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

Michael O. Leavitt
Governor

Ted Stewart
Executive Director

James W. Carter
Division Director

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Box 145801

Salt Lake City, Utah 84114-5801

801-538-5340

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July 15, 1997

Chuck Semborski, Environmental Supervisor
Energy West
P.O. Box 310
Huntington, UT 84528

Re: State Permit with Five Conditions, North Rilda Area, Deer Creek Mine,
PacifiCorp, ACT/015/018 - 97-1, Folder #3, Emery County, Utah

Dear Mr. Semborski:

I am enclosing the Decision Document which includes the state permit for the North Rilda Area at the Deer Creek Mine. There are five conditions associated with this permit. Please have both original permits signed and return one to the Division.

Mining will be approved in the federal leases associated with this significant revision upon receipt of the mining plan approval by the Secretary.

If you have any questions, please call me.

Yours very truly,

A handwritten signature in black ink, appearing to read 'J. W. Carter', written over a large, loopy flourish.

James W. Carter
Director

Enclosure

cc: Ranvir Singh, OSM-WRCC
O:\015018.DER\FINAL\PERMIT\NORILAPP.WPD

UTAH DIVISION OF OIL, GAS, AND MINING
STATE DECISION DOCUMENT

PacifiCorp
Deer Creek Mine
ACT/015/018
North Rilda Lease
Emery County, Utah

July 15, 1997

CONTENTS

- * Administrative Overview
- * Location Map
- * Permitting Chronology
- * Findings
- * Permit
- * Technical Analysis, June 17, 1997
- * Cumulative Hydrologic Impact Assessment (CHIA), dated September 1994
- * Letters of Concurrence
 - Bureau of Land Management, R2P2 - February 28, 1991, July 15, 1997
 - U.S. Fish and Wildlife Services, March 11, 1997
 - Division of State History, July 8, 1997
 - Forest Service, Manti La Sal, July 3, 1997 and July 15, 1997
 - Memo to File, Permittee Commitments for FS Conditions, July 8, 1997
 - Section 510 (c), Memo to File, June 26, 1997
- * Determination of Completeness, April 9, 1997
- * Affidavit or Publication

ADMINISTRATIVE OVERVIEW

PacifiCorp
Deer Creek Mine
North Rilda Area
ACT/015/018
Emery County, Utah

July 15, 1997

PROPOSAL

PacifiCorp submitted an application for the North Rilda Area (which included Federal Leases U-24317, U-2810, U-06039, SL-051221 and fee coal), for a total of 1960 acres on February 4, 1997. This represented about 23 million tons of minable coal to be mined over the life of the mine in this area.

Mining in this area was part of the original application made in 1981 for the entire 16,900 acres. However, this northern area was removed from the mining plan approval on March 11, 1985 by Allen Klein, at OSM, see original approval and only 14,620 acres were approved at that time.

This proposal for mining in the North Rilda Canyon Area would be done as an extension of current underground mining operations in the Blind Canyon seam and Hiawatha seam. Approval of this proposal reflects that mining under the south canyon escarpment has been conditioned according to specific requirements of the Forest Service.

BACKGROUND

The original permit for the Deer Creek Mine was issued February 7, 1986 for approximately 14,620 acres. The mining plan for Federal leases SL-064607-064621, SL-064900, SL-070645, U-1358, U-02292, U-084923, U-084924, U-083066, U-040151, U-044025, U-014275, U-024319, and U-47979 was approved on October 11, 1985 for the Deer Creek Mine. A Waste Rock Storage Facility was added September 1988. The permit was renewed on February 7, 1991.

The January 8, 1993 mining plan approval (IBC-1) added 120 acres of coal (80 acres in a portion of Lease No. U-47977 and 40 acres in a portion of Lease No. SL-050862). The July 22, 1993 mining plan approval (IBC-2) added 160 acres (80 acres in a portion of Lease U-47977 and 80 acres in a portion of Lease SL-050862).

Page 2
Administrative Overview
ACT/015/018
North Rilda Lease Area
July 15, 1997

PacifiCorp submitted the original application for the Rilda Canyon Lease Extension which included Leases U-7653, U-47977, U-06039, and SL-050862 on February 12, 1990 and resubmitted an application on February 8, 1994. This submittal was revised on June 27, 1994 as an incidental boundary change (IBC-3) to include development mining only in U-06039, U-47977, and SL-050862 (approximately 100,000 tons). Included in the revised application was longwall mining the Second, Third and Fourth East panels and development mining in the Third North Mains and the Sixth East Gate. Longwall mining would proceed in areas that were previously approved as incidental boundary changes with mining plan approval dates of January 8, 1993 (IBC-1) and July 22, 1993 (IBC-2). Entry development mining in the Third North Mains and the Sixth East Gates entailed about 40 acres beyond the currently approved permit boundary in Leases U-06039, U-47977 and SL-050862. IBC-3 was approved July 28, 1994.

The Rilda Canyon Lease Extension to mine in federal leases U-7653, U-47977, SL-050862, part of U-06039, and state lease ML-22509 was approved on December 13, 1994.

A modification to lease U-06039 (not requiring mining plan approval) to mine 42.97 acres (or approximately 100,000 tons) was submitted on May 26, 1995 and approved on June 13, 1995.

Construction of the surface facilities which was a significant revision to the Deer Creek Mine permit was submitted on March 29, 1994. The approval to construct surface facilities in Rilda Canyon was approved on July 31, 1995 with nine conditions. All of the conditions were met on November 8, 1995.

RECOMMENDATION

The proposal to mine in the North Rilda Lease Area has been reviewed by the Division and other appropriate federal and state agencies. It is recommended that mining in the North Rilda Lease Area in federal leases U-2810, U-24317, SL-051221, and the remaining part of U-06039, and fee coal areas be approved with the attached conditions.

PERMITTING CHRONOLOGY

PacifiCorp
Deer Creek Mine
North Rilda Lease Area
Emery County, Utah

July 15, 1997

Background Chronology

March 11, 1985	By letter from Allen Klein, OSM, Western Tech Center, UP&L is notified that the mining plan approval for Deer Creek Mine permit will not include the northern leases, and reduce the permit area from 16,900 acres to 14,620 acres.
January 8, 1993	Mining plan approval of 120 acres as an incidental boundary change (IBC-1) in portions of Leases U-47977 and SL-050862.
June 29, 1994	Determination of Completeness for Rilda Canyon Lease Extension sent to all interested parties for the Rilda Canyon Lease Extension area.
July 28, 1994	IBC-3 is approved by the Secretary.
September 23, 1994	Cumulative Hydrologic Impact Assessment for Rilda Canyon is completed.
October 27, 1994	State Decision Document for the Rilda Canyon Lease Extension is prepared and forwarded to the Office Of Surface Mining Reclamation and Enforcement for concurrence and secretarial signature.
December 13, 1994	Mining plan approval for Rilda Canyon Lease extension signed by the Secretary.
June 13, 1995	Modification to U-06039 approved.
July 31, 1995	Rilda Canyon Surface Facilities approved with nine conditions. All of the conditions were met by November 8, 1995.

Page 2
Permitting Chronology
ACT/015/018
North Rilda Lease Area
July 15, 1997

August 23, 1996 Forest Service consents to six exploration holes in federal coal leases for the North Rilda area.

North Rilda Lease Area Chronology

February 4, 1997 North Rilda Area application submitted to the Division.

February 7, 1997 North Rilda Area application submitted to other agencies.

March 26, 1997 Meeting with Division, Forest Service, and Bureau of Land Management about Rilda Lease Area issues.

April 9, 1997 Determination of Administrative Completeness and draft TA sent to PacifiCorp.

April 22, 29,
May 6, 13, 1997 North Rilda Lease Area addition to Deer Creek permit area published for four consecutive weeks in Emery County Progress.

May 14, 1997 Response by PacifiCorp to deficiencies.

June 17, 1997 TA completed.

July 3, 1997 Forest Service consent with six stipulations.

July 15, 1997 Forest Service letter with revised stipulations #3, #4, and #5 and Bureau Land Management letter issued. Permit issued with five conditions.

FINDINGS

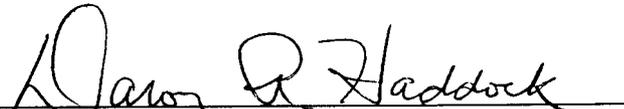
PacifiCorp
Deer Creek Mine
North Rilda Lease Area
ACT/015/018
Emery County, Utah

July 15, 1997

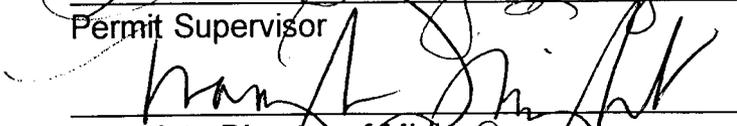
1. The revised plan and the permit application to mine development entries in the Rilda Canyon Lease Extension are accurate and complete and all requirements of the Surface Mining Control and Reclamation Act, and the approved Utah State Program (the "Act") are in compliance. Refer to June 17, 1997 Technical Analysis (R645-300-133.100)
2. No additional surface reclamation is required since the additional permit area will be mined as an underground extension of the existing mine.(R645-300-133.710)
3. An assessment of the probable cumulative impacts of all anticipated coal mining and reclamation activities in the general area on the hydrologic balance has been conducted by the Division and no significant impacts were identified. The Mining and Reclamation Plan (MRP) proposed under the revised application has been designed to prevent damage to the hydrologic balance in the permit area and in associated off-site areas. See CHIA completed September 1994 for the East Mountain Area, including the North Rilda Lease area. (R645-300-133.400 and UCA 40-10-11 (2)(c)).
4. The proposed lands to be included within the permit area are:
 - a. Not included within an area designated unsuitable for underground coal mining operation (R645-300-133.220);
 - b. not within an area under study for designated land unsuitable for underground coal mining operations (R645-300-133.210);

- c. not on any lands subject to the prohibitions or limitation of 30 CFR 761.11 {a} (national parks, etc), 761.11{f} (public buildings, etc.) and 761.11 {g} (cemeteries);
 - d. within 100 feet of a public road (R645-300-133.220); and
 - e. not within 300 feet of any occupied dwelling (R645-300-133.220).
5. The operation would not affect the continued existence of any threatened or endangered species or result in the destruction or adverse modification of their critical habitats as determined under the Endangered Species Act of 1973 (16 USC 1531 et seq.) See concurrence letter from United States Fish and Wildlife, dated March 11, 1997. (R645-300-133.500)
6. The Division's issuance of a permit is in compliance with the National Historic Preservation Act and implementing regulations (36 CFR 800). See letter from State Historic Preservation Office, dated July 15, 1997. (R645-300-133.600)
7. The applicant has the legal right to enter and conduct mining activities in the North Rilda Lease Extension through federal coal leases issued by the Bureau of Land Management. (R645-300-133.300)
8. A 510 (c) report has been run on the Applicant Violator System (AVS), which shows that: prior violations of applicable laws and regulations have been corrected; neither PacifiCorp or any affiliated company, are delinquent in payment of fees for the Abandoned Mine Reclamation Fund; and the applicant does not control and has not controlled mining operations with demonstrated pattern of wilful violations of the Act of such nature, duration, and with such resulting irreparable damager to the damage to the environment as to indicate an intent not to comply with the provisions of the Act (A 510 (c) report was run on June 26, 1997, see memo to file dated June 27, 1994. A condition has been added to the Deer Creek permit pending resolution of an appeal of a federal cessation order. (R645-300-133.730)

9. Underground mining operations to be performed under the permit will not be inconsistent with other operations anticipated to be performed in areas adjacent to the proposed permit area.
10. The applicant has posted a surety bond for the Deer Creek Mine in the amount of \$2,500,000. No additional surety will be required at this time, because this action does not include any additional surface disturbance. (R645-300-134)
11. No lands designated as prime farmlands or alluvial valley floors occur on the permit area. (R645-302-313.100 and R645-302-321.100)
12. The proposed postmining land-use of the permit area is the same as the pre-mining land use and has been approved by the Division and the surface land management agency, the United States Forest Service.
13. The Division has made all specific approvals required by the Act, the Cooperative Agreement, and the Federal Lands Program.
14. All procedures for public participation required by the Act, and the approved Utah State Program are in compliance. See Affidavit of Publication, dated May 13, 1997. (R645-300-120)
15. No existing structures will be used in conjunction with mining of the underground right-of-way, other than those constructed in compliance with the performance standards of R645-301 and R645-301 (R645-300-133.720)


Permit Supervisor


Permit Supervisor


Associate Director of Mining


Director

FEDERAL

PERMIT
Permit Number ACT/015/018

July 15, 1997

STATE OF UTAH
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING
1594 West North Temple, suite 1210
Salt Lake City, Utah 84114-1210
(801) 538-5340

This permit, ACT/015/018, is issued for the state of Utah by the Utah Division of Oil, Gas and Mining (Division) to:

PacifiCorp
201 South Main Street
Salt Lake City, Utah 84140-0021
(801-220-4618)

for the Deer Creek Mine. A Surety Bond is filed with the Division in the amount of \$2,500,000, payable to the State of Utah, Division of Oil, Gas and Mining and the Office of Surface Mining Reclamation and Enforcement (OSM). The Division must receive a copy of this permit signed and dated by the permittee.

Sec. 1 STATUTES AND REGULATIONS - This permit is issued pursuant to the Utah Coal Mining and Reclamation Act of 1979, Utah Code Annotated (UCA) 40-10-1 et seq, hereafter referred to as the Act.

Sec. 2 PERMIT AREA - The permittee is authorized to conduct underground coal mining activities on the following described lands within the permit area at the Deer Creek Mine, situated in the state of Utah, Emery County:

The area to be mined is contained on the USGS 7.5-minute "Red Point", "Rilda" and "Mahogany Point" quadrangle maps. The areas contained in the permit area, approximately 17,000 acres, involve all or part of the following federal, state, and fee coal leases:

Lease No. SL-064607-064621

Issued to Clara Howard Miller 10/4/46

Township 17 South, Range 7 East, SLM, Utah

Containing 613.92 acres

Section 2: Lots 2, 5, 6, 7, 10, 11 and 12 and SW1/4

Section 3: SE1/4 SE1/4

Section 10: NE1/4

ACT/015/018
Federal Permit
July 15, 1997
Page 2

Lease No. SL-064900
Issued to Cyrus Wilberg 2/3/45
Township 17 South, Range 7 East, SLM, Utah
Containing 160 acres
Section 22: SE1/4 SW1/4, SW1/4 SE1/4, NE1/4 SW1/4, NW1/4 SE1/4

Lease No. U-1358
Issued to Castle Valley Mining Co. 8/1/67
Township 17 South, Range 7 East, SLM, Utah
Containing 320 acres
Section 22: S1/2 NW1/4, W1/2 SW1/4, E1/2 SE1/4
Section 27: E1/2 NE1/4

Lease No. SL-070645, U-02292
Issued to Clara Howard Miller 4/1/52
Township 17 South, Range 7 East, SLM, Utah
Containing 2560 acres
Section 4: SW1/4 SE1/4, S1/2 SW1/4
Section 5: SE1/4 SW1/4, S1/2 SE1/4
Section 8: E1/2, E1/2 W1/2
Section 9: All
Section 10: W1/2
Section 15: N1/2
Section 16: N1/2
Section 17: NE1/4, E1/2 NW1/4

Lease No. U-084923
Issued to Malcolm N. McKinnon 8/1/64
Township 17 South, Range 7 East, SLM, Utah
Containing 2252.42 acres
Section 4: Lots 2, 3, 4, 5, 6, 7, 10, 11, 12, NW1/4 SE1/4, N1/2 SW1/4
Section 5: Lots 1 thru 12, N1/2 S1/2, SW1/4 SW1/4
Section 6: Lots 1 thru 11, SE1/4
Section 7: Lots 1 thru 4, E1/2
Section 8: W1/2 W1/2
Section 17: W1/2 NW1/4
Section 18: Lots 1 and 2, N1/2

ACT/015/018
Federal Permit
July 15, 1997
Page 3

Lease No. U-084924

Issued to Malcolm N. McKinnon 8/1/64

Township 17 South, Range 6 East, SLM, Utah

Containing 1211.48 acres

Section 1: Lots 1, 2, 3, S1/2 NE1/4, SE1/4 NW1/4, E1/2 SW1/4, SE1/4

Section 12: E1/2, E1/2 W1/2

Section 13: NE1/4, E1/2 NW1/4

Lease No. U-083066

Issued to Cooperative Security Corp. 3/1/62

Township 17 South, Range 6 East, SLM, Utah

Containing 2485 acres

Section 13: E1/2 SW1/4, SE1/4

Section 24: E1/2 W1/2, E1/2

Section 25: N1/2 NE1/4

Township 17 South, Range 7 East, SLM, Utah

Section 17: SW1/4, W1/2 SE1/4

Section 18: Lots 3 and 4, SE1/4

Section 19: Lots 1, 2, 3, 4, E1/2

Section 20: W1/2, W1/2 E1/2

Section 29: NW1/4 NE1/4, N1/2 NW1/4

Section 30: Lots 1, 2, 3, N1/2 NE1/4, SW1/4 NE1/4, NW1/4 SE1/4

Lease No. U-040151

Issued to Cooperative Security Corp. 3/1/62

Township 17 South, Range 7 East, SLM, Utah

Containing 1720 acres

Section 15: SW1/4

Section 16: S1/2

Section 17: E1/2 SE1/4

Section 20: E1/2 E1/2

Section 21: All

Section 22: N1/2 NW1/4

Section 27: N1/2 NW1/4

Section 28: N1/2 N1/2

Section 29: NE1/4 NE1/4

Lease No. U-044025

Issued to Cooperative Security Corp. 8/1/60

Township 17 South, Range 7 East, SLM, Utah

Containing 40 acres

Section 27: NW1/4 NE1/4

ACT/015/018
Federal Permit
July 15, 1997
Page 4

Lease No. U-024319
Issued to Huntington Corp. 5/1/60
Township 16 South, Range 7 East, SLM, Utah

