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OK

State of Utah

Department of Natural Resources

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Division of Oil, Gas & Mining

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Lieutenant Governor

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December 29, 2004

File in:
☐ Confidential
☐ Shelf
☒ Expandable
Refer to Record No 0082 Date 12292004
In C/0150018, 2047, Outgoing
For additional information

Chuck Semborski, Environmental Supervisor
Energy West Mining Company
P.O. Box 310
Huntington, Utah 84528

Re: Supplemental Volume 1 - Lease Relinquishment Info, PacifiCorp, Deer Creek Mine, C/015/0018, Task # 2047, Outgoing File

Dear Mr. Semborski:

BLM lease relinquishment decision documents and a tab page are to be inserted into Supplemental Volume 1, Phase I, II, and III Lease Relinquishment Information, which is a confidential volume common to the MRPs of all three PacifiCorp's East Mountain mines. Appendix C of the Legal and Financial Volume (another volume common to the PacifiCorp mines) contains detailed coal-lease information that is affected by these lease relinquishments.

Before the Division can approve this amendment the Permittee must provide the following information in accordance with:

R645-301-301-114, The Permittee needs to update the Underground Right-of-Entry Information with Cited Surface and Subsurface Ownership information in Appendix C of the Legal and Financial Volume to include the February and June 2004 lease relinquishments.

R645-301-121.200, The Permittee needs to reconcile the acreage figures for lease U-47978 in Appendix C of the Legal and Financial Volume with the information in the BLM lease relinquishment documents.

R645-301-121.200, The Permittee needs to update total acreage figures in Appendix C of the Legal and Financial Volume for the Deer Creek, Cottonwood/Wilberg, and Des Bee Dove Mines.

R645-301-521.131, Plate 1-1 needs to be updated to show all lease relinquishments.

A copy of our Technical Analysis is enclosed for your information.

1594 West North Temple, Suite 1210, PO Box 145801, Salt Lake City, UT 84114-5801
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In order for us to continue to process your application, please respond to these deficiencies by March 1, 2005.

If you have any questions, please call me at (801) 538-5286 or Jim Smith at (801) 538-5262

Sincerely,

Pamela Grubaugh-Littig
Permit Supervisor

an
Enclosure
cc: Price Field Office
O:\015018.DER\FINAL\WG2047\WG2047letter.doc

State of Utah

Utah Oil Gas and Mining

Coal Regulatory Program

PacifiCorp
Deer Creek Mine
C/015/0018
Technical Analysis
December 29, 2004

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TECHNICAL ANALYSIS DESCRIPTION

The Division ensures that coal mining and reclamation operations in the State of Utah are consistent with the Coal Mining Reclamation Act of 1979 (Utah Code Annotated 40-10) and the Surface Mining Control and Reclamation Act of 1977 (Public Law 95-87). The Utah R645 Coal Mining Rules are the procedures to implement the Act. The Division reviews each permit or application for permit change, renewal, transfer, assignment, or sale of permit right for conformance to the R645-Coal Mining Rules. The Applicant/Permittee must comply with all the minimum regulatory requirements as established by the R645 Coal Mining Rules.

The regulatory requirements for obtaining a Utah Coal Mining Permit are included in the section headings of the Technical Analysis (TA) for reference. A complete and current copy of the coal rules can be found at http://ogm.utah.gov

The Division writes a TA as part of the review process. The TA is organized into section headings following the organization of the R645-Coal Mining Rules. The Division analyzes each section and writes findings to indicate whether or not the application is in compliance with the requirements of that section of the R645-Coal Mining Rules.

When review of an application results in findings of noncompliance with the R645-Coal Mining Rules, the Division discusses the deficiencies in the analysis sections and cites regulatory references for the deficiencies in the findings sections of the Draft TA. The regulatory references cited describe the minimum requirements for meeting the R645-Coal Mining Rules and obtaining a permit.

The Draft TA includes a summary list of deficiencies at the beginning of the document. The Applicant/Permittee will receive the summary list of deficiencies and a redline/strikeout version of the Draft TA at the completion of the review. As the Applicant/Permittee resolves the listed deficiencies, the Division modifies the Draft TA, until a Final TA with no deficiencies is written. Approval is based upon the Final TA. The Permittee will receive an electronic version of the Final TA.

The Final TA is the starting point for review of subsequent applications for permit change, renewal, transfer, assignment, or sale of permit right. The Division modifies the analysis and findings in the Final TA to reflect the changes in the application.

SUMMARY OF DEFICIENCIES

This document presents the Division's technical review of the mining and reclamation plan (MRP), including all amendments currently under review for permit C/015/0018. The following summary lists all outstanding deficiencies identified by the Division.

Regulations

R645-301-121.200, The Permittee needs to reconcile the acreage figures for lease U-47978 in Appendix C of the Legal and Financial Volume with the information in the BLM lease relinquishment documents. 8

R645-301-121.200, The Permittee needs to update total acreage figures in Appendix C of the Legal and Financial Volume for the Deer Creek, Cottonwood/Wilberg, and Des Bee Dove Mines..... 8

R645-301-301-114, The Permittee needs to update the Underground Right-of-Entry Information with Cited Surface and Subsurface Ownership information in Appendix C of the Legal and Financial Volume to include the February and June 2004 lease relinquishments..... 7

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SUMMARY OF DEFICIENCIES

GENERAL CONTENTS

NOTE:

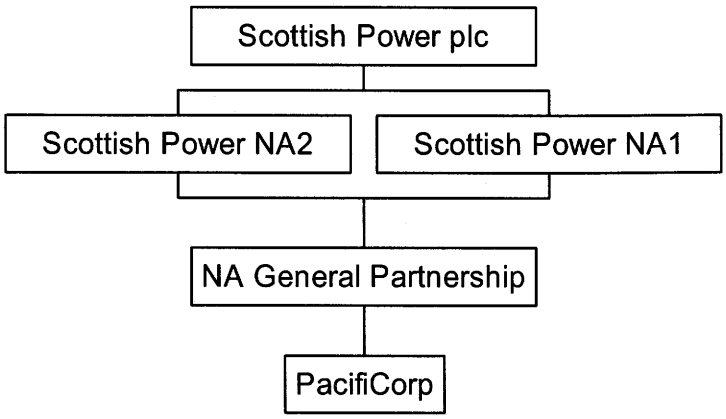
Except for Maps MFU1837D – Coal Ownership and MFS1838D – Surface Ownership, all legal and financial information for the Mill Fork Lease wasmoved from Volume 12 to Volume 1 of the Deer Creek Mine MRP, effective March 5, 2003. Legal and financial information was subsequently incorporated in the Legal and Financial Volume on April 26, 2004.

IDENTIFICATION OF INTERESTS

Regulatory Reference: 30 CFR 773.22; 30 CFR 778.13; R645-301-112

Analysis:

The Permittee is PacifiCorp, an Oregon corporation. All stock of PacifiCorp is owned by NA General Partnership, a Nevada General Partnership. Scottish Power NA1Limited and Scottish Power NA2 Limited make up NA General Partnership and Scottish Power plc own both of these identities. Energy West Mining Company, a wholly owned subsidiary of PacifiCorp is the operator. Ownership and control information with names of officers and directors is in Appendix A (list is current as of December 2000). The organization is diagramed below.



The application gives the name, address and telephone number of the Permittee and operator (page 2). The resident agent is identified as Charles Semborski. Employer I.D. Number is 93-0246090 for PacifiCorp and 87-0246090 for Energy West Mining. PacifiCorp will pay the abandoned mine reclamation fee (page 1-2). The names, addresses, permit numbers, regulatory

authorities, and MSHA numbers together with dates of issuance for coal mining and reclamation operations owned or controlled by the Permittee is found in section R645-301-112.400.

The table titled Deer Creek Mine – Underground Right-of-Entry Information with Cited Surface and Subsurface Ownership lists surface and subsurface owners of record together with the right of entry information. Surface owners and subsurface coal rights are shown on maps MFS1838D and MFU1837D, respectively. Section R645-301-112.600 lists the name and address of each owner of record of all surface and subsurface property contiguous to any part of the permit area.

The only lease interests in the permit area besides coal are oil and gas leases and grazing permits (page 1-21).

PacifiCorp, Deer Creek Mine submitted a memo that acknowledges that all ownership and control information has been updated as of March 3, 2003. The Permittee indicated that no change has occurred in the information previously submitted under R645-301-112.100 through R645-301-112.800.

Findings:

Information provided in the application is considered adequate to meet the minimum Identification of Interests section of the regulations.

VIOLATION INFORMATION

Regulatory Reference: 30 CFR 773.15(b); 30 CFR 773.23; 30 CFR 778.14; R645-300-132; R645-301-113

Analysis:

The NOV information found in Appendix B of Section R645-301-113 Violation Information is up-dated to April 17, 2002.

Findings:

Information provided in the application meets the minimum Violation Information section of the regulations.

RIGHT OF ENTRY

Regulatory Reference: 30 CFR 778.15; R645-301-114

Analysis:

The USFS owns the surface lands in the Mill Fork Lease and SITLA is the sub-surface coal owner. The specific right of entry document is State Coal Lease ML 48258, Issued on April 1, 1999 to PacifiCorp (page 1-19). An Environmental Assessment for this lease was prepared by the Manti-La Sal National Forest and the Bureau of Land Management dated, June 1997 and titled, Mill Fork Federal Coal Lease Tract UTU-71307 Environmental Assessment Lease-By-Application No. 11 (EA).

The Mill Fork Lease added 5,563 acres to the permit area for a total of 22,621 acres. The table titled Deer Creek Mine – Underground Right-of-Entry Information with Cited Surface and Subsurface Ownership lists the total right-of-entry acres as 22,572. The total acreage needs to be recalculated because of the 2004 lease relinquishments (see following).

The Permittee has submitted copies of signed BLM lease relinquishment Decision Documents and a tab page to be inserted into Supplemental Volume 1, Phase I, II, and III Lease Relinquishment Information, which is a confidential volume common to the MRPs of all three PacifiCorp mines on East Mountain. The decision documents are dated December 14, 1995 and February 17, February 20, and June 24, 2004. Also included is a Decision Amendment dated April 2, 2004 that rectifies errors in legal descriptions and lease numbers in three of the February 2004 Decision Documents. The Decision Documents give dates when lease relinquishment decisions were finalized and descriptions of the lands and rights being relinquished.

Appendix C of the Legal and Financial Volume contains Ownership and Right of Entry information for the Deer Creek, Des Bee Dove, and Cottonwood/Wilberg Mines (plus the Trail Mountain Mine). Acreage descriptions in that appendix do not include the February and June 2004 relinquishments, so this Appendix C needs to be updated. The Permittee needs to specifically resolve discrepancies between the Decision Documents and Appendix C as to the amount of acreage relinquished and remaining for lease U-47978. Plate 1-1 shows the 1995 relinquishments but it needs to be updated to show all the lease relinquishments. [12292004]

Findings:

Right of Entry Information is not adequate to meet the requirements of the R645 Coal Rules. Before the Division can approve this amendment the Permittee must provide the following information in accordance with:

R645-301-301-114, The Permittee needs to update the Underground Right-of-Entry Information with Cited Surface and Subsurface Ownership information in Appendix C of the Legal and Financial Volume to include the February and June 2004 lease relinquishments.

R645-301-121.200, The Permittee needs to reconcile the acreage figures for lease U-47978 in Appendix C of the Legal and Financial Volume with the information in the BLM lease relinquishment documents.

R645-301-121.200, The Permittee needs to update total acreage figures in Appendix C of the Legal and Financial Volume for the Deer Creek, Cottonwood/Wilberg, and Des Bee Dove Mines.

LEGAL DESCRIPTION AND STATUS OF UNSUITABILITY CLAIMS

Regulatory Reference: 30 CFR 778.16; 30 CFR 779.12(a); 30 CFR 779.24(a)(b)(c); R645-300-121.120; R645-301-112.800; R645-300-141; R645-301-115.

Analysis:

Maps MRS1838D and MFU1837D show the new permit area and a legal description is found in Appendix E. A statement is provided that after consultation with state and federal agencies, no lands within or adjacent to the permit area have been identified as qualifying under R645-103-300 as areas unsuitable for surface effects of underground coal mining activities (page 1-22).

Findings:

The information provided in the application meets the minimum Legal Description and Status of Unsuitability Claims requirements of the regulations.

PERMIT TERM

Regulatory References: 30 CFR 778.17; R645-301-116.

Analysis:

The Mill Fork Lease is an extension to the Deer Creek Mine Permit. A new permit will be issued to include this lease, but the permit will have the same term as the current Deer Creek Mine permit. The Lease is described on page 1-19; coal ownership is shown on Drawing MFU1837D and surface ownership on Drawing MFU1838D

Drawings MFU1840D and MFU1841D identify the lands subject to coal mining over the life of the operation, including the size, sequence, and timing of the mining anticipated and permit boundaries with yearly projections of mining through 2006.

See the following section for information on the public notice.

Findings:

Permit Renewal Information is adequate to meet the requirements of this section of the Coal Mining Rules.

PUBLIC NOTICE AND COMMENT

Regulatory References: 30 CFR 778.21; 30 CFR 773.13; R645-300-120; R645-301-117.200.

Analysis:

Appendix D contains a copy of the proposed public notice. The notice was published in the Emery County Progress for four consecutive weeks, January 1, 2002 to January 22, 2002. The Public Notice contains:

1. Name and business address of Permittee
2. Map of permit area
3. Location of where permit application is available for public review
4. Name and address of Division for comments, although no comments from the public were received.

Findings:

Information provided is considered adequate to meet the minimum Public Notice and Comment section of the regulations.

PERMIT APPLICATION FORMAT AND CONTENTS

Regulatory Reference: 30 CFR 777.11; R645-301-120.

Analysis:

Some baseline hydrologic data are included in MRP Volume 12, and additional data are in Annual and Quarterly reports.

Findings:

Information provided in MRP Volume 12 is considered adequate to meet the minimum requirements of the Permit Application Format and Contents section of the regulations.

MAPS AND PLANS

Regulatory Reference: 30 CFR 777.14; R645-301-140.

Analysis:

Maps submitted with MRP Volume 12 are in the formats required by the Division.

Findings:

Information provided in MRP Volume 12 is considered adequate to meet the minimum requirements of the Maps and Plans section of the regulations.

COMPLETENESS

Regulatory Reference: 30 CFR 777.15; R645-301-150.

Analysis:

The Division determined Mill Fork Lease amendment administratively complete on December 18, 2001. The amendment refers to data in Annual Reports and other sources for some information required for adequate and complete baseline water-quantity and -quality data.

Findings:

Information provided in MRP Volume 12 is considered adequate to meet the minimum requirements of the Completeness section of the regulations.

ENVIRONMENTAL RESOURCE INFORMATION

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

GENERAL

Regulatory Reference: 30 CFR 783.12; R645-301-411, -301-521, -301-721.

The Permittee provides geologic information describing the existing stratigraphy and structure of the Mill Fork Lease area in section R645-301-600 (Geology) of MRP Volume 12. An environmental description is presented under section 645-301-620. All proposed mining activity is underground: no surface activity is currently proposed for the Mill Fork Lease. Regional geology is described in the Geology and Hydrology sections and again in the Probable Hydrologic Consequences Report prepared by Mayo and Associates, LLC, Appendix B to the Hydrology section. Geologic information in the Hydrology section describes the relationship between the stratigraphy and structure and the movement, quantity and quality of water on and near the Mill Creek lease.

