operation has been designed to prevent material damage to the hydrologic balance outside the permit area.