Containing 1040 acres

Section 27: SW1/4

Section 28: SE1/4

Section 33: E1/2, E1/2 NW1/4, NE1/4 SW1/4, S1/2 SW1/4

Section 34: NW1/4, NW1/4 SW1/4

Lease No. U-014275
Issued to John Helco 10/1/55
Township 16 South, Range 7 East, SLM, Utah

Containing 80 acres

Section 28: E1/2 SW1/4

Lease No. U-47979
Issued to Utah Power & Light Co. 10/1/81
Containing 1,063.38 acres, more or less
Township 16 South, Range 7 East, SLM, Utah

Section 34: S1/2 NE1/4, NE1/4 SW1/4, S1/2 SW1/4, SE1/4

Township 17 South, Range 7 East, SLM, Utah

Section 3: Lots 1 thru 8, 10 thru 12, SW1/4, SW1/4 SE1/4

Section 4: Lots 1, 8, 9, E1/2 SE1/4

Lease No. U-47977
Township 16 South, Range 7 East, SLBM

Containing 640 acres

Section 32: All

Lease No. SL-050862 (consolidated to include U-24069 and U-24070)
Township 16 South, Range 7 East, SLBM

Containing 280 acres

Section 28: W1/2 SW1/4

Section 29: E1/2 SE1/4

Section 33: W1/2 NW1/4, NW1/4 SW1/4

ACT/015/018
Federal Permit
July 15, 1997
Page 5

Lease No. U-06039
Containing 1402.97 acres
Issued to Ferdinand Hintze, 5/1/53
Township 16 South, Range 7 East, SLBM
Section 19: SE1/4
Section 20: S1/2
Section 29: N1/2, SW1/4, W1/2 SE1/4
Section 30: NE1/4, SE1/4 and Lot 4
Township 16 South, Range 6 East, SLBM
Section 25: E1/2SE1/4SE1/4

Lease No. U24317
Issued to Huntington Corp., 5/1/58
Containing 400 acres
Township 16 South, Range 7 East, SLBM
Section 20: S1/2NE1/4
Section 21: S1/2NW1/4, S1/2NE1/4, SW1/4

Lease No. U-2810
Issued to John Helco, 10/1/67
Containing 80 acres
Township 16 South, Range 7 East, SLBM
Section 28: E1/2NW1/4

Lease No. SL-051221
Issued to Rulon Jeppson, 11/5/34
Containing 80 acres
Township 16 South, Range 7 East, SLBM
Section 28: W1/2NW1/4

Lease No. U-7653
Township 16 South, Range 7 East, SLBM
Containing 411.6 acres
Section 31: All

OWNERS OF COAL TO BE MINED OTHER THAN THE UNITED STATES

State Lease ML-22509
Township 16 South, Range 6 East, SLBM
Containing 640 acres
Section 36: All

ACT/015/018
Federal Permit
July 15, 1997
Page 6

The Estate of Malcolm McKinnon
Zions First National Bank, Trustee, Salt Lake City, Utah 84111
Township 17 South, Range 7 East, SLM, Utah
Section 10: SE1/4
Section 11: W1/2 W1/2, NE1/4 NW1/4
Section 14: W1/2 NW1/4

Cooperative Security Corp.
115 East South Temple, Salt Lake City, Utah 84111
Township 17 South, Range 7 East, SLM, Utah
Section 15: SE1/4
Section 22: NE1/4

Fee Leases held by Utah Power & Light
Patent No. 523194, containing 40 acres
Township 16 South, Range 7 East, SLM, Utah
Section 22: SW1/4NW1/4

Patent No. 523192, containing 160 acres
Township 16 South, Range 7 East, SLM, Utah
Section 22: SW1/4

Patent No. 523204, containing 80 acres
Township 16 South, Range 7 East, SLM, Utah
Section 28: N1/2NE1/4

Patent No. 523201, containing 160 acres
Township 16 South, Range 7 East, SLM, Utah
Section 21: SE1/4

Also:

Beginning at the SE corner of NE1/4 SE1/4 Section 25, T17S, R6E, SLM,
thence North 160 rods, West 116 rods to center line of Cottonwood Creek;
thence southerly along center line of said creek to a point 84 rods West of
the beginning; thence East 84 rods to the beginning.

The above listed surface rights and coal owned or leased by PacifiCorp,
successor in interest to Utah Power & Light Company.

Township 17 South, Range 7 East, SLM, Utah
Section 14: SW1/4 (West of the Deer Creek Fault)

ADDITIONAL LANDS TO BE AFFECTED BY MINING

Township 17 South, Range 7 East, SLM, Utah
State of Utah Special Use Lease Agreement No. 284 utilized for conveyor and power line right-of-ways located in the southeast quarter of Section 2

Township 17 South, Range 8 East, SLM, Utah
PacifiCorp fee land (successor to Utah Power & Light Company) utilized for a Waste Rock Disposal Site located within Lots 4 and 5 of Section 5 and Lot 1 and the Southeast quarter of the Northeast quarter of Section 6

This legal description is for the permit area of the Deer Creek Mine. The permittee is authorized to conduct underground coal mining activities and related surface activities on the foregoing described property subject to the conditions of all applicable conditions, laws and regulations.

- Sec. 3 COMPLIANCE** - The permittee will comply with the terms and conditions of the permit, all applicable performance standards and requirements of the State Program.
- Sec. 4 PERMIT TERM** - This permit is effective July 15, 1997, and expires on February 7, 2001.
- Sec. 5 ASSIGNMENT OF PERMIT RIGHTS** - The permit rights may not be transferred, assigned or sold without the approval of the Division Director. Transfer, assignment or sale of permit rights must be done in accordance with applicable regulations, including but not limited to 30 CFR 740.13{e} and R645-303-300.
- Sec. 6 RIGHT OF ENTRY** - The permittee shall allow the authorized representative of the Division, including but not limited to inspectors, and representatives of the Office of Surface Mining Reclamation and Enforcement (OSM), without advance notice or a search warrant, upon presentation of appropriate credentials, and without delay to:
- (a) have the rights of entry provided for in 30 CFR 840.12, R645-400-220, 30 CFR 842.13 and R645-400-110;

- (b) be accompanied by private persons for the purpose of conducting an inspection in accordance with R645-400-100 and R645-400-200 when the inspection is in response to an alleged violation reported to the Division by the private person.

Sec. 7 SCOPE OF OPERATIONS - The permittee shall conduct underground coal mining activities only on those lands specifically designated as within the permit area on the maps submitted in the approved plan and approved for the term of the permit and which are subject to the performance bond.

Sec. 8 ENVIRONMENTAL IMPACTS - The permittee shall take all possible steps to minimize any adverse impact to the environment or public health and safety resulting from noncompliance with any term or condition of the permit, including, but not limited to:

- (a) Any accelerated or additional monitoring necessary to determine the nature and extent of noncompliance and the results of the noncompliance;
- (b) immediate implementation of measures necessary to comply; and
- (c) warning, as soon as possible after learning of such noncompliance, any person whose health and safety is in imminent danger due to the noncompliance.

Sec. 9 DISPOSAL OF POLLUTANTS - The permittee shall dispose of solids, sludge, filter backwash or pollutants in the course of treatment or control of waters or emissions to the air in the manner required by the approved Utah State Program and the Federal Lands Program which prevents violation of any applicable state or federal law.

Sec. 10 CONDUCT OF OPERATIONS - The permittee shall conduct its operations:

- (a) in accordance with the terms of the permit to prevent significant, imminent environmental harm to the health and safety of the public; and
- (b) utilizing methods specified as conditions of the permit by the Division in approving alternative methods of compliance with the performance standards of the Act, the approved Utah State Program and the Federal Lands Program.

- Sec. 11 EXISTING STRUCTURES** - As applicable, the permittee will comply with R645-301 and R645-302 for compliance, modification, or abandonment of existing structures.
- Sec. 12 RECLAMATION FEE PAYMENTS** - The operator shall pay all reclamation fees required by 30 CFR Part 870 for coal produced under the permit, for sale, transfer or use.
- Sec. 13 AUTHORIZED AGENT** - The permittee shall provide the names, addresses and telephone numbers of persons responsible for operations under the permit to whom notices and orders are to be delivered.
- Sec. 14 COMPLIANCE WITH OTHER LAWS** - The permittee shall comply with the provisions of the Water Pollution Control Act (33 USC 1151 et seq.) and the Clean Air Act (42 USC 7401 et seq), UCA 26-11-1 et seq, and UCA 26-13-1 et seq.
- Sec. 15 PERMIT RENEWAL** - Upon expiration, this permit may be renewed for areas within the boundaries of the existing permit in accordance with the Act, the approved Utah State Program and the Federal Lands Program.
- Sec. 16 CULTURAL RESOURCES** - If during the course of mining operations, previously unidentified cultural resources are discovered, the permittee shall ensure that the site(s) is not disturbed and shall notify the Division of Oil, Gas, and Mining. The Division, after coordination with OSM, shall inform the permittee of necessary actions required. The permittee shall implement the mitigation measures required by the Division within the time frame specified by the Division.
- Sec. 17 APPEALS** - The permittee shall have the right to appeal as provided for under R645-300-200.
- Sec. 18 SPECIAL CONDITIONS** - There are special conditions associated with this permitting action as described in attachment A.

The above conditions (Secs. 1-18) are also imposed upon the permittee's agents and employees. The failure or refusal of any of these persons to comply with these conditions shall be deemed a failure of the permittee to comply with the terms of this permit and the lease. The permittee shall require his agents, contractors and subcontractors involved in activities concerning this permit to include these conditions

ACT/015/018
Federal Permit
July 15, 1997
Page 10

in the contracts between and among them. These conditions may be revised or amended, in writing, by the mutual consent of the Division and the permittee at any time to adjust to changed conditions or to correct an oversight. The Division may amend these conditions at any time without the consent of the permittee in order to make them consistent with any federal or state statutes and any regulations.

THE STATE OF UTAH

By: _____

Date: _____

I certify that I have read, understand and accept the requirements of this permit and any special conditions attached.

**Authorized Representative of
the Permittee**

Date: _____

Attachment A

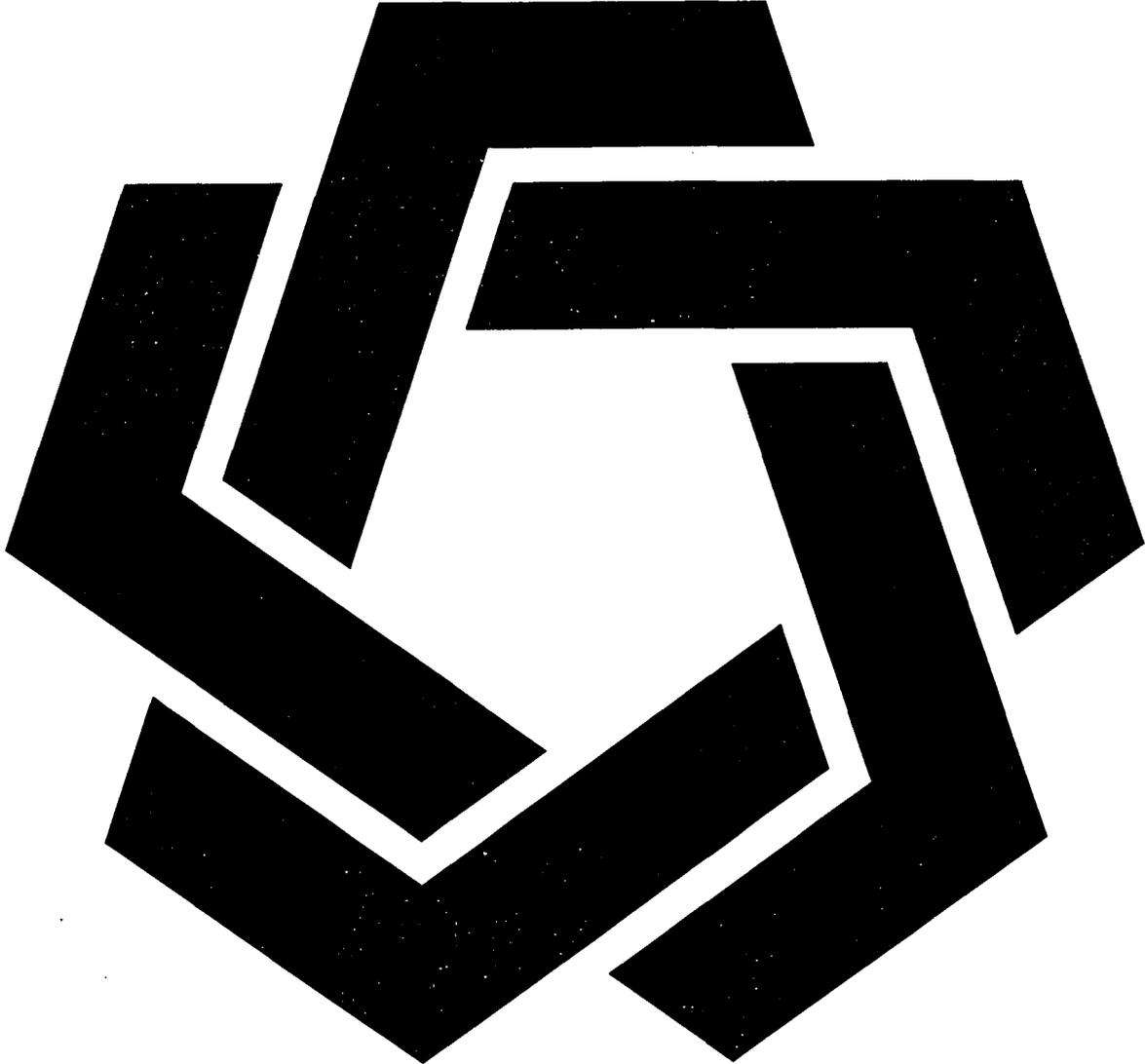
SPECIAL CONDITIONS

1. If during entry development, sustained quantities of groundwater are encountered which are greater than 5 gpm from a single source in an individual entry, and which continue after operational activities progress beyond the area of groundwater production, PacifiCorp must monitor these flows for quality and quantity under the approved baseline parameters.

PacifiCorp will notify the Division within 24 hours prior to initiation of said monitoring.

2. PacifiCorp must notify the Division within 14 days of the decision on the appeal of outstanding cessation order 94-020-370-002, 1 of 1.
3. This special condition is for normal working circumstances and does not apply in an emergency situation: Vehicle access will not be allowed in Rilda Canyon from December 1 to April 15 for construction, maintenance and/or repair of the Rilda Canyon Surface Facilities without prior written approval from the Division. Access will be allowed to the Rilda Canyon Surface Facilities through the Deer Creek Mine portals.
4. Mining in the "North Rilda Lease" area is authorized to the extent that the Surface Managing agency (U. S. Forest Service) has provided consent, per letters dated July 3, 1997 and July 15, 1997 (attached.)
5. Mining within the Federal Leases U-06039, U-24317, U-2810, and SL-051221 (North Rilda Area) is conditioned upon receiving Federal Mining Plan approval.

State of Utah
Division of Oil, Gas and Mining
Utah Coal Regulatory Program



Technical Analysis and Findings
North Rilda Lease
Deer Creek Mine
ACT/015/018-97-1
June 17, 1997

TECHNICAL ANALYSIS

Last revised - July 1, 1997

INTRODUCTION

This Technical Analysis (TA) is written as part of the permit review process. It documents the Findings that the Division has made to date regarding the application for a permit and is the basis for permitting decisions with regard to the application. The TA is broken down into logical section headings which comprise the necessary components of an application. Each section is analyzed and specific findings are then provided which indicate whether or not the application is in compliance with the requirements.

It may be that not every topic or regulatory requirement is discussed in this version of the TA. Generally only those sections are analyzed that pertain to a particular permitting action. TA's may have been completed previously and the revised information has not altered the original findings. Those sections that are not discussed in this document are generally considered to be in compliance.