The Mill Fork Lease encompasses an area of East Mountain, a finger of the Wasatch Plateau. Its extent is shown on several maps in MRP Volume 12. Drawing MFU 48258 shows the lease in relationship to surface ownership and Drawing MFU 1837D shows the lease in relationship to adjacent leases. The lease lies between Huntington Canyon on the east and Joes Valley, a graben valley, on the west. Genwal Resources, Inc. controls leases to the north associated with the Crandall Canyon Mine. The Huntington #4 Mine, now reclaimed, lies east of the southeastern section of the lease. Energy West controls leases to the south, which are associated with the Deer Creek Mine. Coal extraction will take place in the Hiawatha (lower) and Blind Canyon (upper) coal seams. The extracted coal will be transported through mains to the Deer Creek Mine surface facilities.

The topographic features are presented on several maps and overburden isopach maps. Rilda Canyon, Mill Fork Canyon and Little Bear Canyon intersect the lease on the east. Two tributary canyons to Crandall Canyon intersect the lease on the north. At least five small canyons intersect the lease on the west. The canyons are steep. A ridgeline runs north-south down the western third of the property.

Several springs occur on the lease. The majority of springs appear above the Castlegate Sandstone. Little Bear Spring emanates east of the lease area. The flow from Little Bear Spring was studied by HGI/Water Technology and Research and by Mayo and Associates. Mayo and Associates conducted a dye test in 2001 and concluded that water in the Mill Fork drainage flows through fractures in the Star Point Sandstone to supply Little Bear Spring. Both consultants

concluded that the majority of flow from the spring is recharged from the Mill Fork Graben. Mining in both the Deer Creek and Huntington #4 Mines has intercepted the graben faults. The Permittee plans to access the Mill Fork Lease by developing mains from the Deer Creek Mine, and the entries will cross the Mill Fork Fault. The plans for developing entries from the Deer Creek Mine to the Mill Fork Lease were submitted and reviewed as a separate permit amendment that added 65.7 acres to the permit (approved October 2, 2002). The Permittee addressed concerns related to ground-water interception and subsidence under that permit amendment.

Findings:

The Permittee has submitted sufficient information to address the General section of the regulations.

PERMIT AREA

Regulatory Requirements: 30 CFR 783.12; R645-301-521.

Drawing MFU-1837D identifies the permit boundary, which is also identified as the lease area. The Mill Fork lease will be accessed from the Deer Creek Mine, which lies to the southeast. A 65.7-acre modification to lease U-06039 connects the Deer Creek Mine with the Mill Fork Lease.

Subsidence may occur outside the permit area. Drawing MFS1866D shows that subsidence could occur outside the permit boundary but be confined to the Genwal Mine. The Division will allow subsidence to occur outside the permit boundary in this case because all subsidence will be confined to permitted lands.

The lease will be accessed from the Deer Creek Mine, which lies to the southeast. A 65.7 acre incidental boundary change, U-06039, connects the Deer Creek Mine with the Mill Fork Lease.

Findings:

The Permittee has submitted sufficient information in MRP Volume 12 to address the Permit Area section.

HISTORIC AND ARCHEOLOGICAL RESOURCE INFORMATION

Regulatory Reference: 30 CFR 783.12; R645-301-411.

Analysis:

An historic and archeological resource evaluation was conducted in the Mill Fork area in 1995 by archeological Environmental Research Corporation. A stratified sample or Class II survey was the survey method used. This survey actually sampled 15 percent of the lease area. No significant resources were found. Two nonsignificant prehistoric lithic scatters, no historic and no paleontological resources occur on the lease area. The EA states that the 2 nonsignificant prehistoric sites were found in the Star Point Sandstone and not in the Castlegate Sandstone. The Star Point Sandstone is not likely to be effected by subsidence.

The EA lists several mines and access roads in areas surrounding the lease area developed in the late 1930's and 1940's. The old mines include the Tip Top, Old Leamaster, Johnson, Comfort, Rominger, and Helco Mines. A gas field to the southwest of the lease area was developed in the 1950's. One well lies within the permit area. No evaluation of the historic significance of these mines and gas field is provided in the MRP. No effects of subsidence are expected to occur on these sites.

A letter dated February 8, 2002 from James Dykman, State Historic Preservation Officer, concurs with a determination of No Historic Properties Affected.

Findings:

The information provided in the application meets the minimum Historic and Archeological Resource Information requirements of the regulations.

CLIMATOLOGICAL RESOURCE INFORMATION

Regulatory Reference: 30 CFR 783.18; R645-301-724.

The current Deer Creek, Des-Bee-Dove, Cottonwood-Wilberg MRPs and Annual Reports provide statements of the climatological factors that are representative of the permit area, including:

The average seasonal precipitation;
The average direction and velocity of prevailing winds; and
Seasonal temperature ranges.

Surface water originates mainly from snowmelt, with a significant annual runoff season. Precipitation varies from year to year, with resulting variations in stream flows and spring discharges (MRP Volume 12, section R645-301-624).

As determined by the Division, additional data have not been deemed necessary to ensure compliance with other regulatory requirements.

Findings:

Climatalogical Resource Information in the current Deer Creek Mine MRP provides information that is adequate to meet the requirements of the Coal Mining Rules for the Mill Fork Lease.

VEGETATION RESOURCE INFORMATION

Regulatory Reference: 30 CFR 783.19; R645-301-320.

Analysis:

The biology section of the application uses resource information taken from the Data Adequacy document and the EA.

R645-301-300 Biology, section of the MRP describes the diversified topography, complex habitats and vegetation in terms of ecosystems and uses the classifications of conifer ecosystem, aspen ecosystems, transitional ecosystems and pinyon-juniper ecosystems and two vegetation communities, which are: mountain brush and sagebrush grasslands. Vegetation types in the Mill Fork Lease area are described on the vegetation map (Drawing #: MFS1821B) as:
Perennial Grasslands (high elevation)
Perennial Grasslands (mid-low elevation)
Perennial forb lands (high-elevations)
Perennial forb (mid to low elevations)
Perennial forb (alpine elevations)
Black sagebrush
Wyoming sage
Big basin sage
Silver sage
Rabbit brush
Mountain brush
Oak brush
Mountain maple
Mountain mahogany
High mountain brush
Manzanita
White fir
Ponderosa pine
Douglas fir forest

Spruce-alpine-fir-forest
Bluespruce
Limber & bristle cone
Aspen snowberry
Aspen sage
Aspen creeping barberry
Aspen mixed conifer
Aspen mixed mountain brush
Pinyon juniper woodlands (likely a mistake because this is identified at 9,500 feet elevation)
Utah & Rocky Mountain Juniper
Barren Rock outcrops and ledges
Descriptions of the vegetation in the MRP and the Vegetation Map match.

The MRP describes the transitional ecosystem as various vegetation types that resulted after a fire about 25 years ago. The fire covered a large portion of the Mill Fork area and likely prior to recent man's attempt to control fire this area was in a fire cycle so climax communities have never been defined in the Mill Fork area. The vegetation communities comprising the transitional ecosystems are the predominant communities in this area.

Findings:

The information provided in the application meets the minimum "Vegetation Resource Information" requirements of the regulations.

FISH AND WILDLIFE RESOURCE INFORMATION

Regulatory Reference: 30 CFR 784.21; R645-301-322.

Analysis:

The Mill Fork area contains portions of Crandall Creek and is a watershed for Little Bear, Mill Fork, and Right Fork of Rilda Creek. These are all tributaries to Huntington Creek. The western portion of the area is a watershed to Indian Creek. All of these named creeks contain fish and are important fisheries.

Macroinvertebrate data may be used to determine water quality for fish. The Division in consultation with DWR and USFWS recommends collecting three years of macroinvertebrate baseline data prior to disturbance. The data should be collected one time per year at the same sampling station. The best time of year for sampling is during the summer once immature populations have grown enough for biologist to distinguish among species. Furthermore, sample size should be sufficient enough to reduce mean variation.

Deer Creek mine provides a brief summary of the report - USGS Open-File 81-539. The mine operator plans to use the data in this report for the macroinvertebrate baseline data for the Mill Fork Creek below the confluence of the Left and Right Forks. The report was the result of a collaborative effort among staff from USGS, Utah Department of Natural Resources, and the Division. Data was collected from years 1977 (Oct.), 1978 (July & Oct.), and 1979 (Oct.). From the MRP summary, the results show significant differences between seasons. The macroinvertebrates were at "maximum numbers" for the July sample, but were "not present in any of the October samples" (pg 3-8, 3rd ¶). The Shannon-Weiner diversity index for Crandall and Mill Fork canyons were 2.38 and 2.09, respectively. The Division requests that the mine operator submit the completed report - USGS Open-File 81-539. PacifiCorp has chosen to provide one copy of the report to the Division's library instead of incorporating the full report into the MRP (see Incoming folder, dated February 13, 2003).

A large portion of the permit area contains deer and elk habitat. Deer and elk are shown to have summer range and high value winter range within the permit area (MFS1849B and MSF1822B). Population numbers and trends of deer and elk herd unit 16B can be derived from DWR annul reports dating from 1998 (www.wildlife.utah.gov/hunting/biggame.html). Herd unit 16B, however, covers an area from about Scofield to Ferron and does not focus on the Mill Fork Lease expansion area. DWR cautions to avoid projecting the herd unit 16B population numbers and trends for such a large area to the smaller area of the Mill Fork Lease (LeRoy Mead personal communication, February 25, 2003). The Manti-LaSal National Forest requested that this information be put in the MRP knowing that only regional numbers are available. The intent is to look at trends for the area and the trend for deer is a decreasing population (Rod Player personal communication, February 26, 2003).

A survey for the spotted bat (Forest sensitive species list) and Townsend's big-eared bat was completed in the existing permit area and lease area (Appendix A). Results found no Townsend's big-eared bats. Spotted bats found were solitary and evenly spaced over foraging habitat (lower elevations off the lease area). Roosting sites can be found within lease area and throughout the Huntington drainage in suitable cliffs. The study concludes that by looking at areas that have already been mined cliff failures have not dramatically impacted resident populations. Spotted bats are "common" enough throughout the area that localized cliff failure does not pose a serious threat to the population.

The coal lease is stipulated that SITLA in cooperation with the USFS may impose mitigation on the loss of spotted bats. The mitigation may include avoidance during specific times and /or the prevention of bat occupancy during periods of subsidence, such as by netting or screening (Stipulation #20).

A statement is provided in the MRP that no threatened or endangered species of plants or animals inhabit the Mill Fork area (section R645-301-322.210). This statement is based on PacifiCorp conversations with USFS Personnel Rod Player and Bob Thompson, qualified Wildlife Biologist and Botanist, and information contained in the Environmental Analysis.

The MRP discusses the potential presence of Monti's milkvetch, Canyon sweetvetch, Peterson catchfly, and Link trail columbine. A query to the Utah Natural Heritage program identified Carrington daisy, USFS sensitive species, occurring in the permit area. The MRP describes the potential of this species occurring primarily within the southern region of the mine permit area. Mr. Bob Thompson suggests that there will be no impacts to this species caused from subsidence. The Utah Natural Heritage program identified the Link Canyon columbine and Canyon sweetvetch, USFS sensitive species, occurring adjacent to the permit area in Little Bear Canyon. The MRP addresses the potential for occurrence.

Raptor surveys have been conducted along the escarpment zone of the Huntington Creek Drainage. The below table summarizes the data available in the DWR database for surveys conducted in the Mill Fork area.

Table 1. Summary of raptor nest status, location and species from DWR database.

Nest No.	**78**	**1210**	**1211**	**1282**	**963**	**1206**
Species	Golden Eagle	Golden Eagle	Golden Eagle	Redtail Hawk	Golden Eagle	Redtail Hawk
2002	Tended	Active	Inactive	Inactive	Tended	Inactive
2001	Inactive	Tended	Dilapidated	N/A	Inactive	Inactive
2000	Tended	N/A	N/A	N/A	Tended	N/A
1999	Inactive	N/A	N/A	N/A	N/A	N/A
1998	Active	N/A	N/A	N/A	N/A	N/A
Location	Mill Fork Permit Area*	Mill Fork Permit Area	Mill Fork Permit Area	Genwal Permit Area	Huntington #4 Mine Permit Area	Current Deer Creek Permit Area

*For the purposes of this Technical Analysis the Mill Fork extension to the Deer Creek Permit Area is differentiated from the Deer Creek Permit Area recognizing Mill Fork Lease will be a part of the Deer Creek Permit Area.

There are 3 golden eagle nests in the Mill Fork lease area. Two red tail hawk nests and several eagle nests are adjacent to the lease area but not within the subsidence zone. Current mining plans show one coal seam to be mined under nest 1210 in 1211. Currently, no other nests are within the zone of mining.

The DWR raptor survey flight path was viewed for the 2002 data. No flight line was seen on the western side of the lease area along the Joes Valley Fault. The area was flown several years ago and no nests found (phone conversation with Chuck Semborski October 4, 2002). The presubsidence survey map (MFS1839D) shows outcrops in the first long wall panel that could potentially contain raptor habitat. The Division in consultation with DWR and USFWS is requiring this area to be surveyed for raptors prior to longwall mining.

The Raptor Location Map (MFS1852B) provides the location and number of species-specific raptor nests within and adjacent to the Mill Fork lease area. Nest status is available to the Division after the yearly survey is performed.

The mine operator discusses the habitat requirements for the Mexican Spotted Owl (MSO) and provides a summary of research on potential habitat within the permit area and the adjacent lands. Dr. Willey modeled the Mill Fork least tract area for MSO foraging and nesting habitat. Figure 1 (pg 3-12) shows potential nesting and foraging habitat within the permit area and adjacent lands. The mine operator defines the dark green pixels as "potential foraging areas of steep sloped mixed conifers" and the black pixels as "potential nesting habitat" (pg 3-11, 2nd ¶). The operator also summarizes a DWR report that states that most nests in southern Utah are found in caves or cliff ledges in steep-walled canyons (pg 3-11, 2nd ¶).

Figure 1 (pg 3-12) shows that potential nesting habitat is not within the Mill Fork permit area, but exists north and east of the permit area. This map does not include a distance scale; therefore it is difficult to determine distances between permit area and the modeled nesting habitat sites. Figure 1 also shows discrete parcels of foraging habitat located in the far southwestern corner, and along the mid-eastern and northeastern boundaries of the permit area.

Dr. Frank Howe, DWR, in a meeting with the Division and USFWS discussed the potential for Mexican spotted owl in Utah. Potential habitat was discussed in terms of vegetation, slope, elevation and curvature as follows:

- Vegetation - mixed conifer, P-J, tends towards wooded but not always, fewer but larger trees
- Slope - 60 to 80%, minimum 40%
- Elevation - less than 8,000', if greater than 8,000' only mixed conifer (Douglas fir mix)
- Curvature - canyons, branches off of main canyons, steep walls, cooler north aspects

One of the concerns of the Division is the level of disturbance from subsidence to foraging and nesting habitat. The MRP addresses the presence or absence of four habitat factors within the permit area as requested by the Division. The mine operator states that there is no potential MSO habitat within the lease area, including the 1.6 acres of potential foraging habitat near the far southwestern corner, that could be impacted by subsidence (Figure 2; pg 3-13). The USFWS reviewed a summary of the Division's memo on the possible effect of mining operations on the MSO. USFWS states that Rod Player supports the Willey-Spotskey model predicting "no potential MSO nesting habitat within the Mill Fork permit area". Furthermore, USFWS supports there "will be negligible impact from mining subsidence to 1.6 of 182 acres of predicted potential foraging habitat within this expansion". USFWS agrees with the Division that because there is no nesting habitat for the MSO and mining operation will be below ground, mining operations are "not likely to adversely affect" the MSO (letter, February 11, 2003).

Findings:

The information provided in the application meets the minimum "Fish and Wildlife Resource Information" section of the regulations.

LAND-USE RESOURCE INFORMATION

Regulatory Reference: 30 CFR 783.22; R645-301-411.

Analysis:

The Mill Fork lease area land use is primarily grazing, wildlife and recreation. Other uses in the area are gas production. Currently there is one producing well and plans for future gas development. A pipeline for the one gas well follows Forest Road 244 off the permit area. Utah Power and light has a ROW for a 345 KV power transmission line and another line for the Genwall, Crandall Canyon Mine. The Flat Canyon road enters and leaves the southwest portion of the permit area.

Findings:

The information provided in the application meets the minimum Land Use Resource Information requirements of the regulations.

GEOLOGIC RESOURCE INFORMATION

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

Analysis:

The permittee provides geologic information associated with the Mill Fork Lease area in Section R645-301-600 Geology, Volume 12. An environmental description is presented under 645-301-620.

A description of the regional geology, including stratigraphy and structure is presented in MRP Volume 12. A list of boreholes was submitted in Appendix B. The permittee collected geological information from boreholes and reports to identify the local geological setting. One representative lithologic log is presented in Appendix B. The permittee submitted a generalized cross-sectional map, Drawing MFU 1829D. It shows the a cross-sections of strata from north to south and east to west; however, no detailed information is shown, like fence diagrams identifying changes in the stratigraphic column or location of groundwater bearing zones

between drill sites. The drawing and cross-section shows the Mill Fork graben cuts a surface layer of alluvium, Star Point Sandstone and Mancos Shale in Mill Fork Canyon.

The Permittee provides a table in Appendix C identifying the chemical analyses of roof, floor and coal seam for acid and toxic forming minerals. The samples were collected from the roof, floor and coal in the Blind Canyon and Hiawatha coal seams during a drilling program in the Mill Fork lease. Other samples identifying the chemical analyses of the roof, floor and coal were collected from the Blind Canyon and Hiawatha coal seam in the Deer Creek Mine. The analyses show low sulfate and normal range for pH, calcium, boron, and selenium levels.

The permittee discussed subsidence and subsidence control measures under Section R645-301-525, Volume 12 submittal. Pre-mining resources are identified on the Mill Fork Lease on Drawing MFS 1839D. The Permittee also addresses the potential of impacts to the resources.

Findings:

The Permittee has submitted sufficient information to address the minimum Geologic Resources Information requirements of the Coal Mining Rules.

HYDROLOGIC RESOURCE INFORMATION

Regulatory Reference: 30 CFR Sec. 701.5, 784.14; R645-100-200, -301-724.

Analysis:

Water Replacement

Because of recent changes regarding water replacement in the Coal Mining Rules, a deficiency requiring a plan for replacement of water supplies was included in an earlier technical analysis. As defined in R645-301-100 of the Coal Mining Rules,

> "Water Supply", "State-appropriated Water", and "State-appropriated Water Supply" are all synonymous terms and mean, for the purposes of the R645 Rules, state appropriated water rights which are recognized by the Utah Constitution or Utah Code.

Under rule R645-301-525.400, if the Division determines that subsidence could adversely affect state-appropriated water supplies through damage, diminution in value or foreseeable use; or that contamination, diminution, or interruption could occur, the application must include a subsidence control plan that contains information in accordance with:

> R645-301-525.400 … measures to be taken in accordance with R645-301-731.530 and R645-301- 525.500 to replace adversely affected State-appropriated water supplies ….

R645-301-525.480. A description of the measures to be taken in accordance with R645-301-731.530 and R645-301- 525.500 to replace adversely affected State-appropriated water supplies ...

R645-301-731.530. State-appropriated water supply. The permittee will promptly replace any State-appropriated water supply that is contaminated, diminished or interrupted by UNDERGROUND COAL MINING AND RECLAMATION ACTIVITIES conducted after October 24, 1992, if the affected water supply was in existence before the date the Division received the permit application for the activities causing the loss, contamination or interruption. The baseline hydrologic and geologic information required in R645-301-700. will be used to determine the impact of mining activities upon the water supply.

The probability of subsidence causing such impacts or adverse affects in and adjacent to the Mill Fork Lease is small (MRP Volume 12, section R645-301-728, E.; and R645-301-728, I. 2.), but because a possibility exists, the water replacement rules apply.

Little Bear Spring is of particular concern. Direct impacts are not likely, but the primary source of recharge to this spring is the runoff from upper Mill Fork Canyon, which flows to Little Bear Spring by way of the creek in Mill Fork Canyon and the Mill Fork Graben. The report by Mayo and Associates in Appendix B (MRP Volume 12, section R645-301-700) concludes that Mill Fork is the primary source of recharge to Little Bear Spring. (Based on an AquaTrack™ survey that is not cited in the MRP Volume 12, it has been estimated that 60 to 70 percent of the Little Bear Spring discharge comes from upper Mill Fork Canyon through Mill Fork Graben.)

Between Mill Fork and Little Bear Canyons, the down-plunge end of the Crandall Canyon Syncline intercepts the Mill Fork Graben and could provide part of the recharge to Little Bear Spring. When operations in the Trail Mountain Mine exposed the Spring Canyon Member in the down-plunge end of the Straight Canyon Syncline, ground water under pressure entered the mine at a rate of 200 to 300 gpm until the Spring Canyon Member was depressurized (MRP Volume 12, section R645-301-700, Appendix B, page 72). A possibility exists that mining in the Mill Fork tract could depressurize the water in the Crandall Canyon Syncline and impact some portion of the flow at Little Bear Spring.

The Crandall Canyon Syncline, and the potential that mining in this syncline will impact the hydrologic balance in and adjacent to the Mill Fork Lease, Little Bear Spring in particular, are discussed in the PHC in section R645-301-728, I. 1. Exploration boreholes along the trough of the Crandall Canyon Syncline did not have measurable ground-water inflow from the Blackhawk Formation and Star Point Sandstone. The potential for mining to impact ground water in the Crandall Canyon Syncline is very low.

Subsidence could intercept or interrupt flow from upper Mill Fork Canyon, where precipitation and runoff are greatest, and produce a proportional decrease in the flow at Little Bear Spring (MRP Volume 12, section R645-301-700, Appendix B, page 127). Going on the basis that 65 percent of Little Bear Spring flow is from Mill Fork, then a 20 to 25 percent reduction of flow in Mill Fork could produce a reduction of flow at Little Bear Spring on the order of 10 to 15 percent. The potential for interception of ground-water flow by subsidence is also low.

Because possible impacts to Little Bear Spring exist, areas within the Mill Fork tract are "renewable resource land" under the Coal Mining Rules and subject to specific regulations and protection. There are also other State-appropriated water supplies in and adjacent to the Mill Fork Lease, identified in R645-301-600, Appendix C of MRP Volume 12, covered by the same water replacement regulations. Replacement of State-appropriated water supplies is discussed briefly in section 731.530, which refers to Table MFHT-2. Table MFHT-2 lists:

- Surface- and ground-water rights within and adjacent to the Mill Fork Lease;
- The name associated with the spring or stream/drainage;
- The location of the water right;
- What development has been done;
- Ownership;
- The amount of water claimed in the water right;
- The amount of water documented by the Permittee with baseline data;
- Water-rights shares owned by PacifiCorp that could be used for water replacement;
- Specific steps listed under Mitigation Review that will be followed as part of the process to determine if remediation is needed, including annual consultation with the water-right owners; and
- Specific steps listed under Mitigation Alternatives that will be implemented if replacement becomes necessary:
    - Rehabilitate the spring source using BTCA;
    - Transfer water rights to adjacent ground-water sources (refer to Map MFS1832D for locations of water rights);
    - Establish permanent ground-water collection and distribution systems, i.e., Guzzlers; and
    - For Little Bear Spring, negotiate a mitigation agreement.

These constitute a plan sufficient to satisfy the water replacement requirements in the Coal Mining Rules. The water replacement information in section 731.530 and Table MFHT-2 is referenced in section R645-301-525 in the engineering section.

Sampling and Analysis

Water-quality sampling and analyses of samples will be done according to the "Standard Methods for the Examination of Water and Wastewater". Deer Creek, Des-Bee-Dove, Cottonwood-Wilberg MRP Volume 9, Appendix A has sample documentation and analytical methods and detection limits (R645-301-723, p. 7-69).

Baseline Information

Although some (for example *Lines, G. C., 1985, The ground-water system and possible effects of underground coal mining in the Trail Mountain area, central Utah, USGS Water-Supply Paper 2259*) describe the Blackhawk and Star Point strata as a regional aquifer, water intercepted in the Deer Creek and Cottonwood/Wilberg Mine workings is usually perched water from tabular or stream-channel sandstones that have moderate porosity but low permeability and poor interconnectivity. A potentiometric surface can be mapped in the Spring Canyon Member of the Star Point Sandstone in the Mill Fork tract (MRP Volume 12, Figure MFHF-6), but as with other units of the Star Point, this unit generally has low permeability and produces water only where permeability has been enhanced by fracturing, erosion, or weathering (MRP Volume 12, section R645-301-721, A. 3. f.); however, MW-1 at the Crandall Canyon Mine flows 0.5 to 1 gpm from apparently unfractured Star Point Sandstone, from a zone noted by the driller as being coarser-grained than the rest of the unit (Crandall Canyon Mine MRP, p. 7-7). Water is also encountered in open joint-systems in these rocks, in some fault zones - mainly the Roan Canyon fault zone, and the Straight Canyon Syncline (MRP Volume 12, section R645-301-624).

The North Horn and Price River Formations also contain localized, perched water tables or saturated zones (MRP Volume 12, section R645-301-721, A. 3.), although the Price River Formation is generally devoid of water because of a lack of recharge (MRP Volume 12, section R645-301-721, A. 3. c.).

The locations of known seeps and springs within the Mill Fork Lease area are shown on the Pre-Subsidence Survey Map (MFS1839D). Ground-water rights are described in some detail at R645-301-721, A. 15 of MRP Volume 12. No wells with water rights are mentioned, and the Division has no knowledge of water wells or ground-water resources other than seeps and springs in this area.

Reports covering field parameters go back to 1980 for a few springs. A summary of historic water-quality data for the area, mainly collected for the NEPA analysis process prior to leasing of the coal, is in Appendix C of section R645-301-700.

In the past, PacifiCorp collected water-monitoring data at high-flow (May or June) and low-flow (August, September, or October). Under existing mine permits, operational ground-water samples at springs are collected during July and October: baseline data collection for the

Mill Fork Lease has generally followed the same schedule. Laboratory reports for 39 seeps and springs from the 3rd and 4th quarter 2000 are in Appendix C of MRP Volume 12: this includes EM POND, a spring fed pond used by cattle and wildlife. Reports for 53 seeps and springs from the 2nd, 3rd, and 4th quarters 2001 are also in Volume 12. Altogether, 30 seeps and springs were sampled more than once during the two-year period, and 10 were sampled three times. Baseline monitoring continued during 2002.

Baseline data in MRP Volume 12 for the 20 springs that are to be added to the operational monitoring are summarized in Table TM-1 below. Criteria used to select these springs are listed in Section R645-301-20 A. of the MRP. Water users and the USFS were also consulted on the selection.

Three of the springs selected for monitoring have only limited baseline data. Springs RR-5 and MF-19B had only field parameters until water quality data were obtained at both springs in July 2002. (Information that the Permittee considers representative was obtained at adjacent springs: MF-18B, adjacent to MF-19B, was sampled for water quality in October 2000; and RR-6 and RR-7A, adjacent to RR-5, were sampled during 2001 high-flow because the water at RR-5 was too high in suspended solids.) At spring EM-216, field parameters were collected during the initial quarter of baseline data collection and there have been no further baseline data collected for this spring because of low flows or high suspended solids in the water (July 2001).

Of the other 17 springs, 2 have had water quality determined by lab analyses for one quarter only, 7 had it determined for two quarters, and 6 had it determined for three quarters during the 2000-2001 baseline data collection period; however, additional baseline data were collected during 2002. Baseline data submitted with MRP Volume 12 meet the minimum standard in directive Tech 004 that the Division needs one-year of baseline data to initiate a Technical Analysis and two years of baseline data sufficient to determine seasonal water quality and quantity. There are no baseline data for Grants Spring because it was added, at the request of the USFS, after the baseline-monitoring program was completed, and baseline data for Little Bear Spring consist of the annual water-quality analyses done for CVSSD.

According to the table in section R645-731-200 A. 1. of MRP Volume 12, there are water rights on 8 of the 20 springs that are to be monitored. Of the 8 springs with water rights that are to be monitored, EM-216 has no water-quality data (see Table TM-1 below). There was measurable flow at EM-216 only once during the 2000- 2002 period, and a water-quality sample was not taken that time because of high suspended solids in the water.

R645-301-525.130 of the Coal Mining Rules requires a survey of the quality and quantity of all state appropriated water supplies in the permit and adjacent area that could be contaminated, diminished, or interrupted by subsidence. All springs with water rights that are located within the permit and adjacent area have at least one flow measurement, and most have pH and TDS or electric conductivity measurements. Printouts of water-rights information from the Division of Water Rights are in Appendix C: these provide the information on quality and

quantity needed for the pre-subsidence survey. This water-rights information will determine the quality and quantity to be replaced under Water Replacement Rules unless the Permittee collects baseline data at the water-right points of diversion: baseline data collected for water quantity should be correlated to variations in precipitation, if possible.

Nine of the springs in the area that have water rights (MRP Volume 12, section R645-301-700, Table MFHT-2) are not being proposed for operational monitoring (see Table TM-2 below). Information on why these springs do not have baseline and why they will not be monitored was included in the cover-letter sent with the April 18, 2002 submittal: the springs with water rights that are not being proposed for monitoring are either outside both the permit area and the area where the Permittee expects impacts (JV-26, JV-36, and JV-43), or within the permit area but outside the area where the Permittee expects impacts (RR-14A, UJV-204, UJV-207, UJV-209A, UJV-213, and UJV-214). Criteria used to select these springs for monitoring is tabulated in Section R645-301-20 A. of the MRP. Water users and the USFS were also consulted on the selection, and Grants Spring was added to the monitoring program at the request of the USFS.