TECHNICAL ANALYSIS

Last revised - July 1, 1997

TECHNICAL ANALYSIS

ENVIRONMENTAL RESOURCE INFORMATION 5

 PERMIT AREA 5

 MAPS, PLANS, AND CROSS SECTIONS OF RESOURCE INFORMATION 5

 Permit Area Boundary Maps 5

 Coal Resource and Geologic Information Maps 6

 Mine Workings Maps 6

 Monitoring Sampling Location Maps 6

 Subsurface Water Resource Maps 6

 Surface Water Resource Maps 6

 Well Maps 7

 Certification 7

 subsurface water resources, 7

 surface-water resources 7

 GEOLOGIC RESOURCE INFORMATION 7

 HYDROLOGIC RESOURCE INFORMATION 9

 Sampling and analysis. 9

 Baseline information. 9

 Ground-water information 9

 Surface-water information. 9

 Baseline cumulative impact area information. 10

 Modeling. 10

 Probable hydrologic consequences (PHC) determination. . 10

 Supplemental information. 11

 Ground-water monitoring plan. 11

 Surface-water monitoring plan. 12

OPERATION PLAN 13

 FISH AND WILDLIFE INFORMATION 13

 Protection and enhancement plan. 13

 COAL RECOVERY 14

 SUBSIDENCE CONTROL PLAN 15

 Subsidence control plan. 15

 MAPS, PLANS, AND CROSS SECTIONS OF MINING OPERATIONS 17

 Affected area maps. 17

 GEOLOGIC OPERATION INFORMATION 18

 HYDROLOGIC INFORMATION 19

 Ground-water monitoring. 19

TECHNICAL ANALYSIS

Last revised - July 1, 1997

Surface Water Monitoring.	20
Acid- and toxic-forming materials and underground development waste.	20
Transfer of wells.	21
Discharges into an underground mine.	21
Gravity discharges from underground mines.	21
Water-quality standards and effluent limitations	21
Casing and sealing of wells	21
MAPS, PLANS, AND CROSS SECTIONS OF MINING	
OPERATIONS	22
Monitoring and sample location maps	22
RECLAMATION PLAN	23
GENERAL REQUIREMENTS	23
MINE OPENINGS	23
HYDROLOGIC INFORMATION	24
MAPS, PLANS, AND CROSS SECTIONS OF RECLAMATION	
OPERATIONS	26
CUMULATIVE HYDROLOGIC IMPACT ASSESSMENT	27

ENVIRONMENTAL RESOURCE INFORMATION

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

PERMIT AREA

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

Analysis:

The permit area, as enlarged in 1997 by the addition of the North Rilda Lease Extension, is shown on Figure R645-301-100a--Mine Permit Boundaries, on Plate HM-9--North Rilda Area Geologic and Hydrologic Information, and on Plate HM-10--Right Fork of Rilda Canyon; Geologic Cross Section A-A'. Also shown on these maps are the boundaries of the individual leases and patent fee claims which make up the lease extension.

Plates HM-9 and HM-10 were certified in January of 1997 by John Christensen, a licensed professional engineer registered in the state of Utah.

Findings:

The plan fulfills the requirements of this section.

MAPS, PLANS, AND CROSS SECTIONS OF RESOURCE INFORMATION

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

Analysis:

Permit Area Boundary Maps

The permit area, as enlarged in 1997 by the addition of the North Rilda Lease Extension, is shown on Figure R645-301-100a--Mine Permit Boundaries, on Plate HM-9--North Rilda Area Geologic and Hydrologic Information, and on Plate HM-10--Right Fork of Rilda Canyon; Geologic Cross Section A-A'. Also shown on these maps are the boundaries of the individual leases and patent fee claims which make up the lease extension.

TECHNICAL ANALYSIS

Last revised - July 1, 1997

Plates HM-9 and HM-10 were certified in January of 1997 by John Christensen, a licensed professional engineer registered in the state of Utah.

Coal Resource and Geologic Information Maps

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

Mine Workings Maps

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

Monitoring Sampling Location Maps

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

Subsurface Water Resource Maps

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

Surface Water Resource Maps

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

TECHNICAL ANALYSIS

Last revised - July 1, 1997

Well Maps

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

Certification

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

Findings:

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

GEOLOGIC RESOURCE INFORMATION

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

Analysis:

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

TECHNICAL ANALYSIS

Last revised - July 1, 1997

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

Strata above the coal seam to be mined will not be removed, so samples have been collected and analyzed from test borings or drill cores to provide logs of drill holes that show: lithologic characteristics, including physical properties and thickness of each stratum that may be impacted; the location of ground water where encountered; chemical analyses for acid- or toxic-forming or alkalinity-producing materials in the strata immediately above and below the coal seam to be mined; chemical analyses of the coal seam for acid- or toxic-forming materials, including the total sulfur and pyritic sulfur; and the thickness and engineering properties of clays or soft rock in the stratum immediately above and below each coal seam to be mined.

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

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

Findings:

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

TECHNICAL ANALYSIS

Last revised - July 1, 1997

HYDROLOGIC RESOURCE INFORMATION

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

Analysis:

Sampling and analysis.

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

Baseline information.

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

Ground-water information.

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

Surface-water information.

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

TECHNICAL ANALYSIS

Last revised - July 1, 1997

acidity and dissolved carbonate and bicarbonate have been determined. Water-quantity descriptions include, at a minimum, baseline information on seasonal flow rates.

Baseline cumulative impact area information.

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

Modeling.

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

Probable hydrologic consequences (PHC) determination.

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

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

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

Four springs belonging to North Emery Water Users Association (NEWUA) lie within or immediately adjacent to the North Rilda amendment area. There are also two seeps

TECHNICAL ANALYSIS

Last revised - July 1, 1997

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

Ground water intercepted by mine workings is water that has been held in storage in the rock, principally in perched, fluvial-channel sandstone systems. Data from surface monitoring and the hydrologic characteristics of the Blackhawk Formation and Starpoint Sandstone indicate that the interception of this ground water produces only a minor reduction of natural discharge from the ground-water systems. Long-term monitoring of water producing zones in the Deer Creek and Wilberg-Cottonwood Mines has established that in-mine flows decrease in volume with time and are not subject to seasonal or yearly fluctuations (p. 85).

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

Supplemental information.

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

Ground-water monitoring plan.

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

Parameters to be analyzed are those listed in the Division's guidelines for water quality monitoring, which include TDS or specific conductance corrected to 25°C, pH, total iron, total manganese. Water levels are to be monitored quarterly in the five piezometers in

TECHNICAL ANALYSIS

Last revised - July 1, 1997

Rilda Canyon. Information on quantity and quality parameters to be monitored, sampling frequency, and site locations is in Volume 9 - Appendix A of the current MRP.

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

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

Surface-water monitoring plan.

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

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

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

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

TECHNICAL ANALYSIS

Last revised - July 1, 1997

Findings:

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

OPERATION PLAN

FISH AND WILDLIFE INFORMATION

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

Analysis:

Protection and enhancement plan.

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

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

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

No full-extraction mining is planned under the riparian areas. However, part of one longwall panel will be within 200 feet of the Right Fork of Rilda Canyon riparian area. The relative thinness of overburden where planned longwall panels will be closest to the riparian

TECHNICAL ANALYSIS

Last revised - July 1, 1997

area increases the possibility for subsidence induced fractures to reach the surface. But the relative thinness of overburden also reduces the likelihood that subsidence effects will extend laterally into the riparian area. To protect the alluvial-colluvial system in the Right Fork a stream buffer zone has been established based on the extent of the riparian zone and a 15 degree angle-of-draw from the Hiawatha Seam, the lowest seam to be mined. Longwall-mining induced subsidence and related impacts are not projected to reach the North Rilda riparian areas, as shown on HM-9 and HM-11.

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

Findings:

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

COAL RECOVERY

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

Analysis:

See *General*, page 7, *Engineering*, pages 9, 10, 12-17.

Mining began in the North Rilda Lease Extension in 1997. The North Rilda Lease Extension lies to the north of Rilda Canyon. It comprises approximately 1,960 acres and consists of 4 Federal leases and 4 patent fee claims.

The North Rilda Lease Extension contains approximately 23 million minable tons of coal. The coal is in 2 seams: the upper Blind Canyon Seam and the lower Hiawatha Seam. Entry development will be done using continuous mining machinery. Most production, about 75%, will be done by longwall methods. Continuous mining machinery will be used to mine many areas which cannot be incorporated into longwall panels and will thus accomplish the remaining 25% of the total production. Production is expected to be 1,150 tons per day for the continuous miner and 9,000 tons per day for the longwall, which means a production rate for the entire mine of 10,150 tons per day, 190 days per year, or approximately 1.93 million tons per year.

TECHNICAL ANALYSIS

Last revised - July 1, 1997

The coal recovery rate in the longwall panels is expected to be about 85%. Combining the production from longwall and continuous miner sections, and considering in the coal that must remain in place in the form of property boundary barriers, main entry barriers, bleeder entry barriers and surface and subsurface resource protective barriers, the permittee expects to attain an overall coal recovery rate for the entire mine of about 65%. This compares favorably with the industry average for longwall mines, which is about 60%. Thus, the plan maximizes the utilization and conservation of the coal resource, in accordance with R645-301-522.

Findings:

The plan fulfills the requirements of this section.

SUBSIDENCE CONTROL PLAN

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

Analysis:

Subsidence control plan.

The subsidence control plan for the North Rilda Lease Extension incorporates 5 principles: 1) subsidence monitoring, 2) the use of longwall mining methods, 3) the establishment of large longwall panels, 4) the leaving of permanent barrier pillars, and 5) the use of yielding pillars between longwall panels.

Subsidence monitoring will be done exclusively by aerial photogrammetric methods. The yearly monitoring program already in use at the Deer Creek mine, as well as other adjacent mines owned and operated by the permittee, will simply be extended to include the lease extension area. Elevations are measured to a precision of ± 1 foot and the data are so abundant that they can be and are used to draft extensive isogrametric subsidence maps of the area being mined. These maps and the data upon which they are based have been very useful to both the permittee and the Division in monitoring and predicting subsidence.

As has been discussed, wherever practicable, longwall methods will be used. By allowing for vast and relatively uniform subsidence, longwall mining minimizes not only surface damage, but also damage to aquifers and other subsurface features.

Longwall panels have been designed to be as large as possible. The larger the panel, the less the extent of peripheral surface damage relative to the total area subsided.

TECHNICAL ANALYSIS

Last revised - July 1, 1997

Where necessary, permanent protective barrier pillars of coal will be left. These barrier pillars will be located on the basis of the angle of draw, which has been determined to be 18° in this area, and the depth of cover in a particular area. Property boundary pillars will be left to prevent subsidence from extending beyond the permit area. Pillars will be left to protect the South Castlegate escarpment, which lies on the north side of Rilda Canyon and which has significant vertical exposure. Pillars will be left to protect the riparian areas in both forks of Rilda Canyon from subsidence. Only entry development, and no pillar extraction or second mining, will take place in these pillars.

Last, those pillars which are left between longwall panels for entry protection have been designed to yield, or crush out, with time. This means that unsubsidized ridges between panel subsidence troughs will be eliminated or lessened. Like the large longwall panels, this will make for more extensive and uniform subsidence and thus lessen damage to both surface and subsurface features.

The U.S. Forest Service (USFS) reviewed the plan for mining the North Rilda Lease Extension. On March 7, 1997, USFS sent a letter to the Division, outlining a number of deficiencies in the plan, the correction of which would be necessary before it (USFS) would allow mining beneath the escarpments of Mill Fork Canyon and Rilda Canyon, or even entry development beneath the right fork of Rilda Canyon, to proceed.

The deficiencies set forth by USFS have to do with the potential for subsidence. They center around 2 problems.

1) First, USFS fears that the development of entries beneath the riparian area and alluvial deposits in the right fork of Rilda Canyon might, at least in the long run, cause subsidence damage to the riparian area and to the water-bearing capacity of the alluvial deposits. In turn, this might cause a diminution in the quality or quantity of water in nearby springs that are owned by the North Emery Water Users Association.

In order to address USFS's concerns about the stability of the riparian area and alluvial deposits above the proposed entries, the permittee did a stability analysis of both the proposed entry pillars and the overlying strata. The analysis is found in Appendix 1. The analysis indicates that the stability safety factor of the proposed entry pillars ranges from 3.57 at the edges of the canyon, where the overburden is over 600 feet thick, to 23.94 in the middle of the canyon, where the overburden, at 99 feet, is shallowest. The beam analysis of the strata which will overlie the entries indicates for them a stability safety factor of 4.92. The Division is satisfied that these large stability safety factors guarantee that the proposed entries will be stable over the long run.

2) Second, the stipulations of the North Rilda Lease agreement prohibit subsidence damage to the escarpments in Mill Fork and Rilda Canyons.

TECHNICAL ANALYSIS

Last revised - July 1, 1997

The escarpment in Mill Fork Canyon is very small. In a June 10, 1997 letter to the Division, USFS stated that it is willing to allow mining in that area through a categorical exclusion, which would eliminate the necessity of an Environmental Assessment (EA). The permittee has done a comparative study of this area and the south side of Rilda Canyon, which has been completely mined out. These areas are very similar. This study is found in Appendix 1. It indicates that the probability of major, or even noticeable, subsidence damage on the south slope of Mill Fork Canyon is very slight.

The escarpments in Rilda Canyon, on the other hand, are high and quite extensive. Mining in this area, which might pose a threat of subsidence damage to those escarpments, is thus subject to a full EA. The permittee is conducting subsidence studies in other, similar areas, namely Cottonwood Newberry Canyon, Corncob Wash, and Trail Mountain. The permittee commits to using the data from these studies to predict the effects of subsidence on the escarpments of Rilda Canyon.

The layout and location of the entries and the longwall panels is the subject of ongoing study by the permittee and negotiation between the permittee and USFS. The permittee must design the subsidence control plan to the satisfaction of USFS before entry development and mining can proceed.

Findings:

The plan fulfills the requirements of this section. However, in accordance with R645-300-122, the permittee must design the subsidence control plan to the satisfaction of USFS before entry development and mining can proceed.

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:

Affected area maps.

The permit area, as enlarged in 1997 by the addition of the North Rilda Lease Extension, is shown on Figure R645-301-100a--Mine Permit Boundaries, on Plate HM-9--North Rilda Area Geologic and Hydrologic Information, and on Plate HM-10--Right

TECHNICAL ANALYSIS

Last revised - July 1, 1997

Fork of Rilda Canyon; Geologic Cross Section A-A'. Also shown on these maps are the boundaries of the individual leases and patent fee claims which make up the lease extension.

Plates HM-9 and HM-10 were certified in January of 1997 by John Christensen, a licensed professional engineer registered in the state of Utah.

Findings:

The plan fulfills the requirements of this section.

GEOLOGIC OPERATION INFORMATION

Regulatory Reference: R645-301-630, -640

Analysis:

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

Findings:

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

TECHNICAL ANALYSIS

Last revised - July 1, 1997

HYDROLOGIC INFORMATION

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

Analysis:

Ground-water monitoring.

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

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

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

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

TECHNICAL ANALYSIS

Last revised - July 1, 1997

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

Surface Water Monitoring.

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

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

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

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

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

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

TECHNICAL ANALYSIS

Last revised - July 1, 1997

Transfer of wells.

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

Discharges into an underground mine.

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

Gravity discharges from underground mines.

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

Water-quality standards and effluent limitations.

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

Casing and sealing of wells.

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

Findings:

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

TECHNICAL ANALYSIS

Last revised - July 1, 1997

MAPS, PLANS, AND CROSS SECTIONS OF MINING OPERATIONS

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

Analysis:

Monitoring and sample location maps.

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

Findings:

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

RECLAMATION PLAN

GENERAL REQUIREMENTS

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

Analysis:

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

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

Findings:

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

MINE OPENINGS

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

Analysis:

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

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

TECHNICAL ANALYSIS

Last revised - July 1, 1997

Findings:

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

HYDROLOGIC INFORMATION

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

Analysis:

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

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

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

There will be no permanent sedimentation ponds, diversions, impoundments, and treatment facilities in the North Rilda Area. Water treatment facilities built in Huntington Canyon by PacifiCorp are not to treat water to meet water quality standards or effluent discharge limitations, such as those set forth in 40 CFR Part 434, but rather to provide culinary water to NEWUA to replace NEWUA-owned spring water that may potentially be lost because of mining operations in the North Rilda Area.

TECHNICAL ANALYSIS

Last revised - July 1, 1997

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

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

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

Findings:

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

TECHNICAL ANALYSIS

Last revised - July 1, 1997

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:

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

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

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

There will be no permanent sedimentation ponds, diversions, impoundments, and treatment facilities in the North Rilda Area. Water treatment facilities built in Huntington Canyon by PacifiCorp are not to treat water to meet water quality standards or effluent discharge limitations, such as those set forth in 40 CFR Part 434, but rather to provide culinary water to NEWUA to replace NEWUA-owned spring water that may potentially be lost because of mining operations in the North Rilda Area.

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

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TECHNICAL ANALYSIS

Last revised - July 1, 1997

Rilda Area. Monitoring will continue through mining and during reclamation. Monitoring will be done at the sites listed on pages 99 and 100: East Mountain Springs; in-mine sites that meet the criteria in the Special Condition Stipulation in the Deer Creek permit renewal of February 6, 1996; the Waste Rock Wells; Rilda Canyon Springs - NEWUA; and Rilda Canyon Wells - NEWUA Spring area. Spring 80-50 is added to the East Mountain Spring Monitoring Program. Removal of structures will be done following approval by the Division in conjunction with the Utah State Division of Water Rights (p.98).

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

Findings:

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

CUMULATIVE HYDROLOGIC IMPACT ASSESSMENT

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

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

EAST MOUNTAIN CUMULATIVE HYDROLOGIC IMPACT ASSESSMENT

Cottonwood/Wilberg Mine, ACT/015/019

Deer Creek Mine, ACT/015/018

Des-Bee-Dove Mines, ACT/015/017

Huntington #4 Mine, ACT/015/004

Crandall Canyon Mine, ACT/015/032

Emery County, Utah

July 1989
Updated September 1994

TABLE OF CONTENTS

	PAGE
I. Introduction.	1
General Information.	1
Geology.	1
Vegetation	1
Hydrology	3
II. Cumulative Impact Area.	4
III. Scope of Mining	5
Leases	6
Cottonwood/Wilberg Mine	6
Deer Creek Mine	6
Des-Bee-Dove Mine	7
Huntington #4 Mine	7
Crandall Canyon Mine	8
IV. Study Area	8
Geology	8
Hydrologic Resources	8
Ground Water	8
Surface Water	10
V. Potential Impacts	13
Ground Water	13
Dewatering	13
Subsidence	17
Surface Water	19
Cottonwood/Wilberg Mine	19
Deer Creek Mine	21
Des-Bee-Dove Mines	21
Huntington #4 Mine	22
Crandall Canyon Mine	22
VI. Summary	23
VII. References	25
VIII. Plates	Appendix A

I. INTRODUCTION

This updated Cumulative Hydrologic Impact Assessment (CHIA) for East Mountain has been completed based on permit revisions and additional lease extensions for the Deer Creek and Crandall Canyon Mines. This document will include new drawings and information which changes permit areas, lease additions, and the cumulative impact area (CIA). It is not the intent of this document to recreate and change all of the information in the original CHIA because that CHIA was based on current information at that time. The applicable sections listed in the original document will be used in this document to reflect current hydrologic information.