Genwal conducted a baseline spring and seep survey in 1994, 1995, and 1996 in the Mill Fork lease-by-application (LBA) tract to meet NEPA requirements (the northern portion of the tract had been surveyed in 1989 and 1990). The connection between these data and the pre-lease hydrology evaluation for the USFS by Genwal is briefly explained in section R645-301-721, A. 4 of MRP Volume 12. The USFS determined these Genwal data met Data Adequacy Standards. These data, along with other data from 1980, 1981, 1982, 1991, 1992, and 1993 are presented in Appendix C and Table MFHT-2 of MRP Volume 12. Appendix C and Table MFHT-2 do not adequately identify when these data were collected or who collected the data, and although these data provide useful information, they do not meet the requirements of determining seasonal variations of quality and quantity for the purposes of the Coal Mining Rules.

The Permittee initiated a re-evaluation of ground-water resources in 2000, but found inconsistencies between their field observations and the older data. Because of this, the Permittee has placed little confidence in information from the previous surveys. Springs and seep locations were resurveyed, and new baseline data were collected in 2000 and 2001 and correlated with the older data where possible. Collection of baseline data continued through 2002.

The 2000 and 2001 data tabulated in Tables MFHT-3 and MFHT-4 of MRP Volume 12 indicate that the response of the Mill Fork seeps and springs to seasonal and climatic changes is similar to that of the other seeps and springs on East Mountain, which have been monitored by the Permittee for more than twenty years.

Water-quality descriptions include those parameters required by the Coal Mining Rules: total dissolved solids (TDS) or specific conductance corrected to 25°C, pH, total iron, and total manganese. In addition, baseline and operational parameters have been determined for the

samples submitted for laboratory analysis: these parameters correspond with those in DOGM directive Tech 004.

Monitoring parameters include approximate rates of discharge from the seeps and springs. Usage is given in the water-rights printouts in Appendix C and locations of the water rights are shown on Drawing MFS1832D- Water Rights of MRP Volume 12.

The Permittee states that extensive research has established that the surface- and ground-water systems are not hydraulically connected, so no impacts to surface waters are anticipated from dewatering of perched systems in the coal seams and adjacent strata (MRP Volume 12, section R645-301-624). Much of the information from this research is summarized in Appendix B, *Surface-water and ground-water investigation of the Mill Fork Lease area, Emery County, Utah*, by Mayo and Associates, October 24, 2001 (MRP Volume 12, section R645-301-700, Appendix B). This lack of interconnectivity does not apply to impacts to surface or ground water due to subsidence, nor where fractures link the surface and subsurface systems.

Table TM-1 – Baseline for Operational Monitoring Springs

Spring Water Right	1982	1993	1994	1995	1996	2000 3rd Qtr	2000 4th Qtr	2001 2nd Qtr	2001 3rd Qtr	2001 4th Qtr	2002 July	2002 Oct.
EM-216 93-3399			field				field					
EM POND							field, lab		field, lab		field, lab	field, lab
Grants Spring Added at request of USFS												
Little Bear Spring 93-1411	lab (CVSSD)	lab (CVSSD)	lab (CVSSD)	lab (CVSSD)	lab (CVSSD)		lab (CVSSD)			lab (CVSSD)		
JV-9						field, lab		field, lab		field, lab	field, lab	field, lab
JV-34							field, lab	field, lab		field, lab		
MF-7		field	field		field	field, lab		field, lab		field, lab	field, lab	field, lab
MF-10 93-1412		field	field	field	field		field, lab		field, lab		field, lab	field, lab
MF-19B (18A) 93-1413			field	field	field	field, (lab)			(lab)		field, lab	
MF-213 93-259	Field					field, lab		field, lab		field, lab	field, lab	field, lab
MF-219 93-1410						field		field, lab		field, lab	field, lab	field, lab
MFR-10								field, lab		field, lab	field, lab	field, lab
MFR-30								field, lab		field	seep	dry
RR-5			field		field	field					field, lab	
RR-15			field	field	field		field, lab		field, lab	field, lab	field, lab	field, lab

RR-23A				field	field		field, lab			field, lab	field, lab	field, lab
SP1-26 SP-1-26							field, lab		field, lab	field, lab	field, lab	field, lab
SP1-29									field, lab	field	field, lab	field, lab
UJV-101		field		field	field		field, lab			field, lab		
UJV-206 93-3400					field	field, lab		field, lab		field, lab	field, lab	field, lab

Table TM-2 – Baseline Monitoring of Springs with Water Rights
Based on Table MFHT-2 of MRP Volume 12
(M) = Proposed for Operational Monitoring

Spring Water Right	1982	1993	1994	1995	1996	2000 3rd Qtr	2000 4th Qtr	2001 2nd Qtr	2001 3rd Qtr	2001 4th Qtr	2002 July	2002 Oct.
EM-216 (M) 93-3399			field			field						
JV-26 93-998												
JV-36 a23164												
JV-43 93-1572												
MF-10 (M) 93-1412		field	field	field	field		field, lab		field, lab	field, lab		
MF-19B (M) 93-1413			field	field	field	field					field, lab	
MF-213 (M) 93-259	Field					field, lab		field, lab		field, lab	field, lab	field, lab
RR-5 (M) 93-1571			field		field	field						
RR-14A 93-1414			field	field	field							
SP1-26 (M) 93-1410							field, lab		field, lab	field, lab	field, lab	field, lab
UJV-204 93-102		field	field	field	field							
UJV-206 (M) A23166					field	field, lab		field, lab		field, lab	field, lab	field, lab
UJV-207 93-821		field	field	field	field	field, lab		field, lab				
UJV-209A 93-1254			field	field	field	field, lab		field, lab				
UJV-213 a21560												
UJV-214 93-3400												
Little Bear Spring (M) 93-1411	Lab (CVSSD)	lab (CVSSD)	lab (CVSSD)	lab (CVSSD)	lab (CVSSD)		lab (CVSSD)			lab (CVSSD)		

Little Bear Spring

Little Bear Spring in Little Bear Canyon, east of the Mill Fork Lease, is an important source of water for the Castle Valley Special Services District (CVSSD), supplying 65 percent of the culinary water to the residents of Huntington, Cleveland, and Elmo. The only treatment required before use is chlorination. It is probably the largest and most consistently flowing spring in the region.

Little Bear Spring flows from the bounding fault zone on the west side of the Mill Fork Graben. Isotope analyses, geophysical investigations, dye-tracer tests, and comparisons of flow in Mill Fork with other Huntington Creek tributaries indicate that the ultimate recharge area for Little Bear Spring is upper Mill Fork Canyon. Precipitation runoff, snowmelt, and discharge from numerous springs collect in both the channel and alluvium of Mill Fork, and the water is diverted to Little Bear Spring through the Mill Fork Graben (MRP Volume 12, section R645-301-721, A. 15. b. (1)). An additional stream-monitoring point has been added upstream of the Mill Fork Graben at the request of the USFS. The proposed location is shown on Drawing MFS1851D.

When operations in the Trail Mountain Mine exposed the Spring Canyon Member in the down-plunge end of the Straight Canyon Syncline, ground water under pressure entered the mine at a rate of 200 to 300 gpm until the Spring Canyon Member was depressurized (MRP Volume 12, section R645-301-700, Appendix B, page 72). Although recharge to Little Bear Spring from the Star Point Sandstone and Blackhawk Formation is generally discounted in MRP Volume 12 because of low permeabilities, the down-plunge end of the Crandall Canyon Syncline intercepts the Mill Fork Graben between Mill Fork and Little Bear Canyons and may provide part of the recharge to Little Bear Spring. The possibility exists that mining in the Mill Fork tract could depressurize the water in this syncline and impact some portion of the flow at Little Bear Spring; however, exploration bore-holes along the trough of the Crandall Canyon Syncline did not have measurable ground-water inflow from the Blackhawk Formation and Star Point Sandstone.

The Permittee has not collected baseline data, but CVSSD has measured flow since 1982 and documented quality for a number of years. Flow varies seasonally, one indication of a shallowly circulating ground-water system, but minimum flows have not dropped below approximately 200 gpm, indicating there is also storage capacity in the ground-water system: much of this storage is probably in the channel-bottom alluvium of Mill Fork Canyon. Average flow has been approximately 340 gpm. Isotopes indicate modern water, and quality is similar to surface waters in Huntington and Little Bear Creeks (MRP Volume 12, section R645-301-721, A. 15. b.). Baseline water-quality and -quantity data from CVSSD for Little Bear Spring have been included in Appendix C, and Little Bear Spring has been added to the monitoring plan.

The Huntington #4 Mine crossed the Mill Fork Graben. Offset on the bounding faults on both sides is approximately 25 to 30 feet (MRP Volume 12, section R645-301-721, A. 3. g.). Within the graben and at the bounding faults, only minor amounts of ground water were

encountered in the mine, and flow at Little Bear Spring was not measurably impacted (MRP Volume 12, section R645-301-721, A. 15. b.). Either the mine is above the potentiometric surface or there is an aquitard – perhaps one of the coal seams – isolating the mine from the water.

Joes Valley Fault.

Three samples of water associated with the fault were collected in the Crandall Canyon Mine, and radiocarbon age and tritium content were measured. There was a minor amount of tritium in one sample, indicating some recharge of modern water, but radiocarbon dating indicated all three samples were 2,500 to 5,000 years old (MRP Volume 12, section R645-301-700, Appendix B, page 78). Drill-holes adjacent to the fault indicated limited lateral hydrologic communication. Mining within 200 to 300 feet of the Joes Valley Fault could intercept modern water, recharged from the surface, but the "active" zone near the fault may include deeper, older water. A stipulation in the coal lease does not allow full extraction mining within a 22 degree angle-of-draw of the fault (MRP Volume 12, section R645-301-728, I. 4. a. (2); and Appendix B, page 126).

Joes Valley Fault separates Joes Valley from East Mountain and the Mill Fork Lease. This fault runs generally north-south. It is a normal fault with up to 2,300 feet of vertical offset, downthrown on the west side: Volume 12 gives the offset as 1,500 feet adjacent to the Mill Fork Lease (MRP Volume 12, section R645-301-721, A. 3. g.). The fault forms the eastern edge of Joes Valley Graben and the steep escarpment along the western flank of East Mountain. (The fault and graben are regional features that extend both south and north of the East Mountain area.) North Horn and Upper Price River Formations are exposed on the floor of Joes Valley, with thick alluvium and colluvium deposits overlying these formations adjacent to the fault and escarpment. Most of the springs in Joes Valley flow from the alluvium along Indian Creek or from the North Horn Formation exposed west of the creek. Springs also flow in the small canyons that have been eroded into the fault scarp: these springs appear to be less numerous in the northern part of the Mill Fork tract where the fault and the mountain ridge are close to each other, and to become more numerous towards the south as the distance between the scarp and ridge increases (MRP Volume 12, Plate 1 and Drawing MFU1823D).

Surface Water Information

Crandall Canyon, Rilda Canyon, Mill Fork, Little Bear, and Indian Creek are the main surface drainages in and adjacent to the Mill Fork Lease. A number of small unnamed tributaries to Indian Creek flow from the west side of East Mountain. Crandall, Little Bear, and Indian Creeks are perennial, but Little Bear Canyon has a small surface area and is perennial mainly because of Little Bear Spring. Crandall, Rilda, Little Bear, and Mill Fork are tributary to Huntington Creek; Indian Creek is tributary to Cottonwood Creek by way of Lowry Water. The USFS excluded Little Bear Canyon from the Mill Fork Lease to protect Little Bear Spring.

Crandall Creek has been monitored for a number of years by Genwall Resources. The Permittee will not monitor this stream unless Genwall terminates monitoring (MRP Volume 12, section R645-301-721, B. 1. b. 1. (b)).

Rilda Canyon has been monitored downstream of the Mill Fork Lease since 1989. Baseline quality analysis monitoring was done in 1989-1990, and is to be repeated every five years (MRP Volume 12, section R645-301-721, B. 1. b. 1. (d)).

Streamflow in Little Bear Canyon is not monitored, but Little Bear Spring is closely monitored by CVSSD. This spring has been added to the monitoring plan in Appendix A of Volume 9.

Baseline and operational data have been collected since 1997 at MFA01 and MFB02 in Mill Fork. Locations are shown on Drawing MFS1851D – Hydrologic Monitoring Map. Data for Mill Fork have been submitted with Energy West's quarterly reports since 1997. Flows have been monitored monthly since January 1997, but it is common for these monitoring sites to have no flow. Laboratory reports for 1997 through 2001 are in Appendix C, and information on flow, pH, conductivity, and dissolved oxygen is summarized. Parameters from DOGM directive Tech 004 have been determined for the samples submitted for laboratory analysis. Only one baseline analyses was done at MFA1 (June 1999) and this site was either dry or inaccessible due to snow the rest of the 1998 through 2002. Baseline quality analyses were done November 1998, June 1999, September 2000, and September 2001 at MFB2, but for unexplained reasons, only operational parameters were done December 1998 and September 1999: this site was dry or frozen during monthly visits in 2002. Baseline analyses will be repeated every five years (MRP Volume 12, section R645-301-721, B. 1. b. 1. (c)). Based on a request from the USFS, an additional monitoring site, MFU-03, was added upstream of the Mill Fork Graben in 2002; the location is on Map MFS1851D.

Indian Creek was monitored for baseline parameters in 2000 and 2001. Flow and water-quality parameters will be measured during baseflow conditions at ICA, ICB, ICF, and ICD (MRP Volume 12, section R645-301-721, B. 1. b. 2. (b)). These sites are marked on Map MFS1851D. Water-quality data for October 2000 and 2001 are in Appendix C of section R645-301-600 of MRP Volume 12. Genwal has monitored flow and water-quality at ICF since 1996, and the data have been incorporated into the Permittee's hydrologic database. The Permittee will continue with operational monitoring during baseflow only at ICA, ICB, and ICD, but Genwal is currently committed to continue monitoring at ICF. (The ICF flume has a continuous recorder but because of poor access it is typically operational only from June through October; however, water samples are collected quarterly when the site is accessible.)

There are no known water-supply intakes for current users of surface waters flowing into, out of, and within the Mill Fork Lease hydrologic area (although the creek in Mill Fork Canyon is a source of recharge to Little Bear Spring). The water supply system in Rilda Canyon is shown on maps and drawings in the existing Deer Creek Mine MRP.

There is no surface disturbance planned for the Mill Fork Lease, and no surface waters will receive discharges from affected areas in the Mill Fork Lease. Locations for Deer Creek Mine UPDES discharge points are shown on maps in the existing MRP.

Names and locations of surface water bodies within the Mill Fork Lease permit and adjacent areas are shown on several maps in MRP Volume 12, including Plate 1; Drawing MFS1830D – Hydrologic Map; and Drawing MFS1839D - Pre-subsidence Survey Map. Water rights are listed in water-rights printouts in Appendix C and locations are shown on Drawing MFS1832D - Water Rights of MRP Volume 12. Surface-water bodies are described in R645-301-721, B.

Information from ICA, ICB, and ICD in MRP Volume 12 , when combined with data from ICF, is sufficient to demonstrate seasonal variations of flow and water quality. Water-quality descriptions include baseline information on total suspended solids, total dissolved solids or specific conductance corrected to 25° C, pH, total iron, and total manganese. In addition, baseline and operational parameters from DOGM directive Tech 004 have been determined for the samples submitted for laboratory analysis.

There will be no new mine openings under the Mill Fork Lease extension and no potential for acid drainage from the proposed mining operation in the Mill Fork Lease. Nevertheless, the Permittee has included information on baseline acidity and alkalinity in the ground-water quality analyses.

Streams in Mill Fork and Crandall Canyons flow from spring snowmelt and heavy thundershowers. In addition to the seasonal surface flow, alluvium transports a significant amount of water throughout the year. After surface runoff has ceased, water from the alluvium may surface over short reaches of the streambed and then percolate into the alluvium again as it continues its flow down the canyon (MRP Volume 12, section R645-301-624).

Baseline Cumulative Impact Area Information

The Mill Fork Lease is in the cumulative impact area (CIA) for the East Mountain Cumulative Hydrologic Impact Assessment (CHIA) prepared by the Division in 1994. An updated CHIA has been prepared.

Mining in the Mill Fork Lease will be done beneath the Mill Fork, Rilda Canyon, and Indian Creek watersheds and a small part of the Crandall Canyon drainage. The Mill Fork Lease area lies between Joes Valley Fault and the Mill Fork graben. The Joes Valley Fault is especially important as it is a subsurface hydrologic barrier between the mine and Joes Valley. Shallow alluvial ground water flows down the canyons that descend from East Mountain to Joes Valley and then flows into Joes Valley through the alluvial fans that have been deposited across the fault

(MRP Volume 12, section R645-301-624, p. 6-18).

Although the areas of impact will shift within the CIA, there should be no change to cumulative impacts outside the CIA. The main hydrologic impact will be removal of water from storage in the Blackhawk Formation and Star Point Sandstone, which will have no impact on the hydrologic balance outside the CIA. The quantity of discharges from the mine to surface waters should continue at rates similar to those from other recent mine operations, and water quality of the discharges should also be similar, so surface water will not be further impacted or materially damaged.

Hydrological Reports

Hydrologic and geologic information for the cumulative impact area have been obtained by the Division from federal or state agencies. Additional information has been included with MRP Volume 12. The Crandall Canyon Mine has provided other information.

1. Christenson, G. E., 1984, Effects of coal mining at Huntington Canyon No. 4 Mine on Little Bear Spring, Emery County, Utah, *in* Harty, K. M., compiler, Utah Geological and Mineral Survey Report of Investigation No. 198, Technical reports for 1984, Site Investigation Section, Utah Geological and Mineral Survey, Salt Lake City, Utah, pp. 121-130.

2. Hansen, Allen and Luce, Inc., March 1997, Genwal Resources- Probable Hydrologic Consequences Evaluation of LBA 11.

   Hansen, Allen and Luce conducted a review of the data and material to identify the probable hydrologic consequences of mining LBA 11 on Little Bear Spring and Rilda Canyon Spring. Main concern regarding potential mining impacts is a decrease or loss of water from springs. A consistent continuous aquifer system is not found locally. Perched systems within the Castlegate and Blackhawk Formations provide small amounts of water to surface springs as water flows out to the edge of the confining geologic layer. Little contribution of water is believed to reach the underlying Starpoint Sandstone units. Ancient channels or erosion beds are identified by in overlying strata can be breached from subsidence fracturing. Faults conveying water such as the Joes Valley Fault and fracture system. Coal structure mapping confirms that the strata dip to the west toward Joes Valley Fault within the entire western half of LBA 11.

3. Mayo and Associates, March 1997, Results of in-mine slug tests on the Star Point Sandstone, Genwal Resources consulting report prepared for Genwal Resources, Inc., March, 1997, 15 p.

4. Mayo and Associates, March 1997, Supplemental hydrogeologic information for

LBA 11.

5. Mayo and Associates, November 1997, Summary of new isotopic information for LBA 11. Mayo and Assoc, October 1997, Investigation of surface-water and groundwater systems in the PacifiCorp Lease area, East and Trail Mountains, Emery County, Utah: Probable Hydrologic Consequences of coal mining in ht Trail Mountain LBA and recommendations for surface-water and groundwater monitoring, Consulting Report prepared for PacifiCorp, October 1997, 139 p.

6. Mayo and Associates, June 1999, Investigation of groundwater and surface-water systems in the vicinity of GENWAL's existing permit area and the Mill Fork Tract, Emery County, Utah.

   Mayo and Associates suggested Little Bear Spring is recharged through surface water and/or alluvial ground-water losses in Middle Fork Canyon.

7. Mayo and Associates, January 2001, Investigation of the alluvial groundwater system in Mill Fork Canyon with implications for recharge to Little Bear Spring..

8. Mayo and Associates, February 2001, Investigation of the potential for Little Bear Spring recharge in Mill Fork Canyon, Emery County, Utah.

9. Mayo and Associates, November 2001, Determination of the recharge location of Little Bear Spring by means of florescent dye tracing.

10. Montgomery, J. R., AquaTrack Survey, December 1998, Little Bear Springs study, Huntington Canyon, Utah.

11. Montgomery, J. R., AquaTrack Survey, December 1999, Little Bear Springs study, Huntington Canyon, Utah.

12. Sunrise Engineering, January 2001, Resistivity survey (Mill Fork Canyon).

13. Sunrise Engineering, November 2001, AquaTrack Survey- Little Bear Spring, Huntington, Utah.

14. Vaughn Hansen Associates, August 1977, Water quality and hydrologic study in vicinity of Huntington Creek Mine No. 4 and Little Bear Spring, prepared for Swisher Coal Company.

The Division has copies of all reports except #3.

Modeling

Modeling techniques have not been included as part of MRP Volume 12.

Probable Hydrologic Consequences Determination

A Probable Hydrologic Consequences report was compiled by Mayo and Associates for Energy West. The report is submitted in Appendix B of section R645-301-700 of MRP Volume 12. The geologic information presented in Volume 12 is sufficient to establish the hydrologic activities and functions for a probable hydrologic consequence determination.

The planned subsidence from full-extraction mining should result in a generally uniform lowering of the surface over broad areas, and that will limit the extent of material damage to the surface lands, with no appreciable change to land uses and renewable resources, including seeps, springs, and streams. Studies by PacifiCorp and by the US Bureau of Mines indicate that impacts to perched aquifers are negligible when site-specific conditions include thick overburden and hydrophilic clays (R645-301-728, I. 2.). Experience in the Deer Creek Mine area shows that subsidence occurs within two months of coal extraction, and the land is stable after two years. Predicted subsidence is 0 to15 feet, based on total cumulative extraction not exceeding 20 feet.

Full-extraction mining will be done beneath the headwaters of Mill Fork, Rilda, and Crandall Canyons, and tributaries to Indian Creek on East Mountain. There will be no full-extraction mining beneath and no subsidence of the perennial stream-reaches in those canyons. MRP Volume 12 discusses the PHC in section R645-728 (pages 79 – 97) and in Appendix B.

The Coal Mining Rules require the permit application to contain a determination of the PHC of the proposed coal mining and reclamation operation upon the quality and quantity of surface and ground water under seasonal flow conditions for the permit and adjacent areas. Complete and adequate seasonal baseline data, upon which the PHC is to be based, are not in MRP Volume 12. Nevertheless, the determination of the PHC on pages 123 – 130 of Appendix B includes findings - based upon the quality and quantity of surface and ground water under seasonal flow conditions for the permit and adjacent areas - on:

1. *Whether adverse impacts may occur to the hydrologic balance;*
    a. Mining in the current Energy West permit areas has not affected surface- and ground-water flows.
        i. Most springs identified in the Deer Creek Mine and Mill Fork Lease areas occur in the Price River, North Horn, and Flagstaff formations;
            1. The layout of the past and future mines is designed to minimize subsidence impacts to the steep cliffs of the Castlegate Sandstone.

2. Nearly all observed subsidence has occurred in the Price River, North Horn, and Flagstaff formations that overlie the Castlegate.
3. Springs in the Price River, North Horn, and Flagstaff formations are isolated from subsidence related fracturing because of:
    a. The thickness of overburden; and
    b. Clayey units that deform plastically and swell when wetted.
4. Numerous springs have been undermined on East and Trail Mountains, and those that are on areas that have subsided show no evidence of discharge declines attributable to subsidence or fracturing.

ii. Ephemeral and intermittent reaches or Deer Creek and Grimes Wash have been subsided, with no discharge declines attributable to mining-induced subsidence.

iii. Waters encountered underground by mining are from strata immediately above and below the mined horizon and from faults.
1. Waters in strata above the coal are from isolated, inactive systems that are not in connection with the near-surface spring waters.
2. Inflows into the Deer Creek and Crandall Canyon Mines have occurred from faults.
    a. In general, these waters do not appear to be tied to modern, active ground-water systems; however
    b. Tritium data indicate that some ground-water inflows from these faults are local and in hydraulic communication with modern near-surface water.
3. In the Straight Canyon Syncline, substantial volumes of ground water have flowed into the Deer Creek Mine from the underlying Star Point Sandstone.

b. By analogy with currently mined areas:

i. Reduction of surface-water flows in Mill Fork, Crandall, and Rilda Canyons is not anticipated.

ii. The potential for adverse affects to headwater reaches of Mill Fork that overlie planned full-extraction mining areas is minimal because these channel reaches are separated from the coal by the thick sequence of low-permeability North Horn and Price River Formations.

iii. The Mill Fork Lease area has no structure analogous to the Straight Canyon Syncline, so inflows to the mine from the underlying Star Point Sandstone are not anticipated.

iv. Mining within 200 to 300 feet of the Joes Valley Fault system could intercept appreciable quantities of modern near-surface water.

c. The potential for adverse impacts to Little Bear Spring is small because:
   i. It is 1.5 miles from the lease boundary and 2 miles from the nearest proposed mining; and
   ii. It discharges from an active ground-water system that is in good communication with shallow recharge sources.

2. *Whether acid-forming or toxic-forming materials are present that could result in the contamination of surface- or ground-water supplies;*
   a. Pyrite has been identified in the PacifCorp mines.
      i. The pyrite oxidizes to produce acid.
      ii. Acidic waters and iron have not been observed in the PacifiCorp mines.
         1. Acid produced by pyrite oxidation is quickly neutralized by naturally occurring carbonate minerals.
         2. Iron is precipitated as iron hydroxide.
   b. No other acid-forming material than pyrite and no toxic-forming materials have been found or are suspected to exist in strata to be disturbed by mining.
   c. Extensive testing of overburden strata, coal, and surrounding rocks has shown that there are no potentially acid- and toxic-forming materials (R645-301-623.100). Details of yearly analyses (1993 to 1999) of coal, floor, and roof are in R645-301-600-Geology - Appendix C of MRP Volume 12. Analyses of overburden material are presented in Table G-1 in Volume 8 of the Deer Creek, Des-Bee-Dove, Cottonwood-Wilberg MRP, and summarized in Appendix A of Volume 12.

3. *What impact the proposed coal mining and reclamation operation will have on:*
   a. *sediment yield from the disturbed area;*
      i. Sediment yield from disturbed surface areas is minimized by sediment control structures;
      ii. Sediment in mine discharge water is minimized by sedimentation ponds;
      iii. Subsidence can increase or decrease sediment load in streams;
         1. Increased stream gradient;
            a. Higher flow velocities;
            b. Greater sediment entrainment.
            c. Extent this will occur in the Mill Fork Lease area is not known, but this is typically local and short-lived.
         2. Decreased stream gradient, stream impoundment;
            a. Sediment deposited in the impoundment;

b. Extent this will occur in the Mill Fork Lease area is not known, but this is typically local and short-lived.

b. *acidity, total suspended and dissolved solids and other important water quality parameters of local impact;*
   i. Most springs occur in strata above the coal seam and mine, so a mechanism for impact is unlikely.
   ii. Past monitoring at the Deer Creek, Des-Bee-Dove, Cottonwood-Wilberg Mines has detected no impacts to quality of water in springs and streams.
   iii. Water discharged from the Mill Fork Lease will be subject to UPDES standards.
   iv. Water discharged should be similar to that discharged from the Deer Creek and Cottonwood-Wilberg Mines, which:
      1. Meets secondary drinking water quality standards, and
      2. Has not had identifiable detrimental impacts on the quality of water in the receiving streams

c. *flooding or streamflow alteration;*
   i. Expected discharge, although impossible to predict, will probably be much less than the maximum runoff during spring snowmelt or summer thundershowers;
   ii. Flooding and streamflow alteration are not expected from mine discharge waters.

d. *ground-water and surface-water availability;*
   i. Mining will not significantly affect availability of ground water
      1. Ground water in the Blackhawk is compartmentalized and the formation is not a hydraulically continuous aquifer
      2. Ground water in the Blackhawk is isolated from overlying, modern ground waters;
      3. Local effects of dewatering will have no effects on the ground-water availability in the surrounding region.
   ii. No water supplies will be impacted by removal of water from strata immediately above and below the coal seams.

e. *other characteristics as required by the Division;* The Division has required the evaluation of no other characteristics.

4. *Whether the UNDERGROUND COAL MINING AND RECLAMATION ACTIVITIES conducted after October 24, 1992 may result in contamination, diminution or interruption of State-appropriated Water in existence within the proposed permit or adjacent areas at the time the application is submitted.*

a. There are no ground-water supply wells in the Mill Fork Lease area. No water supplies will be impacted by removal of water from strata immediately above and below the coal seams.

Drawing MFU1823D, the surface geology map, shows the Crandall Canyon Syncline passing right through the heart of the projected Mill Fork Lease mine workings, and it intercepts the Mill Fork Graben just upgradient of Little Bear Spring. The Crandall Canyon Syncline, and the potential that mining in this syncline will impact the hydrologic balance in and adjacent to the Mill Fork Lease, Little Bear Spring in particular, are discussed in the PHC in section R645-301-728, I. 1.

The Permittee has discussed the expected duration of flow and the volume of water expected to be encountered in section R645-301-728. I. 4. c. Additional information is provided in R645-301-721, A. 9. and R645-301-721, A. 10. Discharge is expected to be similar to that in the Deer Creek Mine and adjacent Crandall Canyon Mine, but discharge per acre mined is not estimated because interception of water varies depending on several factors, and flow from any given area is expected to decline rapidly after the initial encounter and to decrease over time.

Findings:

Hydrologic Resource Information is considered adequate to meet the requirements of this section.

MAPS, PLANS, AND CROSS SECTIONS OF RESOURCE INFORMATION

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

Analysis:

Applicable cross sections and maps included in or referenced in Volume 12 have been prepared by, or under the direction of, and certified by a qualified, registered, professional engineer or land surveyor, with assistance from experts in related fields such as hydrology, geology, and biology (MRP Volume 12, section R645-301-513, p. 5-2).

Affected Area Boundary Maps

The affected area is usually considered by the Division to be the same as the total life of mine area. Because the total life of mine area is often difficult to predict, the Division usually allows the Permittee to give a best guess estimate.

The Mill Fork lease northern boundary is the Crandall Canyon mine so northern expansion is unlikely. The western boundary is near the Joes Valley Fault so western expansion is also unlikely. To the south is the existing Deer Creek mine. To the east is the South Crandall tract. Therefore, the Division will consider the permit area for the Mill Fork lease to be the same as the affected area.