This assessment encompasses the probable cumulative impacts of all anticipated coal mining in the East Mountain area on the hydrologic balance and whether the operations proposed under the applications have been designed to prevent damage to the hydrologic balance outside the proposed mine plan areas. Additional water quality and quantity data collected for groundwater and surface water sites are considered in this CHIA. This report complies with legislation passed under Utah Code Annotated 40-10-1- et seq. and the attendant State Program rules under R645-301-728.

GENERAL INFORMATION

East Mountain is located in the Wasatch Plateau Coal Field, approximately 20 miles southwest of Price, Utah (Figure 1). The eastern margin of the Wasatch Plateau forms a rugged escarpment that overlooks Castle Valley and the San Rafael Swell to the east. Elevations along the eastern escarpment of the Wasatch Plateau range from approximately 6,500 to over 10,000 feet.

Precipitation varies from 40 inches at higher elevations to less than 10 inches at lower elevations. The area encompassed by the Wasatch Plateau is classified as semiarid to subhumid.

GEOLOGY

Outcropping rocks of the Wasatch Plateau Coal Field range from Upper Cretaceous to Quarternary in age. The rock record reflects an overall regressive sequence from marine (Mancos Shale) through littoral (Star Point Sandstone) and lagoonal (Blackhawk Formation) to fluvial (Castlegate Sandstone, Price River Formation and North Horn Formation) and lacustrine (Flagstaff Limestone) depositional environments. Oscillating depositional environments within the overall regressive trend are represented by lithologies within the Blackhawk Formation which is the major coal-bearing unit within the Wasatch Plateau Coal Field.

VEGETATION

Vegetation of the Wasatch Plateau area is classified within the Colorado Plateau floristic division⁴. The area occupies

parts of both the Utah Plateaus and the Canyonlands floristic sections. Vegetation communities of the area include desert shrub (shadscale) at the lowest elevations through sagebrush, sagebrush-grassland, pinyon-juniper, mountain brush, Douglas fir-white fir-blue spruce, and Engleman spruce-subalpine fir.

Desert shrub communities are sparsely vegetated shrublands that, depending on elevation and soils, may be dominated by shadscale (Atriplex confertifolia), fourwing saltbush (A. canescens), Castle Valley clover (A. cuneata) or mat saltbush (A. corrugata) and may include winterfat (Ceratoides lanata), Mormon tea (Ephedra spp.), budsage (Artemisia spinescens), miscellaneous buckwheats (Eriogonum spp.), Indian ricegrass (Stipa hymenoides), galleta grass (Hilaria jamesii), grama grass (Bouteloua spp.), needle and thread grass (Stipa comata), sand dropseed (Sporobolus cryptandrus) and squirreltail (Elymus elymoides). Greasewood (Sarcobatus vermiculatus) - saltgrass (Distichlis stricta) may dominate bottomlands.

Many sagebrush communities of the area are relatively dense shrub stands of (Artemisia tridentata) with very little understory growth. In relatively undisturbed sagebrush communities, rabbitbrush (Chrysothamnus nauseosus or C. viscidiflorus), Mormon tea, and several perennial grasses may be common, including thickspike and western wheatgrass (Elymus lanceolatus and E. smithii), basin wildrye (Elymus cinereus), Indian ricegrass and dropseed species.

In the sagebrush-grassland type, the typical big sage may give way to Artemisia tridentata var. vaseyana (mountain big sage) with a co-dominant perennial grass understory. Salina wildrye (Elymus salinus) may be co-dominant in these communities and may dominate an herbaceous grassland type. Black sage (A. nova) with Salina wildrye or western wheatgrass also common.

Pinyon-juniper woodlands occupy drier sites often with stoney to very rocky soils. Pinus edulis and Juniperus osteosperma are co-dominant in the overstory. Understory vegetation ranges from sparse to moderate ground cover on range sites in poor to excellent condition. Understory species include sagebrush, mountain mahogany (Cercocarpus montanus), snowberry (Symphoricarpus oreophilus), and several perennial grasses including slender wheatgrass (Elymus trachycaulus), Salina wildrye, junegrass (Koeleria cristata) and Indian ricegrass.

Dominant shrubs of the mountain brush communities will vary depending on elevation and aspect. The drier south and west-facing slopes may support dense stands of Gambel oak (Quercus gambellii). Other dominants of this community may include serviceberry (Amelanchier utahensis), mountain mahogany (Cercocarpus montanus or C. ledifolius), bitterbrush (Purshia tridentata) and snowberry.

The range of the Douglas fir-white fir-blue spruce community is about 8,000 to 10,000 feet. Douglas fir (Pseudotsuga mensiesii) usually the dominant tree with white fir (Abies concolor) and blue spruce (Picea pungens) usually limited to the most mesic sites, often along streams. With dense canopies, understory vegetation may be sparse. Common shrubs include serviceberry (Amelanchier spp.), Oregon grape (Mahonia repens), chokecherry (Prunus virginiana), Rocky Mountain maple (Acer glabrum), mountain lover (Pachistima myrsinites) and snowberry. Bluebunch wheatgrass (Elymus spicatum), mountain brome (Bromus carinatus), and Kentucky bluegrass (Poa pratensis) are common grasses. Aspen stands (Populus tremuloides) can be found throughout the zone, particularly in mesic sites and as successful communities.

Engelman spruce (Picea engelmannii) and subalpine fir (Abies lasiocarpa) dominate the spruce-fir zone at the highest elevations of the hydrologic impact area. While receiving about the same precipitation as the Douglas fir communities, lower evapo-transpiration with cooler temperatures can permit a more lush vegetation in the spruce-fir zone. Limber pine (Pinus flexilis) often occupies steep or rocky, drier sites of this zone.

Small riparian communities are found at all elevations within the impact assessment area. With greater water availability and cooler temperatures, the riparian zone often includes more mesic species, (e.g., those from a higher vegetation zone). Shrub species from the mountain shrub type may be found at most elevations.

Additional riparian zone shrubs include Narrowleaf cottonwood (Populus angustifolia), red osier dogwood (Cornus stolonifera), skunkbush (Rhus trilobata), river birch (Betula occidentalis) and various willows (Salix spp.). Grass species from the mesic zones may be represented (mountain shrub and higher zones) along with fescues (Festuca spp.) and miscellaneous sedges (Carex spp). Small wet areas around springs and seeps will often support a dense growth of grasses, sedges and willows.

HYDROLOGY

Surface runoff from the Wasatch Plateau flows either to the Price River or the San Rafael River, both tributaries to the Green River. The Price River Basin, which includes about 1,800 square miles in six counties, is located primarily in Carbon and Emery Counties in East-Central Utah. The San Rafael River Basin is about 2,300 square miles in three counties and is located mainly in Emery County to the south of the Price River Basin.

The Price River drainage originates in the Wasatch Plateau about 12 miles west and south of Scofield Reservoir. Downstream from the reservoir the river flows in a southeasterly direction.

The drainage is bounded by the Book Cliffs on the northeast, the Wasatch Plateau on the west and the San Rafael Swell on the south.

The San Rafael River Basin occupies parts of two physiographic sections of the Colorado Plateau - The High Plateaus to the north and west and Canyonlands to the south and east⁷. The San Rafael River originates as tributary streams in the upper Wasatch Plateau. Principal tributaries are Huntington Creek, Cottonwood Creek and Ferron Creek which merge to form the San Rafael River about six miles southeast of Castledale, Utah. The San Rafael River flows in a southeasterly direction through the San Rafael Swell joining the Green River about fifteen miles south of Green River, Utah.

The water quality of both the Price River and the San Rafael River is good in the mountainous headwater tributaries, but deteriorates rapidly as flow traverses the Mancos Shale. The shale lithology typically has low permeability, is easily eroded and contains large quantities of soluble salts which are major contributors to poor water quality. Depending upon the duration of contact, water quality degrades downstream with Total Dissolved Solids (TDS) levels of 4,000 milligrams per liter (mg/l) not uncommon. The predominant ion leached from the Mancos Shale is sulfate (SO_4) with values over 1,000 mg/l common in the lower reaches of the Price River.

In the high mountain tributaries, the lowest dissolved solids concentrations occur during high flows associated with the spring snow melt. The highest dissolved solids concentrations occur during late summer when low flow conditions exist. The predominant ions found in the mountain streams during both high flows and low flows are: calcium, magnesium and bicarbonate.¹¹

The lowland stream reaches contain the highest dissolved solids concentrations in late summer during low flow conditions and as irrigation return water is placed back into these streams.

The predominant ions during high flow are calcium, magnesium and bicarbonate and during low flow periods, the predominant ions are sodium, calcium and sulfate.¹¹

Ground water is present in all lithostratigraphic units within the Wasatch Plateau Coal Field. Ground water occurs under localized conditions that often form a system of "perched" aquifers and associated springs and/or seeps. Significant localized ground-water resources are associated with the North Horn Formation and Price River Formation. The U.S. Geological Survey has identified and formally designated the Star Point-Blackhawk aquifer as the only regional ground-water resource occurring in the Wasatch Plateau Coal Field^{6, 10}.

Ground-water is often associated with faulting and fracturing where these geologic structure provide secondary porosity and serve as conduits for rapid groundwater movement both vertically and horizontally. Surface waters readily infiltrate into these fault systems which may then rapidly migrate until contacting impervious material. These faults and fractures often have significant quantities of water stored within the fault gouge.

II. CUMULATIVE IMPACT AREA (CIA)

Figure 2 delineates the CIA for current and projected mining in the East Mountain area. The CIA encompasses approximately 68 square miles and includes East Mountain. The western and eastern CIA boundaries are designated by Huntington Creek and Cottonwood Creek, whereas the southern extent is bounded by sections 8,9 and 10, T18S, R7E, and the northern boundary is defined by the Left Fork of Huntington Creek. The west side of the Crandall Canyon mine permit area was recently extended due to the acquisition of additional leases. This area drains several small ephemeral drainages to Indian Creek and Scad Valley Creek both perennial streams in Joe's Valley. The hydrologic connection between the drainages and Indian Creek is thought to be at the surface only due to the regional dip of the strata towards Huntington Creek.

III. SCOPE OF MINING

The federal coal leases that are designated in the East Mountain "Logical Mining Units" are as follows:

Leases

PacifiCorp

COTTONWOOD/WILBERG, DEER CREEK, AND DES-BEE-DOVE MINES

The Cottonwood/Wilberg Deer Creek, Des-Bee-Dove Mines represent three adjacent and overlapping permit areas encompassing about 29,000 acres.

Cottonwood/Wilberg

SL-64900, U-1358, U-083066, U-040151, U-44025, U-47978, and portions of SL-070645-U-02292, U-084923, and U-084924.

Deer Creek

SL-064607-064621, SL-064900, U-1358, SL-070645, U-02292, U-84923, U-084924, U-083066, U-040151, U-044025, U-014275, U-024319, and U-47979. Additional leases included in the Rilda lease extension include leases U-7653, U-47977 and SL-050862 and U-06039. Future coal leases on the north side of Rilda canyon which are not permitted are: U-024317, U-2810 and SL-051221.

Des-Bee-Dove

U-02664, SL-050133, and SL-066116.

Genwal Coal Co.

Crandall Canyon Mine

The Crandall Canyon Mine is isolated from the previous three mines. It includes leases ML-21569, U-66838, ML-21568 and UTU-69082 which total about 3200 acres.

Mountain Coal Co.

Huntington #4 Mine

The Huntington #4 Mine operated in Federal Lease No. U-33454 and SL-064903.

SCOPE OF MINING

Cottonwood/Wilberg Mine

Coal mining operations have been conducted since the 1890's in the Wilberg area. Utah Power and Light Company (UP&L) acquired the Wilberg Mine in September 1977 from the Peabody Coal Company, which had acquired the lease in 1958. Mining had previously been conducted under the original owner, Cyrus Wilberg, beginning in 1945. With the UP&L acquisition, the Wilberg Mine was redesigned. PacifiCorp acquired the UP&L properties in February 1990.

A tragic fire occurred in December of 1984. On July 1, 1985, it was decided to divide the Wilberg Coal Mine into two separate and independent coal mines; the Cottonwood and the Wilberg Coal Mines, each with a separate MSHA identification number. The mining and reclamation permit, however, was designated as ACT/015/019 for the Cottonwood/Wilberg Mine because the surface facilities were shared by each mine.

Longwall mining and limited room and pillar mining produces about 2.5 million tons from the Hiawatha and Blind Canyon seams. Mining is scheduled to cease around the year 2022.

Underground development waste, sediment from sedimentation ponds and trommel reject from the Des-Bee-Dove and Cottonwood/Wilberg Waste Rock Storage area approximately 1 mile south of the Cottonwood/Wilberg Mine. This disposal structure utilizes a maximum of sixteen acres and is part of approved BLM Right of Way: U-37642.

Deer Creek Mine

UP&L purchased the Deer Creek Mine in 1977 from Peabody Coal Company, which had acquired leases on the Deer Creek property and began operations in 1969. Coal mining operations had taken place on fee land in Deer Creek Canyon prior to 1946 when the first federal coal lease was issued in this area. PacifiCorp acquired the UP&L properties in February 1990.

Operations at the Deer Creek Mine overlap those of the Wilberg Mine, predominantly in the Blind Canyon Seam. The Deer

Creek Mine surface facilities are located on a 25-acre site at the junction of Deer Creek Canyon and Elk Canyon.

The Deer Creek Mine utilizes the longwall mining method and produces about 2.5 million tons per year from the Hiawatha and Blind Canyon seams. All underground operations are scheduled to cease around the year 2032.

Waste rock generated at the Deer Creek Mine has been placed into two areas at the main mine site. These two disposal sites are at capacity and the permittee has acquired a third site on the north side of Huntington Canyon. This site is located within the Gentry Mountain CIA and is discussed there.

Des-Bee-Dove Mine

The Des-Bee-Dove Mine complex (the Deseret, Beehive and Little Dove Mines) was acquired by UP&L in 1972 from the Deseret Coal Company, a Mormon Church enterprise. The Mormon Church and the Castle Valley Fuel Company mined the property from 1938 to 1947. From 1936 to 1938, the mine workings were operated by two men, Edwards and Broderick. Mining began in the canyon in 1898 as the Griffith Mine. PacifiCorp acquired the UP&L properties in February 1990.

The Des-Bee-Dove Mine permit area contains two mineable coal seams, the Hiawatha and Blind Canyon seams. The mining plan consists of a series of room and pillar continuous mine sections.

The Des-Bee-Dove Mine ceased operations on February 6, 1987. PacifiCorp is currently maintaining the site in an indefinite "temporary cessation" phase until the coal market improves. This mine may not be reactivated. Before UP&L temporarily ceased operations, the Des-Bee-Dove Mine produced 725,000 tons per year and projected that mining would end in the year 1998.

Huntington #4 Mine

The Huntington Canyon #4 Mine permit area contains 1,320 acres. The underground operations utilized room and pillar mining methods in the Blind Canyon and Hiawatha coal seams in Federal Lease No. U-33454 and SL-064903. All underground mine operations ceased November 1, 1984.

Beaver Creek Coal Company reclaimed the site from August 15, 1985 through September 30, 1985. Three portals and one opening were sealed, regrading and backfilling of the pad and road areas was completed, soil replaced, and reseeding done. The reclaimed site has been maintained since that time. Beaver Creek Coal Company was bought by Mountain Coal Company and the permit was transferred on September 12, 1991. In 1993, Mountain Coal Company applied to the Division for Phase II bond release. This application is under review and is still pending Division approval.

Crandall Canyon Mine

Historically, mining had been conducted in Crandall Canyon from November 1939 through September 1955. Mining in Tract 1 by Genwal Coal Company began in 1983.

The permit area for the Crandall Canyon Mine contains approximately 158 acres in Huntington Canyon in Emery County, Utah. The current method of room and pillar mining for Federal Lease SL-062648 will be continued throughout Lease U-54762. Pillars will be removed upon abandonment of sections. Overall, an advance-retreat mining system is projected for the mine.

Other leases included in the permit area are ML-21569, U-66838 and ML-21568. Additional leases were acquired by Genwal to the west of the existing mine area in March 1994. This lease by assignment includes lease UTU-69082 which is about 3,000 acres.

IV. STUDY AREA

GEOLOGY

The East Mountain CIA is characterized by cliffs, steep slopes, narrow canyons and high plateaus. Stratigraphic units outcropping within the area include, from oldest to youngest, the Mancos Shale, Star Point Sandstone, Blackhawk Formation, Castlegate Sandstone, Price River Formation, North Horn Formation, Flagstaff Limestone and Quaternary deposits. Lithologic descriptions and unit thickness are given in Figure 3.

Rocks in the study area strike northeast and dip from one to three degrees to the southeast. The major structural features occurring within East Mountain are: Deer Creek Fault; Roans Canyon Fault Graben; Pleasant Valley Fault; the Mill Fork Graben; and the Straight Canyon Syncline. The Deer Creek Fault and Pleasant Valley Fault trend north - south, whereas Roan's Canyon Fault Graben, Mill Fork Graben and the Straight Canyon Syncline trend northeast - southwest. Fault displacements range from several feet to approximately 170 feet.

HYDROLOGIC RESOURCES

GROUND WATER

The ground-water regime within the CIA is dependent upon climatic and geologic parameters that establish systems of recharge, movement and discharge.

Snowmelt at higher elevations provides most of the ground-water recharge, particularly where permeable lithologies such as fractured or solution limestone are exposed at the surface. Vertical migration of ground water occurs through permeable rock units and/or along zones of faulting and fracturing. Lateral migration initiates when ground water encounters impermeable rocks and continues until either the land surface is intersected (and spring discharge occurs) or other permeable lithologies or zones are encountered that allow further vertical flow.

The Star Point Sandstone and lower portion of the Blackhawk Formation, Castlegate Sandstone, Price River Formation, North Horn Formation, Flagstaff Limestone, and Quarternary deposits are potential reservoirs or conduits for ground water in the CIA. Reservoir lithologies are predominantly sandstone and limestone. Sandstone reservoirs occur as channel and overbank, lenticular and tabular deposits, whereas limestone reservoirs have developed through solution processes and fracturing. Shale, siltstone, mudstones and cemented sandstone beds act as aquacludes to impede ground-water movement.

The Mancos Shale is considered a regional aquaclude that limits downward flow within the CIA. Localized aquacludes include relatively thin, impermeable lithologies occurring within the stratigraphic sections above the Star Point Sandstone.

The Star Point-Blackhawk aquifer is present and represents the only identified regional ground-water resource in the study area⁶. Ground water associated with the Price River Formation and North Horn Formation may be characterized as occurring within an extensive system of "perched" aquifers and represents a significant hydrologic resource.

Faults and fractures act as effective conduits for ground water and allow unsaturated downward flow. Springs having significant discharges (10 gpm or greater) are most commonly located in proximity to north-south and northeast-southwest trending fault or fracture zones (Figure 4). In particular, the Roans Canyon Fault Graben appears to act as a significant conduit for ground water.

Drilling from the Deer Creek Mine identified two major hydrogeologic units associated with the Roan's Canyon Graben. Aquifer testing indicated the horizontal flow component within the graben is towards the east and suggests discharge occurs into the Huntington Creek drainages basin.

The Straight Canyon Syncline is also thought to direct ground-water movement towards the southwest into the Cottonwood Creek drainage basin.

Data from seven boreholes located within the Cottonwood/Wilberg Mine suggest that ground-water in the Star Point Sandstone is moving towards the northeast. This flow direction could be associated locally with the southern extent of the Straight Canyon Syncline. Other, more regional data indicate ground water moves from north to south.

Approximately 309 seeps and springs occur within the CIA. Total spring discharge exceeds 2,378 gpm (3,800 acre feet/year). Flow data is not available for all of these identified springs. The average flow was calculated for springs emanating from

specific formations and then total spring flow from each formation was estimated by multiplying the average flow by the number of springs. Spring discharge is distributed as follows:

<u>Lithologic Unit</u>	<u>Number of Springs</u>	<u>Total Discharge</u>
Flagstaff Limestone	8	25 gpm
Undifferentiated Flagstaff Limestone/North Horn Formation	5	34 gpm
North Horn Formation	125	1,325 gpm
Undifferentiated North Horn Formation/Price River Formation	3	25 gpm
Price River Formation	82	519 gpm
Castlegate Sandstone	17	55 gpm
Blackhawk Formation	52	135 gpm
Star Point Sandstone	15	260 gpm

Analysis from spring samples indicates that water quality progressively decreases from the Flagstaff Limestone to the Star Point Sandstone.

Mine inflow is estimated to total 1,500 gpm for the Deer Creek Mine and Cottonwood/Wilberg Mine and 100 gpm in the Crandall Canyon Mine. Mine water is discharged to the Left Fork of Grimes Wash and Miller Canyon from the Cottonwood/Wilberg Mine and to the Huntington Power Plant and Deer Creek from the Deer Creek Mine. Mine water is not discharged at the Crandall Canyon Mine or Des-Bee-Dove Mine. No discharge occurs at the reclaimed Huntington #4 Mine.

Mine water intercepted within the CIA represents ground-water depletion from storage in the Blackhawk Formation and Star Point Sandstone and/or interception of flow along faults/fractures or from fluvial channels in the mine roof.

SURFACE WATER

The CIA has been divided into fourteen major drainage basins. The CIA encompasses drainages to Huntington Creek and Cottonwood Creek, both tributaries to the San Rafael River Basin (see Figure 5).

Crandall Canyon (4)

Crandall Canyon drainage (4) includes the disturbed area associated with the Crandall Canyon Mine. The mine exists in the

lower reaches of this watershed which encompasses 3,332 acres. The average gradient of Crandall Creek is 16 percent. Crandall Creek is perennial and flows east into Huntington Creek.

Mining is centered in the lower reaches of the drainage area and involves approximately 162 acres, of which 9.7 acres is surface disturbance. All surface disturbance is treated by maintained sediment controls.

Additional leases have been acquired by Genwal Coal Company to the west of the existing mine workings. These leases extend the permit area north into Blind Canyon and Horse Canyon. These new lease additions abut the Joe's Valley Graben which creates a barrier to further mining to the west.

Little Bear Canyon and Mill Fork Canyon (5 and 6)

Approximately 3,869 acres drain from Little Bear Canyon and Mill Fork Canyon combined. The Huntington #4 Mine encompasses approximately 1,320 acres with these two canyons. Reclaimed surface disturbance involves 12.5 acres in Mill Fork Canyon. Little Bear Creek is considered ephemeral and Mill Creek is considered perennial in its lower reaches. The average gradient of Little Bear Creek is 30 percent and the average gradient for Mill Creek is 13 percent.

The Huntington #4 Mine was reclaimed in 1985 and has maintained sediment controls in place through the bonding period. Mountain Coal Company has applied for phase 2 bond release. PacifiCorp leases in the Rilda Canyon area extend into the south half of Mill Fork Canyon and includes 390 acres in Mill Fork.

Rilda Creek (7)

Approximately 4,119 acres drain into Rilda Canyon. Rilda Creek is perennial due to several large springs found in the middle reaches of the creek. The average gradient of Rilda Creek is 11 percent.

The permit area of the Deer Creek Mine includes areas in Rilda Canyon. Previous surface disturbances were associated with the Helco Mine Rominger Mine. The North Emery Water Users Association (NEWUA) controls several springs adjacent to the Helco Mine. These springs have been developed and are used as culinary water. Reclamation of the abandoned Helco Mine was done in 1988 by the Division's Abandoned Mine Reclamation Program. This work included six portal closures, removal and burial of coal waste piles followed by revegetation. PacifiCorp's permit area encompasses 2,417 acres in the Rilda Canyon drainage.

PacifiCorp has proposed constructing a ventilation breakout up the Left Fork in Rilda Canyon. This proposal includes construction of a 1.2 acre pad with three portals. The pad will support portal liners, a substation, ventilation fan, water

storage tank and a pumphouse. A 12 foot wide gravel road will connect the pad to the Rilda Canyon road. Approximately 1350 feet of road will be added in Rilda Canyon. This proposal has been submitted to the Division and is currently under review. Sediment controls will be installed and maintained during construction and operation.

Meetinghouse Canyon and Deer Creek Canyon (8 and 9)

Approximately 4,469 acres drain Meetinghouse Canyon and 3,218 acres drain Deer Creek Canyon. Meetinghouse Creek is considered ephemeral and Deer Creek is considered perennial. The average gradient of Meetinghouse Creek is 12 percent and the average gradient of Deer Creek is 13 percent. Approximately 56 acres of surface disturbance associated with the Deer Creek Mine is located in the middle of Deer Creek Canyon. The surface facilities are treated by sediment controls and all coal produced at the mine is conveyed to the Huntington Power Plant located adjacent to Huntington Creek near the bottom of Deer Creek Canyon.

Meetinghouse Canyon contains 4,090 acres and Deer Creek contains 2,998 acres of PacifiCorp's permit area. Mine ventilation breakouts have been established in Meetinghouse Canyon. No other mine related surface disturbance occurs in Meetinghouse Canyon.

Maple Gulch and Danish Bench (10 and 11)

Approximately 4,338 acres is associated with the drainage area of Maple Gulch and approximately 3,708 acres is associated with the drainage area of Danish Bench. Both areas are primarily Mancos Shale flats draining away from the southeastern end of East Mountain. The area lacks the steeply incised canyons found in some of the other drainages within the CIA. Danish Bench drains to Cottonwood Creek and has an average gradient of 12.5 percent. Maple Gulch drains to Huntington Creek and has an average gradient of 17 percent. Permit areas of the PacifiCorp mines encompasses 837 acres of Maple Gulch and 250 acres of Danish Bench. Neither area contains any surface disturbance associated with mining.

Grimes Wash (12)

Approximately 7,426 acres is associated with the Grimes Wash drainage. The Cottonwood/Wilberg Mine is situated within Grimes Wash and includes 31 acres of surface disturbance which is treated by sediment controls. The average gradient of Grimes Wash is 14 percent. PacifiCorp's Cottonwood/Wilberg Mine permit area encompasses 4,120 acres of the Grimes Wash drainage.

Cottonwood Creek (13)

This drainage encompasses 8,942 acres and includes all drainage to Cottonwood Creek along the western half of the CIA area. It has many small canyons and contains 12 acres of surface

disturbance associated with the Cottonwood Fan Portal area of the Cottonwood/Wilberg Mine. This area is treated by sediment controls and is partially reclaimed. The portion of PacifiCorp's permit area contained in this drainage is 5,120 acres. There is a portal in Miller Canyon which drains mine water from the Cottonwood/Wilberg mine to Cottonwood Creek.

Drilling conducted in August 1992 upward from the Cottonwood Mine into flooded panels of the Deer Creek Mine released significant quantities of water into the Cottonwood Mine. Portions of this water was discharged from the mine portals into Grimes Wash and portions were discharged from the breakout in Miller Canyon.

V. POTENTIAL IMPACTS GROUND WATER

Dewatering and subsidence related to mining have the greatest potential for impacting ground-water resources in the CIA. The impact of changes in vegetation on ground-water recharge should be minimal since mining will create surface disturbance of less than 150 acres of the 44,000 acre CIA. Disturbance of phreatophytic vegetation (primarily cottonwood and some willow) is negligible.

The Cottonwood/Wilberg Mine Waste Rock Storage area is located below the coal resource on Quaternary sediment gravel that directly overlies the Masuk member of the Mancos Shale. Inasmuch as the Mancos Shale is considered a regional aquiclude, the storage facility presents a low risk for impacting ground-water resources.

Dewatering.

The Deer Creek Mine and Cottonwood Mine have discharged an average of 2,206 gpm (3,600 acre feet/year) since January 1990. This average is high due to large quantities of water encountered by the Deer Creek Mine in 1990. The volume of water has diminished significantly since its initial interception and in 1993 the average discharge rate was 1,342 gpm (2,200 acre feet/year). The Crandall Canyon Mine continues to intercept about 100 gpm (161 acre feet/year) with no discharge from the mine. The volume of water being discharged from mines within the CIA (3,700 acre feet/yr.) approximates the amount of water that is currently being withdrawn from the ground-water system. The volumes of water discharged from the Deer Creek and Cottonwood/Wilberg Mines are presented in the table below as an average discharge in gallons per minute (GPM)*. The current withdrawal values may be totalled and compared to estimates of ground-water discharge and recharge within the CIA and thereby, allow an assessment of cumulative dewatering impacts.

MONTH	DEER CREEK & COTTONWOOD/WILBERG MINES Average Discharge Per Minute (GPM) ¹⁸			
	1990	1991	1992	1993
January	1,683	2,985	1,901	1,939
February	2,433	2,634	1,796	1,775
March	2,287	2,088	1,710	1,347
April	3,190	2,817	1,872	827
May	3,339	2,653	1,890	770
June	2,958	2,629	853	788
July	3,189	2,467	2,325	985
August	3,248	2,267	3,433	1,156
September	3,367	2,464	3,268	1,254
October	3,085	2,204	2,211	1,455
November	2,873	2,128	2,210	1,340
December	3,087	2,176	2,073	1,133
AVERAGE	2,895	2,459	2,129	1,342

* The Crandall Canyon Mine encounters about 100 gallons per minute. This water is utilized for in mine purposes and is not discharged from the mine.

Approximately 44,273 acres within the CIA overlie the Coal resource and represent a potential recharge area (Figure 6). Average annual precipitation is approximately 20 inches over the potential recharge area and hence, the total annual precipitation over the outcropping recharge is 73,803 acre-feet. Approximately 12 percent of the annual precipitation contributes to recharge.¹⁴ Thus 12 percent of 73,803 produces about 8,900 acre feet of recharge water per year for the entire CIA area.

Table 1A gives estimates for the total annual discharge of springs from water-bearing rock units that overlie the coal resource.

Table 1a. Precipitation and Spring Discharge Estimates for Areas Above the Coal Resource. East Mountain CIA.

<u>Lithologic Unit</u>	<u>Outcrop Area (acres)</u>	<u>Precipitation on Outcrop (acre-feet)</u>	<u>Total Annual Discharge of Springs (Percent of annual precipitation on outcrop)</u>
Undivided Flagstaff Limestone, North Horn Formation, Price River Formation	27,007	45,021	3,100 (6.9%)
Castlegate Sandstone	5,020	8,368	100 (1.1%)
Blackhawk Formation, Star Point Sandstone	12,246	20,414	600 (3.1%)
TOTAL		73,803	3,800 (5.2%)

Discharge also occurs directly to perennial streams where channels intersect ground water within the Blackhawk Formation and Star Point Sandstone. The six perennial streams that occur within the CIA are: Crandall Creek, Mill Fork Creek, Rilda Creek, Grimes Wash Creek, Cottonwood Creek, and Huntington Creek. All of these streams intersect the lower Blackhawk Formation and Star Point Sandstone.

A study conducted along Miller Creek in the adjacent Gentry Mountain area indicated that streamflow substantially increased from 8 to 115 gpm) as a result of discharge from the Blackhawk Formation and Star Point Sandstone ⁵. The results from the Miller Creek Study suggest perennial steams that traverse the regional aquifer sustain similar ground-water discharges (or base flow recharge). Accordingly, total base flow recharge to perennial streams is estimated to be 1,000 acre feet per year.

Table 1B lists estimated ground-water discharges to perennial steams and from mines.

Table 1B. Estimated Ground-water Discharge to Perennial Streams and from Mines. East Mountain CIA.

Discharge to Perennial Streams (6 total)	1,000 acre feet
Discharge from Mines (3 total)	5,000 acre feet
Total	6,000 acre feet

Table 1C approximates the amount of ground water discharged to the atmosphere by mine ventilation systems. Psychrometric formulas were utilized to derive ventilation discharge values and extrapolated to mine elevation. Average relative humidity data

from the Central Weather Station in the Manti-LaSal National Forest were also used in the psychrometric calculation.

Table 1C. Approximate Atmospheric Discharges from Active Mines, East Mountain, CIA.

<u>Mine</u>	<u>Approximate Discharge Rate (gpm)</u>
Cottonwood/Wilberg Mine	36
Deer Creek Mine	36
Crandall Canyon Mine	<u>10</u>
TOTAL	82

Total ground-water discharge within the CIA (summed from Tables 1A, 1B, and 1C) is currently about 9,900 acre-feet, where 48 percent (4,800 acre feet) of the total represents natural discharge to streams and springs and 52 percent (5,100 acre feet) results from mining activities.

Lines (1985) investigated the adjacent Trail Mountain area and indicated regional aquifer inflow to mines is derived from aquifer storage (80 percent) and aquifer discharge (20 percent). Extrapolating these percentages to the East Mountain CIA allows depletion of regional aquifer storage and discharge to be estimated at 4,100 acre feet per year and 1,000 acre feet per year respectively. Mining is progressing to the north away from the Straight Canyon Syncline and the Roans Canyon Fault. These two geologic structures were associated with the large quantities of water encountered. As mining progresses further north limited quantities of groundwater are not anticipated. This has already been observed in the Rilda Canyon area.

Recent mine plan proposals were changed in areas of Rilda Canyon where underground mining posed greater risk to damage the alluvial stream channels due to shallow overburden. Three longwall panels in the Left Fork of Rilda Canyon were removed until sufficient information is available to better determine potential impacts to the stream channel.

PacifiCorp is accessing coal reserves for the Deer Creek Mine through a rock tunnel across the Roans Canyon Fault Graben. A drilling and testing program identified two water-bearing zones within the graben. The permittee pressure grouted the water-bearing zones during development of the rock tunnel. It was not anticipated that the diversion of ground-water flow within the Roans Canyon Fault Graben would exceed a total of 100 gpm.

In the fall 1990, the Deer Creek Mine intercepted a fault associated with the Straight Canyon Syncline and the Roans Canyon Graben which initially produced about 2,000 GPM. This water flooded the mine and created a need for an emergency discharge of

mine water. This emergency discharge was granted to PacifiCorp by the Bureau of Water Pollution Control on November 16, 1990. The volume of water requiring discharge has continued to decrease during the last several years. The total mine water flow discharged from the Deer Creek Mine averaged 1,342 gallons per minute in 1993.

These flows have been reduced due to the reduction in mine water inflows following localized dewatering and because some mine water is being sumped into sealed abandoned mine workings or into the Cottonwood Mine.