Coal Resource and Geologic Information Maps

The Permittee has submitted maps and tables identifying the local geologic and hydrologic features within and near the Mill Fork Lease Tract. Map MFU-1823D, the Geologic Formations Map, shows the locations and elevations on the surface of all exploration drill holes and test wells within the lease area. Seventeen coal exploration holes and one gas well have been drilled within the lease area. The Utah Geological and Mineral Survey (Utah Geological Survey) drilled DH-2 in 1975. The US Geological Survey drilled holes CLB-1, CLB-2, CLB-3A, SLB-1 and SLB-2 in 1980. ARCO Coal Company drilled HC-2 and HC-3 in 1981. PacifiCorp has drilled nine boreholes to date within the lease, EM-169 through EM-177. Meridian Oil and Gas Co. drilled a single gas well on the property in 1987. Energy West used information from these drill holes and wells to assess the underground geology, coal reserves, ground-water resources, and probable impacts to resources.

Map MFU-1823D, Geologic Formations Map, shows the locations and elevations of the surface of all exploration and drill holes and test wells within the permit area. Seventeen coal exploration holes and one gas well have been drilled within the lease tract.

There are two power lines on the lease. One line crosses a quarter section on the east side of the lease area. There is no planned mining beneath the line. The other line crosses the lease diagonally from south to west. It crosses over one panel. Two towers lie within the panel.

Existing Structures and Facilities Maps

No surface structures exist or currently planned for the Mill Fork Lease area. However, the Permittee did make a statement that they are evaluating the possibility of new portals located at Crandall Canyon. This would require a separate permitting action and will not be approved under the C/015/018-PM01I (Mill Fork Lease).

Existing Surface Configuration Maps

Several maps show the existing surface configuration of the Mill Fork lease area, such as Drawing MFS1839D, Deer Creek Mine Mill Fork Lease ML-48258 Pre-Subsidence Survey Map. The map is at a scale of 1" = 1,000 'and has 100 foot contours.

Existing surface configuration is portrayed in the Geologic Cross-sections, MFU-1829D and Geologic Formations Map, MFU-1823D. The characteristics of the drainage pattern are a result of the surface configuration on the plateau.

Mine Workings Maps

There has been some historic mining in the canyons east of the lease tract, but no mining has occurred within the Mill Fork Lease boundary. The Permittee has submitted maps showing the underground mine working associated with the Mill Fork Lease. The maps show active, inactive and abandoned underground mine workings of Genwal Coal Company, Skeen Mine, Helco Mine, Huntington #4 Mine, and the Deer Creek Mine.

The Permittee has given mine projection for the Blind Canyon and Hiawatha coal seam in the Mill Fork Lease. Map MFU-1840D gives the mining sequence for nineteen years in the Hiawatha Seam. These maps are projections and can change in the future due to ground condition, roof control, coal quality, mineable reserves and coal market.

Monitoring and Sampling Location Maps

Several maps, including Geologic Formations Map MFU-1823D, identify the locations of boreholes from which geologic information and sampling was conducted.

Permit Area Boundary Maps

The permit area boundary is identified on several maps including maps MFU-1823D, MFU-1824D, MFU-1825D, MFU-1826D, MFU-1827D and MFU-1828D and MFU-1824D.

Subsurface Water Resource Maps

Although Lines (*Lines, G. C., 1985, The ground-water system and possible effects of underground coal mining in the Trail Mountain area, central Utah, USGS Water-Supply Paper 2259*) described the Blackhawk and Star Point strata as a regional aquifer, water intercepted in the Deer Creek and Cottonwood/Wilberg Mine workings is usually perched water from tabular or stream-channel sandstones that have moderate porosity but low permeability and poor interconnectivity. Water is also encountered in open joint-systems in these rocks, in some fault zones - mainly the Roan Canyon fault zone, and the Straight Canyon Syncline (MRP Volume 12, section R645-301-624). The North Horn and Price River Formations also contain localized, perched aquifers or saturated zones (MRP Volume 12, section R645-301-624). Hydrographs of spring and seep discharge rates, such as Figure 12 of Appendix B (MRP Volume 12, section R645-301-700, Appendix B), show seasonal and climatic differences of head.

Areal and vertical distribution of the formations that contain these perched waters are shown on Drawings MFU1823D and MFU1829D in the Geology section of MRP Volume 12. There are no maps or cross-sections of individual aquifers nor of seasonal differences of head in different aquifers, and the Division does not routinely require such detailed description or mapping of these localized, discontinuous perched ground-water zones.

Surface and Subsurface Manmade Features Maps

The Permittee has identified surface and subsurface man made features within, passing through, or passing over the permit area - see Page 5-20 and 5-21 and Map MFS1839D.

Map MFU1840D shows that Genwal mine facilities are within 1,000 feet of the permit area. The Permittee has identified the buildings that are in or within 1,000 feet of the permit area. The buildings are the Genwal mine facility and are shown on Figure R645-301-500a of MRP Volume 12.

The Permittee has shown two gas wells, one of which is proposed. This is illustrated on several of the mine maps. The gas well in Section 23 in the Mill Fork Lease will not be undermined. Longwall mining between the years 2012-2016 will undermine the proposed gas well in Section 14. See map MFU1840D.

Surface and Subsurface Ownership Maps

The surface and subsurface ownership maps for the Mill Fork Lease are Drawings MFS1838D and MFU1837D respectively. The maps identify the ownership of both surface and coal rights.

Plate 1-1 shows the 1995 lease relinquishments but it needs to be updated to show the 2004 lease relinquishments. [12292004]

Surface Water Resource Maps

There are no known water-supply intakes for current users of surface waters flowing into, out of, and within the Mill Fork Lease hydrologic area. The water supply system in Rilda Canyon is shown on maps and drawings in the existing MRP. No surface waters will receive discharges from affected areas in the Mill Fork Lease. Locations for Deer Creek Mine UPDES discharge points are shown on maps in the existing MRP. Locations of surface water bodies within the Mill Fork Lease permit and adjacent areas are shown on several maps, including Plate 1; Drawing MFS1830D – Hydrologic Map; and Drawing MFS1839D - Pre-subsidence Survey Map.

Vegetation Reference Area Maps

Vegetation map, Drawing #: MFS1821D, designates the vegetation types within the Mill Fork Lease and adjacent area. The Manti-La Sal National Forest provided the vegetation mapping.

Well Maps

Locations of a gas well and a proposed gas well are shown on several maps, including the two Mine Plans, Drawings MFU1840D and MFU1841D, and the Pre-subsidence Survey Map, Drawing MFS1839D.

Contour Maps

Several maps show the existing contours of the Mill Fork Lease area, such as Drawing MFS1839D, Deer Creek Mine Mill Fork Lease ML-48258 Pre-Subsidence Survey Map. The map is at a scale of 1" = 1,000 'and has 100 foot contours.

Findings:

The information provided is not adequate to meet the requirements of the Maps, Plans and Cross-Sections of Resource Information section of the Coal Mining Rules. Before the Division can approve this amendment the Permittee must provide the following information in accordance with:

R645-301-521.131, Plate 1-1 needs to be updated to show all lease relinquishments.

OPERATION PLAN

MINING OPERATIONS AND FACILITIES

Regulatory Reference: 30 CFR 784.2, 784.11; R645-301-231, -301-526, -301-528.

Analysis:

General

The Permittee plans to conduct only underground mining within the Mill Fork Lease in the near future. All coal will be shipped out of the mine by conveyor belt to the existing Deer Creek coal handling facilities. Men and some of the material will enter then mine through these facilities, and some of the equipment and material will enter the Deer Creek mine by the portal at Rilda Canyon. The Permittee has mentioned in the proposal that surface facilities may be constructed at Crandall Canyon. This would be a separate action and is not considered in this review.

The Permittee has submitted a local and regional description of the geology, including stratigraphy and structure. A list of boreholes was submitted in Appendix B. One representative lithologic log is presented in Appendix B. The Permittee submitted a generalized cross-sectional map, MFU 1829D, showing a cross-section of strata from north to south and east to west, but no detailed information is shown, like fence diagrams identifying changes in the stratigraphic column or location of ground-water bearing zones between drill sites. The drawing shows the Mill Fork Graben cutting the Blackhawk Formation on the geologic map, but not the Star Point Sandstone and Mancos Shale in the Cross-section.

The Mill Fork Lease encompasses an area of East Mountain. Its extent is shown on several maps in the Mill Fork tract submittal. Drawing MFU 48258 shows the lease in relationship to surface ownership. It lies between Huntington Canyon and Joes Valley. Genwal Resources, Inc. controls leases to the north associated with the Crandall Canyon Mine, and Energy West control leases to the south associated with the Deer Creek Mine. All planned mining activities in the Mill Fork Lease are underground. Coal extraction will take place in the Hiawatha (lower) and Blind Canyon (upper) coal seams. The extracted coal will be transported through mains to the Deer Creek Mine surface facilities.

Type and Method of Mining Operations

The Permittee will use continuous miners for development of longwall panels and main entry development. Longwall mining will be used to extract the majority of the coal from the

Mill Fork Lease (Drawings MFU-1824D through MFU-1828D). This method yields high coal recovery and is safer than other mining methods for heavy ground cover. This is the same method being used at the Deer Creek mine today.

Most of the mining in the Blind Canyon seam will take place in the northwest half of the lease. Drawing MFU-1824D identifies the thickness of the overburden above the Blind Canyon coal seam. Overburden thickness in the area of mining ranges from 0 to 2,600 feet. Most of the overburden thickness is over 1,000 feet. The thinner overburden is in the northeast corner of the lease near a side canyon of Crandall Canyon. Overburden isopach maps MFU-18245D and MFU-1825D show only a portal access in that area. No full extraction mining will occur in that area. The greater overburden depth should minimize surface impacts.

Facilities and Structures

The Permittee has not proposed any new surface facilities on the Mill Fork Lease.

Findings:

The Permittee has met the minimum requirements of the Mining Operations and Facilities section of the R645 Coal Rules.

EXISTING STRUCTURES:

Regulatory Reference: 30 CFR 784.12; R645-301-526.

Analysis:

The Permittee listed the existing structures in MRP Volume 12 on Page 5-20 and 5-21. The structures listed include one operating gas well and two gas pipelines, two power transmission lines, one radio repeater station and two roads. Additional structures in the Mill Fork Lease area include the USFS road #244 and transmission lines in the southwest corner of the lease.

The information listed in section R645-301-526 of MRP Volume 12 is for surface structures in existing disturbed areas. The reader is instructed to refer to Volume 5, maps 3-9 and 3-9a for information about other existing structures in the permit area.

Findings:

The information provided in the proposal is considered adequate to meet the requirements of the existing structures section of the regulations.

COAL RECOVERY

Regulatory Reference: 30 CFR 817.59; R645-301-522.

Analysis:

The Permittee will be using longwall mining for the main extraction of coal in the Mill Fork Lease. Continuous miners will be used for development of longwall panels and main entries. This is the current method of mining at the Deer Creek and in Carbon and Emery Counties. This method of mining yields the highest safety and coal recovery possible for underground coal mining.

The Division relies on SITLA and BLM to evaluate the coal recovery plan. Both agencies have reviewed the coal recovery plan and found that the maximum amount of economically recoverable coal will be produced. The Division has reviewed the mine plan and concurs with the findings.

Findings:

The information provided in the proposal is considered adequate to meet the requirements of the coal recovery section of the regulations.

SUBSIDENCE CONTROL PLAN

Regulatory Reference: 30 CFR 784.20, 817.121, 817.122; R645-301-521, -301-525, -301-724.

Analysis:

Renewable Resources Survey

The Permittee has identified manmade features and renewable resources in the Mill Fork lease area. The manmade features in the area include unimproved roads, trails, a gas well and pipelines and power transmission lines. However, no non-commercial buildings or occupied residential dwellings and related structures were shown to exist in the area. The renewable resources include springs, water seeps, grazing land, timber and wildlife. State appropriated water rights are part of the renewable resources in the area.

R645-301-525.130 requires that the Permittee to conduct a survey of the quantity and quality of all State-appropriated water supplies that could be contaminated, diminished, or interrupted by subsidence within the permit and adjacent areas. The Permittee conducted the survey by assessing the State of Utah Water Rights database.

In the tables in hydrology section of the MRP the Permittee list the water rights and owners within the affected area. A detailed print out of water rights is located in Appendix C of the MRP. Unless otherwise stated the Division will assume that the quality and quantity of water associated with each water right is that listed in the printout from Water Rights in Appendix C of the MRP.

The subsidence survey conducted by the Permittee shows renewable resources exists within the Mill Fork affected area. Therefore, the Permittee must provide the Division with a subsidence control plan.

Subsidence Control Plan

The subsidence control plan must address each of the following elements:

- A description of the method of coal removal. The Permittee will use longwall mining exclusively for production mining. The size of the panels, sequence, and timing are shown on Drawing MFU1840D (Hiawatha Mine Plan) and Drawing MFU1841D (Blind Canyon Mine Plan.) Development mining in the Hiawatha Seem is scheduled to occur in 2003 and terminate in 2021. Development mining in the Blind Canyon seam should begin in 2006 with rock slopes from the Hiawatha seam to the Blind Canyon seam and terminate in 2017. Panel lengths will vary from 600 feet to 1,000 feet.

- A map of underground workings that describes the location and extent of areas in which planned-subsidence mining methods will be used and which includes all areas where measures will be taken to prevent or minimize subsidence and subsidence related damage and where appropriate, to correct subsidence-related material damage. Drawing MFS1866D shows the areas where planned subsidence will occur. The drawing shows two areas, one based on a 15 degree angle-of-draw and the other based on a 0 degree angle-of-draw. The drawing only shows the mine workings for the Hiawatha Seam. See Drawing MFU1841D for the Blind Canyon Mine Plan. The main areas that are protected from subsidence are the gas well and the rock slopes between the seams.

In Section 522 of the MRP the Permittee states that the western extent of subsidence will be governed by a 22 degree angle-of-draw because of the Joes Valley Fault. This is a USFS requirement. The gas well will be protected by a 15 degree angle-of-draw. In general, the Division assumes that a 15-degree angle-of-draw is adequate for most underground mines.

If the Permittee uses a 15-degree angle-of-draw the only subsidence that is scheduled to occur outside the permit boundary will be along the northern border next to the Genwal mine. The Genwall mine is also conducting longwall mining in the area and the Genwal mine could cause some subsidence in the Mill Fork area. Because all subsidence would be confined to

permitted areas the Division will allow each mine to subside outside of their respective permit boundaries.

The Permittee believes that no subsidence will occur outside the permit boundary because the angle-of-draw will be much less than 15 degrees. The Permittee makes these claims based on annual subsidence surveys.

- A description of the physical conditions, such as depth of cover, seam thickness, and lithology, which affect the likelihood or extent of subsidence and subsidence-related damage. That information was given in the geology section of the MRP and is considered adequate.

- A description of monitoring, if any, needed to determine the commencement and degree of subsidence so that, when appropriate, other measures can be taken to prevent, reduce, or correct material damage. The Permittee committed to monitor subsidence with aerial photography. This method has been effective in the past and is currently being used by the Permittee.