Entry development north of the Roans Canyon Graben has encountered little additional inflows. Following the cessation of mining, the discharge of ground water to the Left Fork of Grimes Wash, Miller Canyon, Huntington Power Plant and the atmosphere will cease and the mine workings will begin to flood.

The impact associated with the reduction in surface flow is considered temporary. Mine flooding may conceivably recharge regional aquifer storage and re-establish the natural ground-water conduit system that was operational prior to mining. The maximum time span required for complete mine flooding may be derived by assuming the final workings (14,000 acres) will remain open (average 5 foot height) and caving will not occur. Accordingly, for workings that experience inflow (Cottonwood/Wilberg Mine, Deer creek Mine, Crandall Canyon Mine) an upper limit of 20 years may be derived for complete mine flooding. It should be noted that complete flooding will, undoubtedly, never be achieved because the hydraulic head generated as flooding proceeds will increase until the hydraulic properties of the roof, floor and rib are exceeded and flow into the rocks initiates. New seeps and springs may begin to appear as this mine water moves laterally towards the outcrops.

Subsidence. Subsidence impacts are largely related to extension and expansion of the existing fracture system and upward propagation of new fractures. Inasmuch as vertical and lateral migration of water appears to be partially controlled by fracture conduits, readjustment or realignment in the conduit system will inevitably produce changes in the configuration of ground-water flow. Potential changes include increased flow rates along fractures that have "opened", and diverting flow along new fractures or within permeable lithologies.

Subsurface flow diversion may cause the depletion of water in certain localized aquifers and potential loss of flow to springs that will be undermined. Springs situated below the mine elevation may also be reduced as water which normally flows downward past the coal seam to these springs is intercepted and diverted from the mine. Increased flow rates along subsidence fractures may reduce ground-water residence time and potentially

improve water quality. Water accumulating inside abandoned mine workings may pick up and dissolve rock dust and other constituents thereby decreasing water quality.

Mining will occur beneath approximately 13 springs that have a combined flow in excess of 625 gpm. Overburden thickness averages more than 1,000 feet beneath areas where springs are located. Diversion of spring flow is considered to be at overall low risk.

Investigations in 1993, by the U.S. Bureau of Mines indicates that springs situated above mine workings on East Mountain do not display impacts to the degree once anticipated. (personal communication, Liane Kadnuck, U.S Bureau of Mines) These springs are located in areas where maximum subsidence of 26 feet has been documented. Springs located at or below the mine workings elevations may be at higher risk of impact due to interception, dewatering and diversion of groundwater away from the spring's point of surfacing.

In August 1991, the Division received a citizen complaint regarding the loss of flow in the Cottonwood Spring located in Cottonwood Canyon upstream from the Trail Mountain Mine. This complaint implicated the Deer Creek Mine for the loss of flow. In response to this complaint, the Division began analyzing what data was available for this spring. Examination of water quality data which was gathered by the Trail Mountain Mine. Stiff diagram and trilinear plots were generated from these data. According to these plots, the water quality of the Cottonwood Spring was very stable over several seasons. The Stiff Diagrams did not vary between sampling times. This indicates that water from the spring was probably originating within a geologic strata and not from sub-surface flow in the canyon alluvium. The water associated with a stream and alluvial floor varies seasonally due to fluxes of higher quality water during spring snowmelt and more concentrated dissolved ions during low flow periods.

PacifiCorp, in response to Division requests, drilled monitoring wells at four sites in Cottonwood Canyon. At each site two wells were drilled. One was completed into the alluvial deposits near the surface. The second well penetrated the upper tongue of the Star-Point Formation.

Resistivity surveys were also conducted up Cottonwood Canyon along the axis of the streams and at various cross sections to the streams. The resistivity surveys have been used to help identify geologic anomalies and zones of potential water producing strata. According to the PacifiCorp report, the water in the Cottonwood Spring originated from water coursing through the alluvium which was then forced to the surface by the Roans Canyon Fault across Cottonwood Creek. The water levels in the Cottonwood wells has remained fairly stable.

Additional water may have contributed to this spring from geologic sources to the north. According to the analysis of the well monitoring and the resistivity the alluvial water in the canyon bottom was about 12 feet below the point where the spring originated. This is in response to the continuing drought which has been occurring for the last 7 years. PacifiCorp contends that should adequate precipitation occur to refill the alluvial system, then spring flow would commence. This phenomena has yet to occur.

SURFACE WATER

The cumulative impacts associated within the CIA will be summarized by individually discussing impacts associated with the Crandall Canyon Mine, Huntington #4 Mine, Deer Creek Mine, Cottonwood/Wilberg Mine and the Des-Bee-Dove Mine. Creeks and drainage areas which are referenced by (#) or discussed, are shown on Figure 5, Surface Water Drainage Map. Water monitoring locations within the CIA are shown on Figure 7, Water Monitoring Locations.

Cottonwood/Wilberg Mine. The Cottonwood/Wilberg Mine is located in Grimes Wash. Grimes Wash drainage water quality is greatly affected by the influx of the Right Fork. The Right Fork originates in the North Horn Formation (interbedded shale, siltstones, and sandstones), which is abundant with calcareous material. As a result, the Right Fork contributes a relatively high amount of suspended and dissolved solids to the Grimes Wash drainage. The greatest factor influencing the dissolved solids level in the Right Fork drainage during 1988 was the sudden increase in temperature.

As reported in 1985, the TDS level increased slightly at the location below the mine. Two possible factors stated for the rise were Cottonwood/Wilberg Mine Discharge and Mancos Shale seeps. Due to the fact that no water was discharged from the mine during 1985 through 1988 (one exception in August 1986), seeps emanating from the Mancos Shale probably have the greatest influence upon the TDS level. Periodic sampling during 1986 and early 1987 confirmed the seeps' contribution to the TDS level. The average TDS level for the four samples collected was 1,188 mg/l, representing a nearly 3.3 fold increase over the historical averages for the Right and Left Forks. ¹⁷ (Annual Hydrologic Monitoring Report for 1988, pg. 24).

All surface facilities are treated by sediment controls and as such, there is little potential impact from sediments generated within disturbed areas.

Waste rock generated from the Des-Bee-Dove and Cottonwood/Wilberg Coal Mines is disposed of in a series interconnected storage cells (Figure 4). The waste rock storage site is located at the 6,800 foot elevation. Annual

precipitation is approximately 14 inches, and the vegetation surrounding the waste rock storage area is the pinyon-juniper community type.

Each completed waste rock containment structure consists of over four feet of shot and crushed coal, sandstone, and mudstone rock. The expected waste rock encountered will be approximately 35 percent sandstone, 30 percent interbedded mudstone and siltstone, and 45 percent boney coal. Sediment pond clean out waste is also disposed of at this site.

Roof and floor materials are sandy loam to loamy sand in nature. Analyses of roof and floor material indicate high Sodium Adsorption Ratios (SAR) (Mean=17.36, Standard Deviation=25.14), and movement of sodic materials is typically associated with hygroscopic rise and leaching processes. High SAR in the waste rock storage area should not be a concern to water quality because drainage from the storage site flows into a sediment pond and discharges should be minimal.

Analyses from Drill Hole EM-23C, indicates low pH (3.3, 2.9, 3.7) within the mudstones and siltstones directly below the Hiawatha Coal Seam. Additionally, roof and floor analyses indicate high pyritic/marcasite levels (%Fe₂, Mean=8.15, Standard Deviation=10.82). The colluvium and Mancos Shale which underlies the waste rock storage area is calcareous and should be sufficient to neutralize drainage or seepage from areas within the waste rock storage site, which could potentially become acidic.

Although most water associated with the Cottonwood/Wilberg Waste Rock Storage Area will evaporate, some water will inevitably percolate through the storage cells and underlying colluvium deposits. Eventually seepage would contact the Mancos Shale and further degradation (increased TDS and EC) of water quality would take place. Accordingly, drainage from the waste rock storage site would have little down gradient effect.

Deer Creek Mine. Referencing Table 1D, it is apparent that the quality of Deer Creek runoff degrades from the upper to lower sampling points. The upper stream site is dominated by a calcium, bicarbonate system. The quality of the lower point is affected by the Mancos Shale and is dominated by chloride, sulfate and sodium. Data from 1993 compared very well with the historical water quality information.¹⁹

Table 1D. Deer Creek Water Quality.

		<u>Calcium</u>	<u>Chloride</u>	<u>Conductivity</u>	<u>Magnesium</u>	<u>Sodium</u>	<u>Sulfate</u>	<u>TDS</u>	<u>TSS</u>
Above	Max	82.0	176.0	1580	183.9	111.6	255.0	897	3592.0
Mine	Mean	49.5	19.2	581	37.5	27.5	63.8	335.0	124.9
1993		51.2	56.2	790	41.3	43.9	137.4	496.3	14.1
Below	Max	112	420.0	2300	122.8	233.8	500.0	1544	20540.0
Mine	Mean	73	120.4	1153	67.0	114.9	215.8	684	490.9
1993		52.7	58.5	785	40.6	43.6	136.6	491	12.6

Deer Creek sediment pond discharge has been historically within UPDES limits, but discharges of high Total Dissolved Solids may degrade downstream water quality.

All surface drainage facilities are designed to safely control water and sediment runoff from all disturbed areas. In addition, all surface water originating from undisturbed lands upstream of the facilities area will be controlled and diverted through the mining operation in large Corrugated Metal Pipe. Storm runoff from within the mine facilities area is collected in a system of open ditches, bermed roadways and culverts, and diverted into the sediment pond prior to its discharge into Deer Creek below the facilities area.

The sediment pond is designed to detain the 10-year, 24-hour storm event. It should be noted that when the design event is exceeded (i.e. storms larger than the 10-year, 24-hour storm), sediment detention times will be reduced, leading to a slightly higher sediment load in Deer Creek. The UPDES permit for the sediment pond incorporates this into the monitoring requirements during storm events.

Runoff from 25 acres of disturbed land will be temporarily detained in the Deer Creek Mine sediment pond and will be released to Deer Creek within UPDES limitations. The surface-water impact associated with the Deer Creek Mine operations will be minimal.

Reclamation of the drainage at the Deer Creek Mine will consist of removing the temporary drainage system, diversion and sedimentation pond. The plan as currently approved allows for the construction of permanent channels over the refuse material and into a splash basin. The Utah program regulations currently require all diversions to be routed away from fill. A Division order is being prepared to address this permit deficiency. This reclamation plan will have negligible impact on water quantity or quality of Deer Creek and its tributaries.

Des-Bee-Dove Mine. The Des-Bee-Dove Mine complex ceased operations in February 1987 for economic reasons and is in an indefinite "temporary cessation". This mine is a dry mine and all surface drainage is treated by a sediment pond and released

to an ephemeral wash. Since all surface water is treated by a maintained sediment pond, the effects of the Des-Bee-Dove Mine operations on the hydrologic balance are negligible.

Huntington #4 Mine. The major aquatic habitats within the permit area are Mill Fork and Little Bear Creek. All reclaimed mine lands are within Mill Fork Canyon. Based on benthic macroinvertebrate and aquatic habitat surveys conducted by the operator and on data provided by the Utah Division of Wildlife Resources, neither creek supports game or non-game fish and both lack sufficient flow in most years to provide spawning sites. However, these streams probably contribute some invertebrate food items and a small amount of surface flow to Huntington Creek, an important fishery in the region.

The mine is currently reclaimed and all surface structures have been removed and all disturbed areas reseeded. Sediment controls are in place (i.e. sediment ponds) and there is no anticipated impact to Mill Creek from the Huntington #4 Mine due to the lack of potential sources of impact. Mountain Coal Company recently requested a Phase II bond release. This request is pending Division review and approval.

Crandall Canyon Mine. Crandall Canyon Mine is located in Crandall Canyon. The U.S. Geological Survey established a gauging station at the mouth of Crandall Canyon Creek in 1978. Flow data collected at the gauging station are not complete for the winter in most years, due presumably to data acquisition problems. However, the limited data indicate that most of the flow of Crandall Canyon Creek occurs in the period of May through July. Assuming an average of 30 acre-feet per month for the period when records were missing, the average annual flow for the six-year period of data was 2,740 acre-feet or 457 acre-feet per year.

Surface water quality data collected from Crandall Canyon Creek by Genwal Coal Company for the Tract 1 Lease from 1985 indicate that the dominant ions in Crandall Canyon Creek are calcium and bicarbonate. Total dissolved solids concentrations in the stream have varied from 180 to 286 milligrams per liter, with lower concentrations normally occurring during the high flow season. Total suspended solids concentrations in Crandall Canyon Creek have varied during the period of record from 0.5 to 208.0 milligrams per liter. As expected, the highest suspended solids concentrations generally occur during periods of highest flow.

The main concern in terms of impact to surface water is water quality deterioration downstream from the minesite, primarily in the form of suspended sediments. Typically the suspended sediment concentration in Crandall Canyon Creek since 1983 varied from approximately 205 mg/1 to 0.5 mg/1. Low

suspended sediment values are associated with natural climactic and geologic process although a proportion may be attributed to surface disturbances from roads and the mine pad area. Sediment controls do exist for the disturbed surface areas. Therefore, the impact associated with mining in Crandall Canyon is minimized by surface controls (i.e., sediment pond, diversions, etc.).

VI. SUMMARY

Mine operations within the CIA currently intercept regional aquifer flow at an approximate rate of 5,100 acre feet per year. Of this total, approximately 300 acre feet are consumptively lost to mine ventilation and uses underground. Cooling and evaporation at the Huntington Power Plant consume another 2,400 acre feet/year (1,500 gpm). The remaining 2,300 acre feet (1,400 gpm) are discharged, with minimal interbasin transfer of water to streams. Mine water discharges generally meet required UPDES effluent limitations. The regulations require a mine operator to notify in writing whenever these limits are exceeded.

Mining operations have attempted to design the underground mine layout to avoid interception of fault conduit flow and interruption of stream channels. The operational portions of the mine are moving north away from the Straight Canyon Syncline and the Roans canyon Fault. Accordingly, inflow from the regional aquifer should remain stable. Barring interception of fracture related flow mine water inflow is expected to remain stable as old areas are abandoned and sealed. Approximately 80 percent of the flow will be derived from storage and 20 percent from discharge. Consumptive use is not anticipated to increase. Mine water discharge and ventilation losses will be discontinued upon cessation of mining. Concomitantly, flooding of abandoned workings will initiate. An upper limit of 20 years has been estimated for complete flooding of mine workings and re-establishment of the premining ground-water system. Some areas within the Deer Creek Mine have already been sealed following mining and are beginning to flood.

Diversion of spring flow from areas above the mine is considered to be at overall low risk. Interception of groundwater which feeds springs below the mine elevation are at greater risk for reduced flow.

Sediment control measures have been and will be designed, constructed and maintained to treat runoff from the minesite prior to discharge. These treatments will reduce contamination of surface waters.

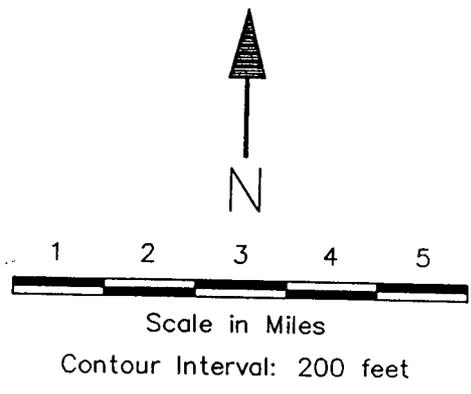
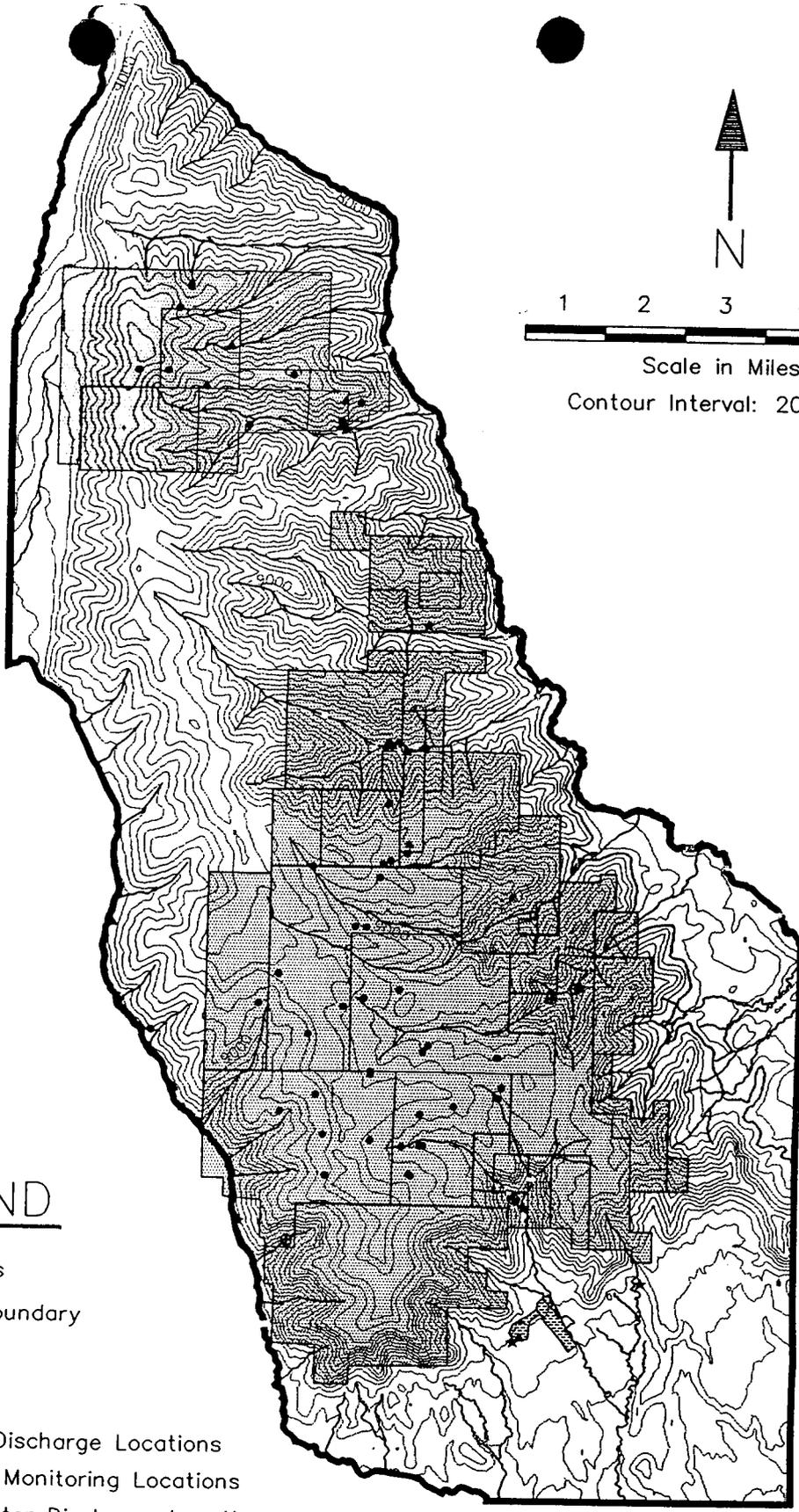
Following cessation of mining, waste rock storage areas will be adequately covered with topsoil and all disturbed areas will be stabilized and revegetated to prevent surface water contamination.

The designs proposed for all anticipated mining operations within the CIA are determined to be consistent with preventing damage to the extent possible to the hydrologic balance outside the proposed mine plan areas.

REFERENCES

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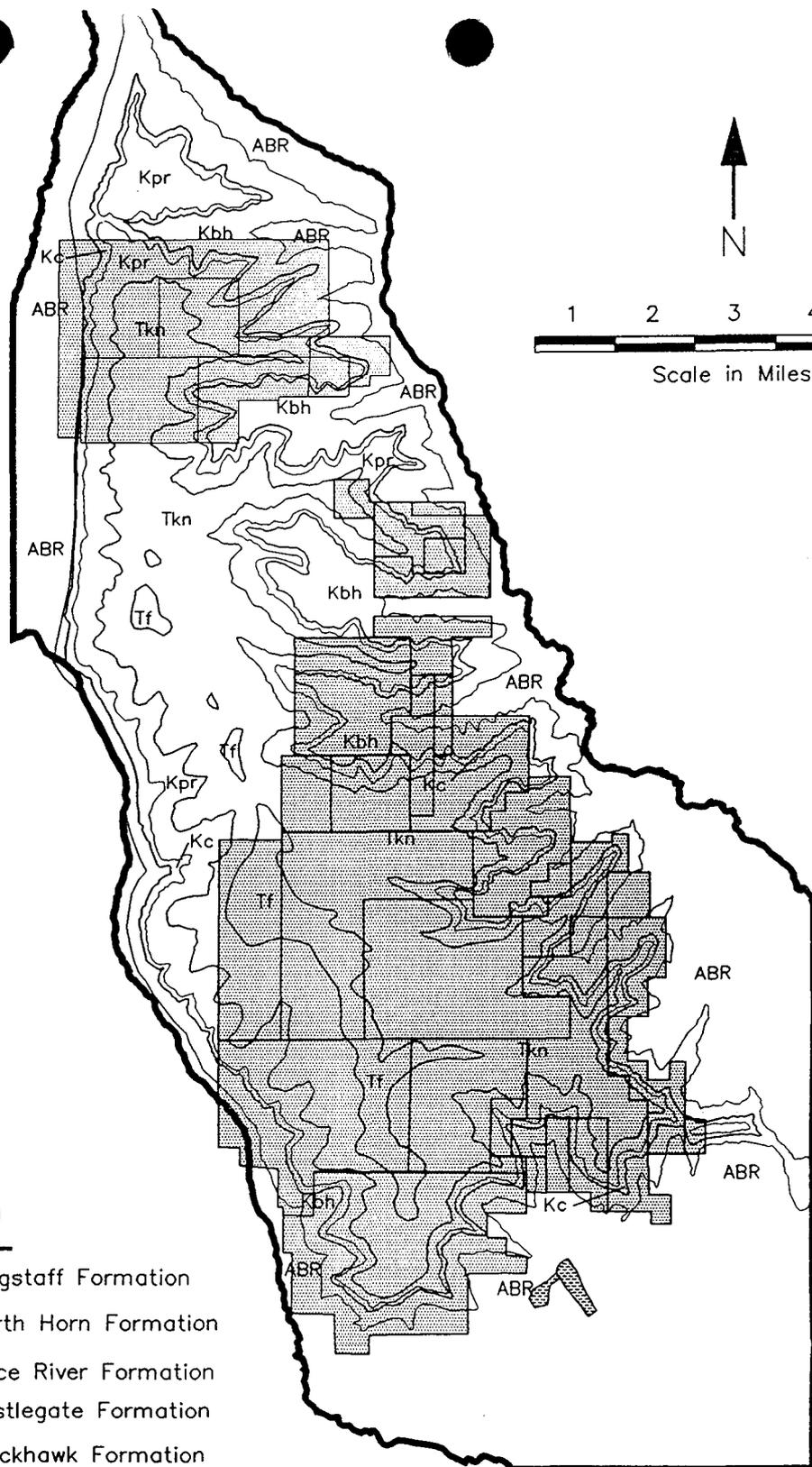
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15. PacifiCorp, Cottonwood/Wilberg Mine, Permit Application Package 1986.
16. PacifiCorp, Deer Creek Mine, Permit Application Package 1986.
17. PacifiCorp, Des-Bee-Dove Mine, Permit Application Package, 1985.
18. PacifiCorp, Hydrologic Monitoring Annual Reports for 1979 through 1988.
19. PacifiCorp, 1993 Annual Report.



LEGEND

- Streams
- CHIA Boundary
- Springs
- ▲ Wells
- ★ UPDES Discharge Locations
- Surface Monitoring Locations
- ⊙ Mine Water Discharge Location
- ▨ Genwal Coal Co. leases
- ▩ Mountain Coal Co. leases
- ▧ PacifiCorp leases
- ▤ PacifiCorp Waste Rock Disposal Areas

	State of Utah
	Division of Oil, Gas & Mining
EAST MOUNTAIN CHIA Water Monitoring Locations	
FILE: Eastfig7.dwg	
DATE: 9/23/94	DRAWN BY: KWW



LEGEND

- Base of Flagstaff Formation
- Base of North Horn Formation
- Base of Price River Formation
- Base of Castlegate Formation
- Base of Blackhawk Formation
- ABR Areas below the Coal resource
-  Genwal Coal Co. leases
-  Mountain Coal Co. leases
-  PacifiCorp leases
-  PacifiCorp Waste Rock Disposal Areas



State of Utah
Division of Oil, Gas & Mining

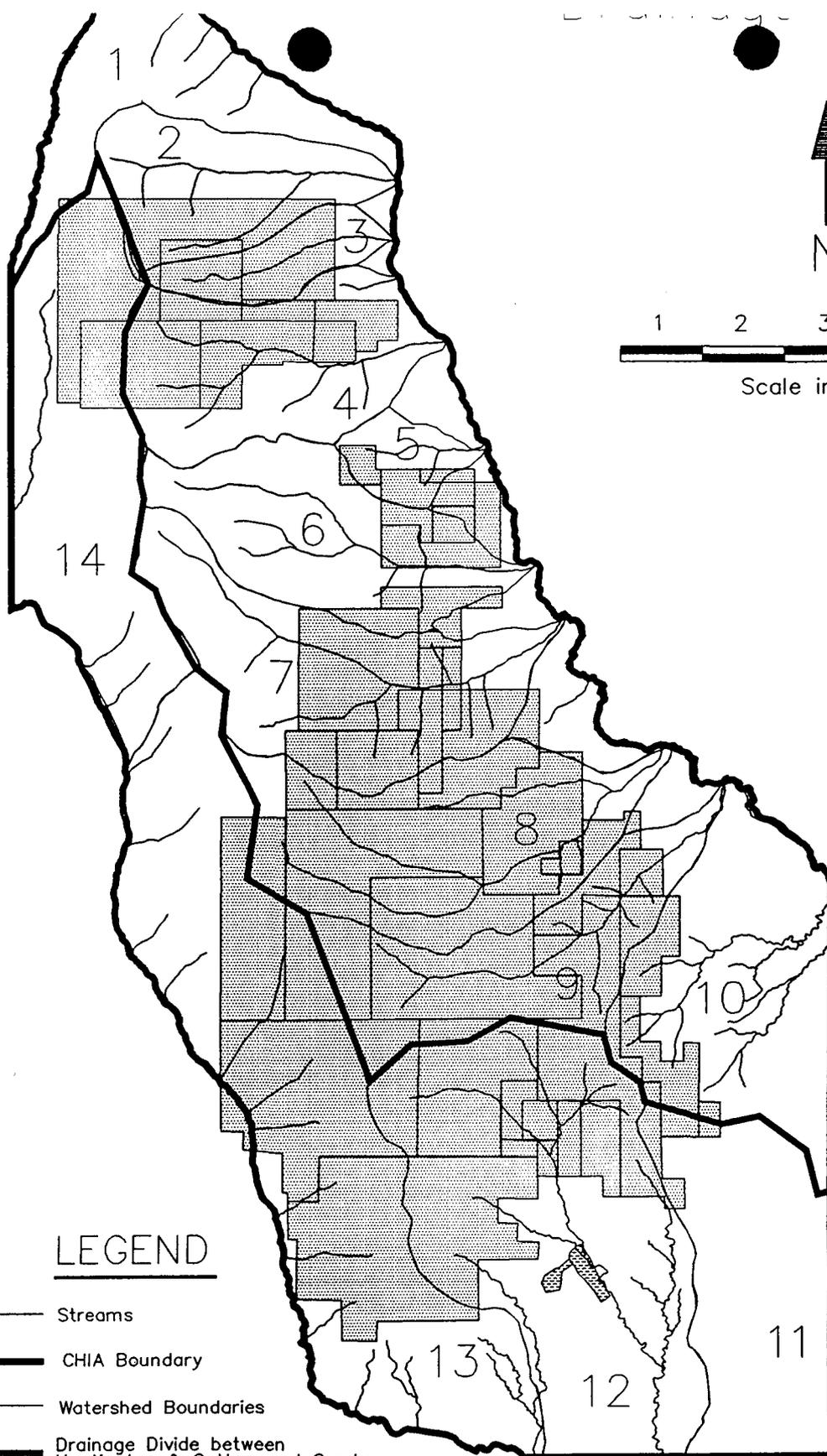
EAST MOUNTAIN CHIA

Potential Recharge Areas
Above the Coal Resource

FILE: Eastfig6.dwg

DATE: 9/23/94

DRAWN BY: KWW



Watersheds

(Referenced by number)

- 1: Left Fork of Huntington Creek
- 2: Horse Canyon
- 3: Blind Canyon
- 4: Crandall Canyon
- 5: Little Bear Canyon
- 6: Mill Fork Canyon
- 7: Rilda Canyon
- 8: Meetinghouse Canyon
- 9: Deer Creek
- 10: Maple Gulch
- 11: Danish Bench
- 12: Grimes Wash
- 13: Cottonwood Creek
- 14: Indian Creek

LEGEND

- Streams
- CHIA Boundary
- Watershed Boundaries
- Drainage Divide between Huntington & Cottonwood Creeks
- Genwal Coal Co. leases
- Mountain Coal Co. leases
- PacifiCorp leases
- PacifiCorp Waste Rock Disposal Areas



State of Utah
Division of Oil, Gas & Mining

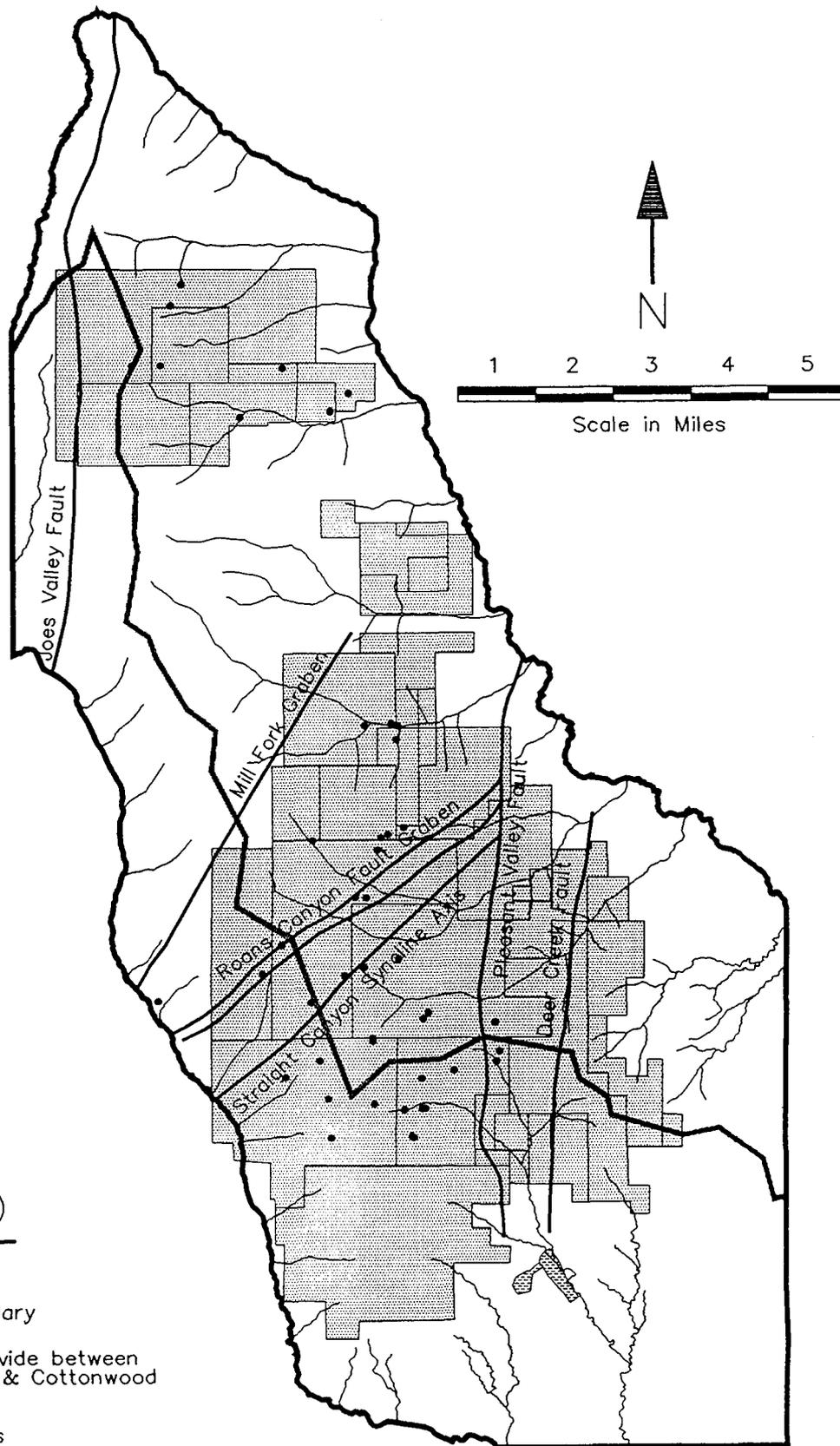
EAST MOUNTAIN CHIA Surface Water Drainage Map