- A detailed description of the subsidence control measures that will be taken to prevent or minimize subsidence and subsidence-related damage, including, but not limited to: backstowing or backfilling of voids; leaving support pillars of coal; leaving areas in which no coal is removed, including a description of the overlying area to be protected by leaving the coal in place; and, taking measures on the surface to prevent material damage or lessening of the value or reasonably foreseeable use of the surface. The main concerns with subsidence damage are the Joes Valley Fault, the gas well and the escarpments. The Joes Valley Fault will be protected with a 22 degree angle-of-draw, the gas well and rock tunnels will be protected with a 15 degree angle-of-draw. The panels will be laid out to minimize damage to the escarpments. In addition, the Permittee will leave a 400-foot barrier between the most northern panel and the permit boundary. This should minimize any adverse effects on the Genwal mine.

- A description of the anticipated effects of planned subsidence, if any. On Figure R645-301-500d the Permittee shows the anticipated subsidence trough. The maximum amount of subsidence is expected to be 5 feet. Drawing MFS1866D shows the areas where subsidence should occur. .

- A description of the measures to be taken to mitigate or remedy any subsidence-related material damage to, or diminution in value or reasonably foreseeable use of the land, or structures or facilities to the extent required under State law. In order to restore any land affected by operations to a condition capable of supporting the current and postmining land uses stated herein, the Permittee will replace water (including State Appropriated Water Supplies) determined to have been lost or adversely affected as a result of the

Permittee's mining operations if such a loss or adverse impact occurs prior to final bond release. The water will be replaced from an alternative source in sufficient quantity and quality to maintain the current and postmining land uses as stated herein.

In Table MRHT-2 Mill Fork Spring and Seep Survey 2000-2002, the Permittee lists the surface and groundwater rights. In addition the Permittee lists the mitigation alternatives for groundwater as: A) Rehabilitate spring source utilizing BTCA, B) Transfer water rights to adjacent groundwater sources, C) establish permanent groundwater collection and distribution system and D) in the case of disturbance to Little Bear Spring the Permittee will follow a negotiated mitigation agreement. The Permittee reserves the right to use any of the first three methods to replace all groundwater sources. The forth method will only be used in connection with Little Bear Spring. For mitigation of surface water rights the Permittee proposes the following: A) Rehabilitate stream utilizing BTCA, B) Transfer Water Rights to adjacent groundwater sources and C) Establish permanent groundwater collection and distribution systems.

United States Forest Service Comments

The Division reviewed the USFS comments about subsidence issues for the Mill Fork lease. Those issues can be divided into two groups: protecting structures and commitments to repair damage. The USFS wants the Permittee to take action to protect the powerline and gas well in the Mill Fork lease.

Protected areas are outlined in R645-301-525.200 of the Coal Mining Rules. Protected areas include:

- Public buildings and facilities.
- Churches, schools and hospitals.
- Impoundments with 20 acre-feet or more capacity.
- Aquifer or body of waters that is a significant source of a public water supply.

The powerline and gas well are not considered protected structures. The Division cannot prohibit subsiding under those structures. The Permittee has shortened one longwall panel to reduce the possibility of impinging on the powerline. The mine layout maps show no mining within a 15-degree angle-of-draw of the well. The Permittee commits to coordinating mining activities with Merit Oil Company, operator of well Federal #23-32, and to giving six-months notification prior to conducting mining in or adjacent to the angle-of-draw buffer.

The USFS wants the Permittee to make specific commitments to repair of replace damages to structures. The requirements for repair of subsidence related damage to a structure are in R645-301-525.500. The requirements are that if subsidence causes damage the Permittee

will repair the damage. Specific commitments for specific structures are not needed to meet the requirements of the Coal Mining Rules.

Performance Standards For Subsidence Control

The basic performance standard for subsidence control is that the Permittee shall comply with all provisions of the approved subsidence control plan. The Division will monitor the Permittee to insure that all mining is conducted in accordance with the MRP. If subsidence causes material damage the Division will take steps to insure that the land is restored to a condition capable of maintaining the value and reasonably foreseeable uses that it was capable of supporting before subsidence. Repair of damage includes rehabilitation, restoration, or replacement of damaged structures or resources.

Notification

At least 6 months prior to mining, or within that period if approved by the Division, the underground mine operator shall mail a notification to all owners and occupants of surface property and structures above the underground workings. The notification shall include, at a minimum, identification of specific areas in which mining will take place, dates that specific areas will be undermined, and the location or locations where the operator's subsidence control plan may be examined. The Division will monitor the Permittee with respect to notification.

Findings:

The information provided in the subsidence control plan is considered adequate to meet the requirements of this section.

SLIDES AND OTHER DAMAGE

Regulatory Reference: 30 CFR Sec. 817.99; R645-301-515.

Analysis:

There should be no slides occurring in the Mill Fork lease area because all mining activities are underground. If slides would occur, it would most likely be caused by subsidence. The area where slides would most likely occur is along the escarpments. The remedy for these slides would fall under the subsidence mitigation plan.

The Permittee has a plan in place to notify the Division should a slide occur and what action is needed to protect the public.

Findings:

The Permittee has met the minimum requirements of the slides and other damage section of the regulations.

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

Second mining is expected to occur under the Castlegate Sandstone escarpments on the east side of the permit area. This has caused cliff failure and rock falls in other areas mined in the Deer Creek permit area (section R645-301-525. Subsidence Control Plan). The Pre-Subsidence Survey Map (MFS-1839D) shows the Castlegate Sandstone out crops. Escarpments on the Joes Valley side will be protected from subsidence (page 5-24).

The application states (page 3-14) that experience from the existing PacifiCorp permit areas has shown that the effects of subsidence on grazing and grazing lands, timber resources (not identified as a land use) or access to timber resources, and wildlife resources are minimal. Bob Thompson (Forest Botanist, USFS) and Rod Player (USFS) opinions are that subsidence impacts will be negligible to vegetation and wildlife within the Mill Fork Lease (p. 3-19; 4th ¶). The MRP states that infrared color photographs will be used to record vegetation data changes until permit area reduction. When the Division has asked for vegetation information prior to permit area reduction, PacifiCorp has refused to provide such data and again states that their experience indicates no effects. The MRP contains a commitment to continue to analyze vegetation changes every five years using infrared technology. The mine operator will cease analysis once the Division approves a permit area reduction (pg 3-19; 4th ¶). In a letter to the Division (December 4, 2002; RE: Response to the deficiencies to the Mill For Lease Application Round 2…), the mine operator agrees to provide the annual reports on vegetation changes at the time of permit reduction (letter, pg 9).

Endangered and Threatened Species

The only threatened or endangered species possibly present in the permit area is the Mexican spotted owl (although recognized as highly unlikely). The MRP states the potential surface impacts due to second mining have shown land surface disturbance is minimal to non-existent (page 3-9).

The USFWS have identified that water consumption by underground coal mining operations could jeopardize the continued existence of or adversely modify the critical habitat of the Colorado River endangered fish species. The MRP addresses adverse effects to the four Colorado River endangered fish species: the Colorado pikeminnow, the humpback chub, the bonytail chub, and the razorback sucker. Possible effects are addressed by determining the amount of water consumption by the mine. Consumption estimates include evaporation from ventilation; coal preparation; sediment pond evaporation; subsidence effects on springs; alluvial aquifer abstractions into mines; postmining inflow to workings; coal moisture loss; and direct diversions. Mitigation is required if the loss is estimated to be greater than 100 acre-feet per year.

The mine operator provided derivations and values of consumption and addition of water to the Colorado River. The net total is estimated to be a net gain of 2,453 acre-feet. The USFWS reviewed a summary of the Division's memo on the possible effect of mining operations on the Colorado River Basin fishes. USFWS agrees with the Division that because calculations suggest no depletion of water to the Basin will occur, mining operations are "not likely to adversely affect" the endangered fishes of the Colorado River Basin (letter, February 11, 2003).

Bald and Golden Eagles

Page 5-22 of the application states that cliff escarpment failure could occur in section 1 where an eagle nest is located. Mining plans change and a specific protection plan given at this time will likely be obsolete when mining actually occurs. Annual raptor monitoring will continue and prior to mining PacifiCorp will consult with the Division to discuss avoidance, mitigation, and impacts (page 3-7). PacifiCorp should recognize that it is the Division's and not their responsibility to consult with DWR and USFWS.

Wetlands and Habitats of Unusually High Value for Fish and Wildlife

Findings:

The information provided in the application meets the minimum "Fish and Wildlife Resource Information" section of the regulations.

VEGETATION

Regulatory Reference: R645-301-330, -301-331, -301-332.

Analysis:

Specific information concerning the effects of underground coal mining operations on rare and sensitive plant species if found under the Fish and Wildlife Information section.

In order to mitigate any impacts to vegetation from subsidence the impacts must be located, measured and quantified. Color infrared photographs at five-year intervals will be used as a method to monitor potential vegetation change over time.

Findings:

Information provided in the application is considered adequate to meet the minimum Vegetation section of the regulations.

ROAD SYSTEMS AND OTHER TRANSPORTATION FACILITIES

Regulatory Reference: 30 CFR Sec. 784.24, 817.150, 817.151; R645-301-521, -301-527, -301-534, -301-732.

Analysis:

Road Classification System

No roads will be built. All access to the Mill Fork Lease will be from underground. Ventilation portals may be built in Crandall Canyon but that would be handled by a separate amendment.

Findings:

The Permittee has met the minimum requirements of the road system and other transportation facilities section of the regulations.

SPOIL AND WASTE MATERIALS

Regulatory Reference: 30 CFR Sec. 701.5, 784.19, 784.25, 817.71, 817.72, 817.73, 817.74, 817.81, 817.83, 817.84, 817.87, 817.89; R645-100-200, -301-210, -301-211, -301-212, -301-412, -301-512, -301-513, -301-514, -301-521, -301-526, -301-528, -301-535, -301-536, -301-542, -301-553, -301-745, -301-746, -301-747.

Analysis:

Disposal Of Noncoal Mine Wastes

Disposal of noncoal waste will not change because there will be no breakout in the Mill Fork Lease. Noncoal waste materials will be removed either from the Deer Creek's mine portals or from Rilda Canyon portal.

Coal Mine Waste

Coal mine waste will be removed as stated in the approved MRP. The coal mine waste will either be placed underground or shipped to the waste rock disposal site (refuse pile.)

Refuse Piles

No new refuse piles will be associated with the Mill Fork Lease.

Impounding Structures

No additional impoundment structures will be associated with the Mill Fork Lease.

Excess Spoil

No excess spoil will be generated from mining actives. Underground development waste generated from the Mill Fork lease will be not be classified as excess spoil.

Findings:

The Permittee has met the minimum requirements of the spoil and waste materials section of the regulations.

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:

General

Appendix A of the Mill Fork Lease Extension to the Deer Creek Mine MRP is an update of the monitoring plan in Volume 9 of the Deer Creek, Des-Bee-Dove, Cottonwood-Wilberg MRP. Appendix B is a report by Mayo and Associates, *Surface-water and ground-water*

investigation of the Mill Fork Lease area, Emery County, Utah, for the Mill Fork Lease, which includes a PHC determination.

Appendix C to MRP Volume 12 has been submitted with information on springs and seeps in the Mill Fork Lease. There is an interesting section with photos and descriptions of the sites; details on location and elevation, geology and stratigraphic position, and water rights and development information; relationships to other springs; and a determination of the probable recharge area. This appendix also contains data report sheets for select seeps and springs – including isotope data for select springs, and water rights in the Mill Fork Lease area.

Groundwater Monitoring

R645-301-700 – Hydrology - Appendix A of MRP Volume 12 lists sampling sites and a monitoring schedule.

Surface Water Monitoring

R645-301-700 – Hydrology - Appendix A of MRP Volume 12 lists sampling sites and a monitoring schedule.

Acid- and Toxic-Forming Materials and Underground Development Waste

Extensive testing of overburden strata, coal, and surrounding rocks has shown that there are no potentially acid- and toxic-forming materials (MRP Volume 12, section R645-301-623.100). Details of yearly analyses (1993 to 1999) of coal, floor, and roof are in section R645-301-600-Geology - Appendix C of MRP Volume 12. Analyses of overburden material are presented in Table G-1 in Volume 8 of the Deer Creek, Des-Bee-Dove, Cottonwood-Wilberg MRP, and summarized in Appendix A of MRP Volume 12.

Transfer of Wells

MRP Volume 12 contains no information on transfer of wells; however, there are no water-monitoring wells, piezometers, or unplugged exploration holes in the Mill Fork Lease area.

Discharges Into An Underground Mine

There are no mine openings in the Mill Fork Lease. The only potential mine opening associated with this permit extension is possible ventilation breakout in Crandall Canyon, upstream of the existing Crandall Canyon Mine. The need for these portals will be evaluated and the design will be made based on future coal exploration. If these portals are needed, they will

be permitted in a separate application. All currently planned coal mine operations in the Mill Fork Lease will be underground.

Gravity Discharges From Underground Mines

There are no mine openings in the Mill Fork Lease. The only potential mine opening associated with this permit extension is the possible ventilation breakout in Crandall Canyon, upstream of the existing Crandall Canyon Mine. The need for these portals will be evaluated and the design will be made based on future coal exploration. If these portals are needed, they will be permitted in a separate application. All currently planned coal mine operations in the Mill Fork Lease will be underground.

Water-Quality Standards And Effluent Limitations

Discharges of water from areas disturbed by coal mining and reclamation operations will be made in compliance with all Utah and federal water quality laws and regulations and with effluent limitations for coal mining promulgated by the U.S. Environmental Protection Agency set forth in 40 CFR Part 434 (MRP Volume 12, section R645-301-751, p. 7-101). UPDES information is in Appendix B of Deer Creek, Des-Bee-Dove, Cottonwood-Wilberg MRP Volume 9.

Diversions: General

No diversions are planned for coal mining operations the Mill Fork Lease Coal mining operations in the Mill Fork Lease should have no impact on existing diversions in the permit and adjacent areas.

Stream Buffer Zones

No coal mining operations are planned within 100 feet of a perennial or intermittent stream in the Mill Fork Lease. The Permittee states that no such activity will occur without approval from the Division (MRP Volume 12, section R645-301-731.600, p. 7-100).

Sediment Control Measures

Sediment control facilities at the Deer Creek Mine are discussed in Volume 2, Part 3 of the Deer Creek MRP. No surface facilities, sediment control, or other disturbance are planned in the Mill Fork Lease area.

Siltation Structures: General

No siltation structures are planned for coal mining operations the Mill Fork Lease Coal mining operations in the Mill Fork Lease should not impact existing siltation structures in the permit and adjacent areas.

Siltation Structures: Sedimentation Ponds

No sedimentation pond is planned for coal mining operations the Mill Fork Lease Coal mining operations in the Mill Fork Lease should not impact existing sedimentation ponds in the permit and adjacent areas.

Siltation Structures: Other Treatment Facilities

No treatment facilities are planned for coal mining operations the Mill Fork Lease Coal mining operations in the Mill Fork Lease should have no impact on existing treatment structures in the permit and adjacent areas.

Siltation Structures: Exemptions

There is no request for exemption for siltation structures. No siltation structures are planned for coal mining operations the Mill Fork Lease Coal mining operations in the Mill Fork Lease should have no impact on existing siltation structures in the permit and adjacent areas.

Discharge Structures

No discharge structures are planned for coal mining operations the Mill Fork Lease Coal mining operations in the Mill Fork Lease should have no impact on existing discharge structures in the permit and adjacent areas.

Impoundments

No impoundments are planned for the Mill Fork Lease area. Coal mining operations in the Mill Fork Lease should have no impact on existing structures in the permit and adjacent areas.

Ponds, Impoundments, Banks, Dams, and Embankments

No ponds, impoundments, banks, dams, or embankments are planned for the Mill Fork Lease area. Coal mining operations in the Mill Fork Lease should have no impact on existing structures in the permit and adjacent areas.

Casing and Sealing of Wells

Each coal exploration borehole will be plugged by filling it from total depth to the surface with type II portland cement, or if that is not feasible, with bentonite chips to within 5 feet of the surface with cement plug in the top of the hole. A brass marker with the hole number and year will be placed on top of the cement, 2 feet below surface grade. This method has been approved by the BLM and the Division and has been used in the past to prevent acid and toxic drainage from entering water resources, minimize disturbance to fish, livestock, and wildlife, machinery in the permit and adjacent area. If an exploration borehole is converted to a water monitoring well, Utah water well regulations and the provisions of R645-301-731 of the Coal Mining Rules will be followed (MRP Volume 12, sections R645-301-631 and -642, p. 6-23 and 6-24, 6-25 and 6-26).

Findings:

The Permittee has submitted sufficient information to address the minimum Hydrologic Information requirements for this section.

SUPPORT FACILITIES AND UTILITY INSTALLATIONS

Regulatory Reference: 30 CFR Sec. 784.30, 817.180, 817.181; R645-301-526.

Analysis:

No new surface support facilities or utility installations will occur because of the Mill Fork lease.

Findings:

The Permittee met the minimum requirements for the support facilities and utility installations section of the regulations.

SIGNS AND MARKERS

Regulatory Reference: 30 CFR Sec. 817.11; R645-301-521.

Analysis:

No new signs or markers will be needed because of the Mill Fork lease.

Findings:

The Permittee met the minimum requirements for signs and markers section of the regulations.

USE OF EXPLOSIVES

Regulatory Reference: 30 CFR Sec. 817.61, 817.62, 817.64, 817.66, 817.67, 817.68; R645-301-524.

Analysis:

General Requirements

No explosives will be used on the surface as part of the Mill Fork lease.

Findings:

The Permittee met the minimum requirements of the use of explosive section of the regulations.

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:

Applicable cross sections and maps included in or referenced in MRP Volume 12 have been prepared by, or under the direction of, and certified by a qualified, registered, professional engineer or land surveyor, with assistance from experts in related fields such as hydrology, geology, and biology (MRP Volume 12, section R645-301-513, p. 5-2).

There are no impounding structures associated with the Mill Fork Lease.

Affected Area Maps

The Division usually considers the affected area to be equivalent to the permit boundary. Several maps show the permit boundaries including Drawing MFU1840D, Deer Creek Mine Mill Fork Lease ML-48258 Hiawatha Mine Plan.

Mining Facilities Maps

There will be no changes to the current support facilities map because all mining activities will be underground using existing facilities. All maps are P.E. certified.

The only potential surface facility associated with this permit extension is the possible ventilation breakout in Crandall Canyon, upstream of the existing Crandall Canyon Mine. The location for these portals is shown on Drawing MFU1841D in Section 500 of Volume 12. These locations are preliminary, and the need for the portals will be evaluated and the design will be made based on future coal exploration. If these portals are needed, they will be permitted in a separate application (MRP Volume 12, section R645-301-623.200). All currently planned coal mine operations in the Mill Fork Lease will be underground.

Mine Workings Maps

The Permittee has submitted maps showing the underground mine working associated within the Mill Fork Lease. The maps show active, inactive and abandon underground mine workings of Genwal Coal Company, Skeen Mine, Helco Mine, Huntington #4 Mine, and the Deer Creek Mine.

The Permittee has given mine projection for the Blind Canyon and Hiawatha coal seam in the Mill Fork Lease. Maps MFU-1840D and MFU1841D give the mining sequence for nineteen years in the Hiawatha Seam. These map are projected and can change in the future due to ground condition, roof control, coal quality, mineable reserves, and coal market. Maps are P.E. certified.

Monitoring and Sampling Location Maps

Elevations and locations of monitoring stations used to gather data on water quality and quantity are on Plate 1; Drawing MFS1830D – Hydrologic Map; and Drawing MFS1839D - Pre-subsidence Survey Map.

Certification Requirements

All maps and cross-sections that are required to be certified have been certified.

Findings:

The Permittee has met the minimum regulatory requirement for supplying the Division with operations maps, cross-sections, and plans.

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:

There will be no reclamation needed on the Mill Fork Lease because all mining activities will be underground. Subsidence mitigation is not considered as a reclamation requirement.

Findings:

The Permittee has met the minimum requirements of this section.

APPROXIMATE ORIGINAL CONTOUR RESTORATION

Regulatory Reference: 30 CFR Sec. 784.15, 785.16, 817.102, 817.107, 817.133; R645-301-234, -301-412, -301-413, -301-512, -301-531, -301-533, -301-553, -301-536, -301-542, -301-731, -301-732, -301-733, -301-764.

Analysis:

Because no surface disturbance is planned for the Mill Fork area, the Permittee does not have to address the AOC section for the Mill Fork amendment.

Findings:

The Permittee met the minimum requirements of the approximate original contour section of the regulations.

BACKFILLING AND GRADING

Regulatory Reference: 30 CFR Sec. 785.15, 817.102, 817.107; R645-301-234, -301-537, -301-552, -301-553, -302-230, -302-231, -302-232, -302-233.

Analysis:

General

Because no surface disturbance is planned for the Mill Fork area, the Permittee does not have to address the backfilling and grading section for the Mill Fork amendment.

Findings:

The Permittee met the minimum requirements of the backfilling and grading section of the regulations.

MINE OPENINGS

Regulatory Reference: 30 CFR Sec. 817.13, 817.14, 817.15; R645-301-513, -301-529, -301-551, -301-631, -301-748, -301-765, -301-748.

Analysis:

The Permittee has not proposed any new mine opening on the Mill Fork Lease or a change in the mine opening closure plan.

Findings:

The Permittee met the minimum requirements of the mine opening section of the regulations.

ROAD SYSTEMS AND OTHER TRANSPORTATION FACILITIES

Regulatory Reference: 30 CFR Sec. 701.5, 784.24, 817.150, 817.151; R645-100-200, -301-513, -301-521, -301-527, -301-534, -301-537, -301-732.

Analysis:

No new roads or road reclamation plans are associated with the Mill Fork Lease.

Findings:

The Permittee met the minimum requirements of the road systems and other transportation facilities section of the regulations.

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:

Hydrologic Reclamation Plan

There will be no surface disturbance in the Mill Fork Lease area. There will probably be no disturbance to the hydrologic balance within the permit and adjacent areas other than water removed with the coal, water lost with mine ventilation, and water discharged under the UPDES permits: these are minimal and unavoidable effects. There is no anticipation of acid or toxic drainage. Structures in place will prevent, to the extent possible, additional contributions of suspended solids to streamflow. There is no need foreseen for additional water treatment facilities or drainage control in the Mill Fork Lease area. There have been no potential adverse hydrologic consequences identified in the PHC determination.

There are no permanent or temporary structures, stream channel diversions, and other diversions to be constructed, and there will be no need for postmining removal, reclaiming, or rehabilitation of all structures, sedimentation ponds, diversions, impoundments, and treatment facilities within the Mill Fork Lease area.

Casing and sealing of wells

The Permittee describes the casing and sealing of boreholes. Plans are to backfill or seal exploration holes or boreholes to prevent acid or toxic drainage from entering water resources, minimize disturbance in the permit and adjacent areas of the permit area. Boreholes will be filled from total depth to the surface with type II Portland cement. If circulation cannot be maintained while filling, the borehole will be filled with bentonite chips to within 5 feet of the top, then a cement surface plug with a permanent identification marker will be placed on the top of the hole.

Ground-Water Monitoring

R645-301-700 – Hydrology - Appendix A of MRP Volume 12 lists sampling sites and a monitoring schedule.

Surface-Water Monitoring

R645-301-700 – Hydrology - Appendix A of MRP Volume 12 lists sampling sites and a monitoring schedule.

Acid- and Toxic-Forming Materials

Extensive testing of overburden strata, coal, and surrounding rocks has shown that there are no potentially acid- and toxic-forming materials (MRP Volume 12, section R645-301-623.100). Details of yearly analyses (1993 to 1999) of coal, floor, and roof are in R645-301-600-Geology - Appendix C of MRP Volume 12. Analyses of overburden material are presented in Table G-1 in Volume 8 of the Deer Creek, Des-Bee-Dove, Cottonwood-Wilberg MRP, and summarized in Appendix A of MRP Volume 12.

Transfer of Wells

MRP Volume 12 contains no information on transfer of wells; however, there are no water-monitoring wells, piezometers, or unplugged exploration holes in the Mill Fork Lease area.

Discharges into an Underground Mine

There are no mine openings in the Mill Fork Lease area. The only potential mine opening associated with this permit extension is possible ventilation breakout in Crandall Canyon, upstream of the existing Crandall Canyon Mine. The need for these portals will be evaluated and the design will be made based on future coal exploration. If these portals are needed, they will be permitted in a separate application. All currently planned coal mine operations in the Mill Fork Lease will be underground.

Gravity Discharges

There are no mine openings in the Mill Fork Lease area. The only potential mine opening associated with this permit extension is the possible ventilation breakout in Crandall Canyon, upstream of the existing Crandall Canyon Mine. The need for these portals will be evaluated and the design will be made based on future coal exploration. If these portals are needed, they will be permitted in a separate application. All currently planned coal mine operations in the Mill Fork Lease will be underground.

Water Quality Standards and Effluent Limitations

Discharges of water from areas disturbed by coal mining and reclamation operations will be made in compliance with all Utah and federal water quality laws and regulations and with effluent limitations for coal mining promulgated by the U.S. Environmental Protection Agency set forth in 40 CFR Part 434 (MRP Volume 12, section R645-301-751, p. 7-101). UPDES information is in Appendix B of Deer Creek, Des-Bee-Dove, Cottonwood-Wilberg MRP Volume 9.

Diversions

There are no diversions in the Mill Fork Lease.

Stream Buffer Zones

No coal mining operations are planned within 100 feet of a perennial or intermittent stream in the Mill Fork Lease. The Permittee states that no such activity will occur without approval from the Division (MRP Volume 12, section R645-301-731.600, p. [7-]100).

Sediment Control Measures

Sediment control facilities at the Deer Creek Mine are discussed in Volume 2, Part 3 of the Deer Creek MRP. No surface facilities, sediment control, or other disturbance are planned in the Mill Fork Lease area.

Siltation Structures

No siltation structures are planned for coal mining operations the Mill Fork Lease Coal mining operations in the Mill Fork Lease should not impact existing siltation structures in the permit and adjacent areas.

Sedimentation Ponds

No sedimentation pond is planned for coal mining operations the Mill Fork Lease Coal mining operations in the Mill Fork Lease should not impact existing sedimentation ponds in the permit and adjacent areas.

Other Treatment Facilities

No treatment facilities are planned for coal mining operations the Mill Fork Lease Coal mining operations in the Mill Fork Lease should have no impact on existing treatment structures in the permit and adjacent areas.

Exemptions for Siltation Structures

There is no request for exemption for siltation structures. No siltation structures are planned for coal mining operations the Mill Fork Lease Coal mining operations in the Mill Fork Lease should have no impact on existing siltation structures in the permit and adjacent areas.

Discharge Structures

Coal mining operations in the Mill Fork Lease should have no impact on existing discharge structures in the permit and adjacent areas.

Impoundments

No impoundments are planned for the Mill Fork Lease area. Coal mining operations in the Mill Fork Lease should have no impact on existing structures in the permit and adjacent areas.

Ponds, Impoundments, Banks, Dams, and Embankments

No ponds, impoundments, banks, dams, or embankments are planned for the Mill Fork Lease area. Coal mining operations in the Mill Fork Lease should have no impact on existing structures in the permit and adjacent areas.

Casing and Sealing of Wells

Each coal exploration borehole will be plugged by filling it from total depth to the surface with type II portland cement. If circulation cannot be maintained while filling the borehole will be filled with bentonite chips to within 5 feet of the top, then a cement surface plug. A brass marker with the hole number and year will be placed on top of the cement, 2 feet below surface grade. This method has been approved by the BLM and the Division and has been used in the past to prevent acid and toxic drainage from entering water resources, minimize disturbance to fish, livestock, and wildlife, machinery in the permit and adjacent area. If an exploration borehole is converted to a water monitoring well, Utah water well regulations and the provisions of R645-301-731 of the Coal Mining Rules will be followed (MRP Volume 12, sections R645-301-631 and -641).

Findings:

The Permittee has submitted sufficient information to address the minimum Hydrologic Information requirements for this section.

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:

Affected Area Boundary Maps

The Division usually considers the affected area to be equivalent to the permit boundary. Several maps show the permit boundaries including Drawing MFU1840D, Deer Creek Mine Mill Fork Lease ML-48258 Hiawatha Mine Plan.

Bonded Area Map

The bonded area is usually the same as the disturbed area. Because no new surface disturbance is planned for the Mill Fork Lease area, the bonded area map will not change.

Reclamation Backfilling And Grading Maps

Because no new surface disturbance will occur with the Mill Fork Lease no backfilling or grading on the Mill Fork Lease will be needed.

Reclamation Facilities Maps

No new surface facilities will be associated with the Mill Fork Lease.

Final Surface Configuration Maps

No surface structures or facilities will be developed for the Mill Fork Lease. Therefore, no new disturbed areas will be created. Because subsidence will take place, the final surface elevations will be shorter. The Division usually is not concerned with the surface configuration after subsidence has taken place.

Reclamation Monitoring And Sampling Location Maps

Elevations and locations of monitoring stations used to gather data on water quality and quantity are on Plate 1; Drawing MFS1830D – Hydrologic Map; and Drawing MFS1839D - Pre-subsidence Survey Map.

Findings:

Maps, plans, and cross sections of reclamation operations for the Mill Fork Lease are considered adequate to meet the requirements of the Coal Mining Rules.

BONDING AND INSURANCE REQUIREMENTS

Regulatory Reference: 30 CFR Sec. 800; R645-301-800, et seq.

Analysis:

General

No additional bonding will be required because the Mill Fork Lease will be only underground mining. No surface disturbance has been proposed in the Mill Fork Lease.

The Deer Creek mine has liability insurance and will provide coverage for the Mill Fork Lease.

Findings:

The Permittee has met the minimum requirements of the bonding and insurance section of the regulations.

CUMULATIVE HYDROLOGIC IMPACT ASSESSMENT (CHIA)

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

Analysis:

The Division is updating the CHIA to include the Mill Fork tract and the South Crandall Lease.

Findings:

The Division is updating the CHIA to include the Mill Fork and the South Crandall Leases.

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