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DATE: 9/23/94

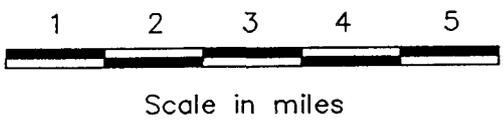
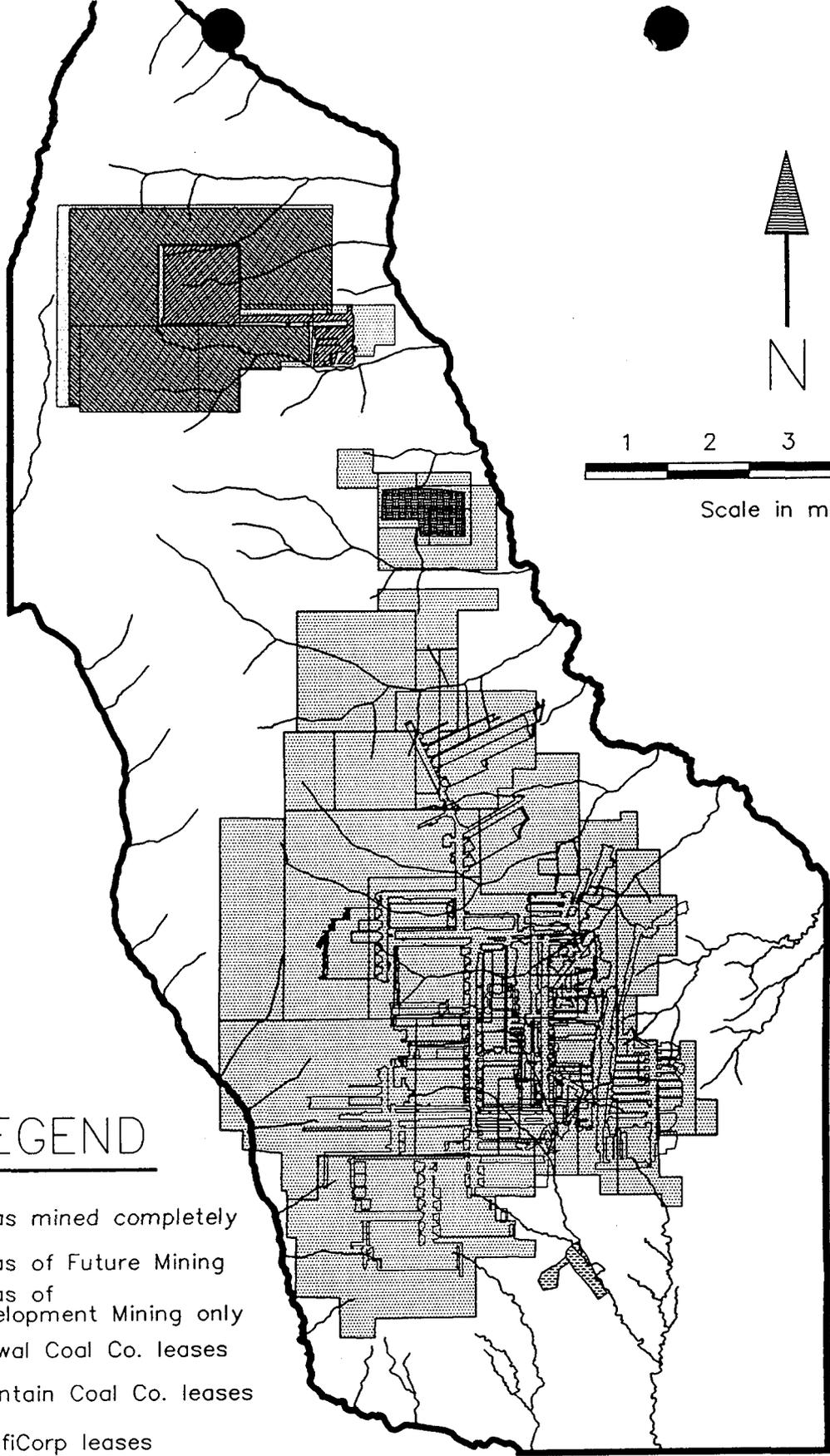
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FIGURE 4: Major Hydrogeologic Features



LEGEND

-  Streams
-  CHIA Boundary
-  Drainage Divide between Huntington & Cottonwood Creeks
-  Major faults
-  Straight Canyon Syncline Axis
-  Springs
-  Genwal Coal Co. leases
-  Mountain Coal Co. leases



LEGEND

-  Areas mined completely
-  Areas of Future Mining
-  Areas of Development Mining only
-  Genwal Coal Co. leases
-  Mountain Coal Co. leases
-  PacifiCorp leases
-  PacifiCorp Waste Rock Disposal Areas
-  Deer Creek Mine workings
-  Des-Bee-Dove Mine workings
-  Cottonwood/Wilberg Mine workings
-  Streams
-  CHIA Boundary



State of Utah
Division of Oil, Gas & Mining

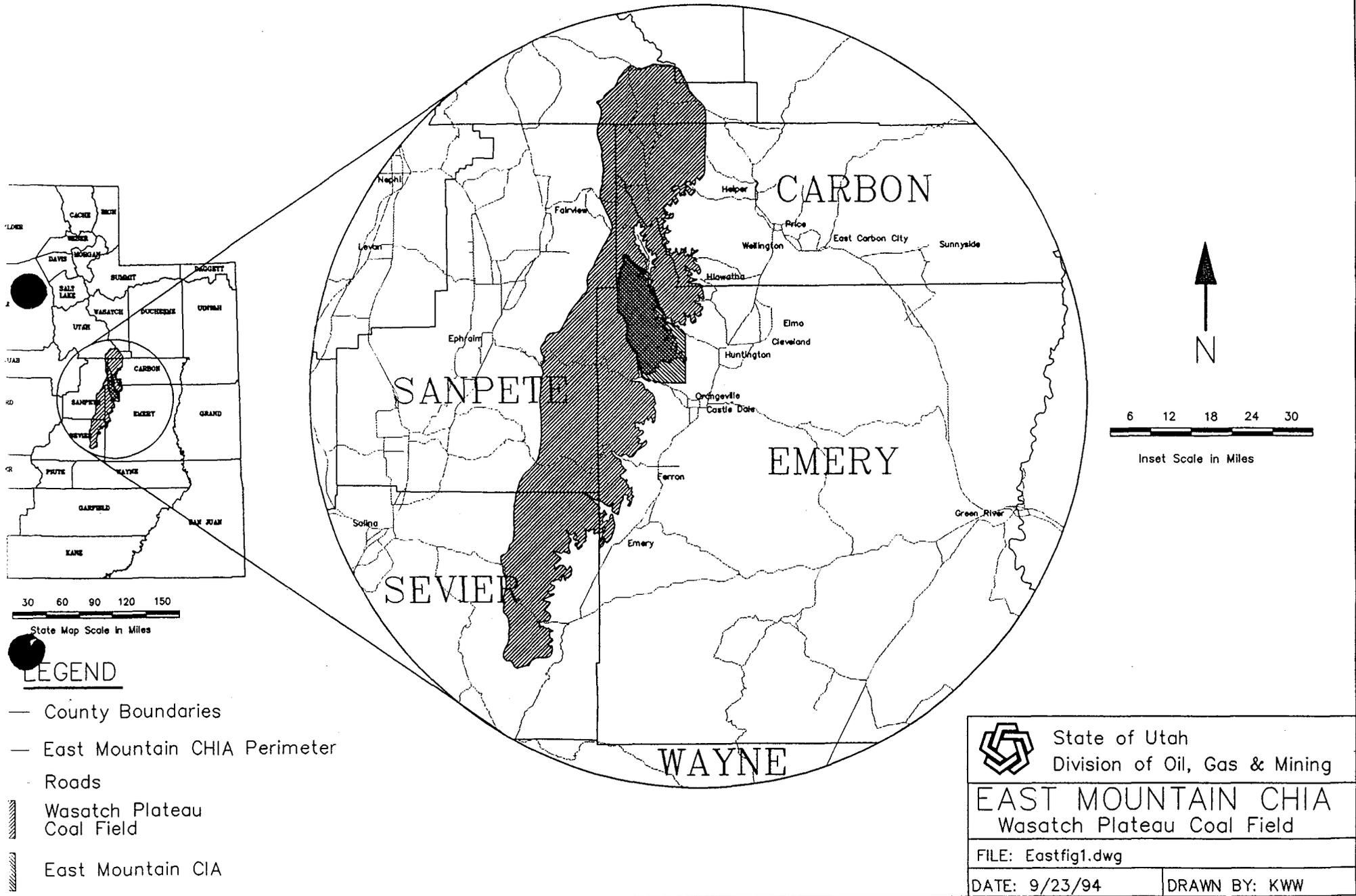
EAST MOUNTAIN CHIA CIA and Mining Map

FILE: East2.dwg

DATE: 9/23/94

DRAWN BY: KWW

FIGURE 1: Wasatch Plateau Coal Field



LEGEND

- County Boundaries
- East Mountain CHIA Perimeter
- Roads
- ▨ Wasatch Plateau Coal Field
- ▨ East Mountain CIA

 State of Utah Division of Oil, Gas & Mining	
EAST MOUNTAIN CHIA Wasatch Plateau Coal Field	
FILE: Eastfig1.dwg	
DATE: 9/23/94	DRAWN BY: KWW

LETTERS OF CONCURRENCE

*Hand file -
SL-020645
mine corresp.*

3482
SL-070645
U-02292
(U-065)

Moab District
P.O. Box 970
Moab, Utah 84532

FEB 28 1991

Pamela Grubaugh-Littig, Permit Supervisor
State of Utah
Division of Oil, Gas and Mining
355 West North Temple Street
3 Triad Center, Suite 350
Salt Lake City, Utah 84180-1203

Dear Ms. Grubaugh-Littig:

On February 21, 1990, the Bureau of Land Management (BLM) received PacifiCorp's proposed Rilda Canyon Lease Tract addition for the Deer Creek Mine Permit Application Package (PAP). The BLM was asked to review the resource recovery and protection plan (R2P2) and submit our findings which are discussed below.

PacifiCorp plans to enlarge the Deer Creek Mine Permit Area (Act/015/018) by adding an adjacent tract to the north. The tract includes one State of Utah coal lease (ML-22509), three Federal coal leases (U-7653, U-47977, and SL-050862) and the southern portion of Federal coal lease U-06039.

The R2P2 calls for the development of main entries in a north-northwest direction beyond the Roan's Canyon Fault. Longwall panels are projected on both sides of these main entries. A number of longwall panels located along the south side of Rilda Canyon will undermine portions of the canyon escarpments (see enclosed highlighted map). This has prompted an in-depth review of potential escarpment failure.

The Manti-LaSal National Forest (FS) has asked BLM to evaluate the R2P2 and determine if the mining plan provides adequate protection of surface resources in accordance with the Federal lease terms and conditions. The BLM is currently working on a response to the FS regarding our analysis of the escarpment issue. Final approval of mining zones that may affect sensitive escarpment areas is contingent on the completion of the technical studies currently underway. Because the mine plan provides adequate flexibility for any necessary future adjustments in these areas, development as proposed for the remainder of the R2P2 is recommended for approval.

We have determined that the R2P2 as submitted is complete and technically adequate. The R2P2 is also in compliance with the Mineral Leasing Act, as amended, the regulatory provisions of 43 CFR 3480, Federal lease terms and conditions, and will achieve maximum economic recovery (MER) of the Federal coal. Therefore, we recommend partial approval of the R2P2 for this permit action.

Sincerely yours,

Gary Johnson
for

Assistant District Manager
Mineral Resources

Enclosure:
Mine Projection Map

cc: SD, Utah (U-921), w/enclosure
DM, Moab (U-065), w/enclosure
Office of Surface Mining, Denver, w/enclosure
PacifiCorp, SLC, Utah, w/enclosure
Manti-LaSal NF, Price, Utah, w/enclosure

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Wang 2015D



United States Department of the Interior

BUREAU OF LAND MANAGEMENT

Moab District
Price River/San Rafael Resource Area
125 South 600 West
P. O. Box 7004
Price, Utah 84501

3482
U-06039
U-024317
SL-051221
U-2810
(UT-066)

ACT 1015/018 #2

Pamela Grubaugh-Littig
Permit Supervisor
Department of Utah Natural Resources
Division of Oil, Gas and Mining
1594 West North Temple, Suite 1210
Box 145801
Salt Lake City, Utah 84114-5801

OPTIONAL FORM 89 (7-90)

FAX TRANSMITTAL

of pages = 11

To	PAM GRUBAUGH-LITTIG	From	B Grossel
Dept./Agency	DOG M	Phone	636-3606
Fax	801-359-3940	Fax #	

NSN 7540-01 317-7366 6089-101 GENERAL SERVICES ADMINISTRATION

Re: Resource Recovery and Protection Plan (R2P2), PacifiCorp, Deer Creek Mine, Emery County, Utah

Dear Ms. Grubaugh-Littig

On May 16, 1997, the Bureau of Land Management (BLM) received from your office for our review/comments, PacifiCorp's response to technical deficiencies concerning the North Rilda area. Also, on July 2nd, we received from the Manti-LaSal National Forest (FS), PacifiCorp's revisions concerning:

- 1) the ground stability of the 4th North Mains crossing of the Right Fork Rilda Canyon; and
- 2) the Castlegate Escarpment statement of mining in the North Rilda area,

which was submitted to their office on the same date.

In addition to your request for BLM's review/comments, the FS has requested documentation of our findings concerning the location and entry stability of the proposed route (4th North Mains) accessing reserves of the Blind Canyon and Hiawatha coal seams in the North Rilda area.

As you may be aware, an approved R2P2 for the subject area is already in place. It is our understanding that PacifiCorp is now requesting to expand the current Deer Creek mining operation/mine permit area. In part, PacifiCorp seeks partial approval to afford a timely access into the North Rilda area in order to sustain the current level of longwall coal production.

According to the proposal, the 4th North Mains would access the reserves by advancing beyond the current permit boundary to the northern boundaries of Federal coal leases U-06039 and U-024317. Then, a series of east-west-oriented longwall panels would be developed along the east side of the Mains. These panels would be developed and sequentially extracted from the north to the south. PacifiCorp proposes to confine mine development at this time to the Blind Canyon coal seam and limit panel extraction to the four most northern panels.

Approval to complete extraction of the remaining panels in the Blind Canyon and Hiawatha Seams, which are developed under the Castlegate Escarpment, would be subject to the findings of the on-going Castlegate Escarpment Geotechnical Studies and number of other requirements made by the FS (archaeology survey, Spotted Bat survey, EA) on the affected areas.

BLM's findings regarding the 4th North Mains:

The projected access route into the North Rilda area is constrained by the Mill Fork Fault Zone to the west, a shallow overburden to the east, and a potential for the coal seam to pinch out in a westerly direction. These adverse geologic conditions more or less dictated the location of the access route and have precluded alternative routes into the subject area. The exact location of the 4th North Mains will be determined upon delineation of the Mill Fork Fault Zone or by the seam geology of the Blind Canyon Seam (insufficient seam height). PacifiCorp's intent is to explore the fault zone and seam geology by using either the continuous miner, in-mine drilling, surface drilling, or any combination of the three methodologies.

Subsequently, the access route will pass under an upland ephemeral stream in the right fork of the Rilda Canyon which has been designated by the Surface Managing Agency (SMA) as an important alluvial/hydrologic system and riparian zone. Due to the potential for surface impacts from subsidence, the SMA has restricted mining based on their concerns for the preservation of this hydrologic resource.

In efforts to ensure long-term stability of the underground excavation and to protect against surface impacts in the riparian zone, PacifiCorp has proposed the following mine design criteria:

- 1) Include, per SMA's request, a protective buffer zone of sufficient size to isolate the riparian zone from all potential effects of mining.
- 2) Utilize an entry/pillar configuration consisting of a 5-entry system with staggered crosscuts on 80x150-foot centers, with an entry width of 20 feet and entry height of 8 feet.
- 3) Provide secondary roof support, as needed, to maintain the long-term stability of the underground workings and to prevent/limit the potential of any future surface impacts.

Also, PacifiCorp has agreed to comply with the stipulated approval of the Minor Modification Request (The Proposed Location for the 4th North Mains off the 10th West Mains, North Rilda Canyon Reserve Access) dated February 13, 1997, from our office which states in part:

"PacifiCorp shall submit a written evaluation documenting entry and pillar stability for the Rilda Canyon Fork area. The specific areas to be addressed are the **4th North Mains in the Blind Canyon Seam** and the **access entries to the Hiawatha Seam reserve** where the entries pass under the riparian zones, as illustrated on Enclosure 2. The evaluation shall determine whether additional secondary entry support is needed to prevent the occurrence of surface impact due to mining. The evaluation shall be submitted 60 calendar days prior to final abandonment of the North Rilda Canyon area. The evaluation shall be subject to BLM's approval based on verification of the reported documentation."

The BLM concurs with PacifiCorp on the following:

We find the requested "riparian buffer zone" to be of sufficient size. It has been designed using a 15° "angle-of-draw"/"angle-of-influence" calculated from the Hiawatha Seam to delineate the zone. The referenced 15° "angle-of-draw" is an industry/agency-accepted standard, based on **full extraction mining**. In addition, PacifiCorp's mining experience at the Deer Creek, Trail Mountain and Cottonwood Mines over the last 20 years provides a sound basis for the design criteria. Furthermore, the area has been restricted to first mining, making the required buffer zone a moot issue.

In regard to the location and long-term stability of the 4th North Mains:

1) We recognize PacifiCorp's difficulty in determining the best location for the 4th North Mains and feel that an attempt to locate the Mill Fork fault zone by means of exploring with a continuous miner will not impact the surface or affect the hydrologic regime. However, it will provide data for maximizing recovery of the coal resource.

2) PacifiCorp, at the request of the SMA, provided step-by-step calculations to illustrate how the factor of safety was calculated for the coal pillars and entry opening. The safety factors were calculated by using **standard industry-accepted equations**. The calculated safety factors for pillar stability and entry opening are in the range of 3.57 to 23.94 and 4.92, respectively. In standard industry practice, safety factors used to define stable conditions and long-term stable conditions are 1 and 1.5 to 2, respectively. It is evident that PacifiCorp is well beyond the acceptable values for long-term stability.

Finally, approval for full-extraction (longwall) mining under the Castlegate Escarpment will be based on:

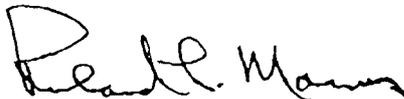
- 1) the **Castlegate Escarpment studies** provided by PacifiCorp; and
- 2) an **objective environmental analysis** of the affected resources by the SMA,

prior to BLM's determination.

The BLM has reviewed the proposed R2P2 Revisions/Deer Creek Mine Permit Expansion and all available information concerning the mining of the subject area. The BLM has determined that PacifiCorp's R2P2 for the Deer Creek Mine appears to be a logical and prudent mine plan. It is technically complete and complies with the Mineral Leasing Act of 1920, as amended, the regulations at 43 CFR 3480, the lease terms and conditions, and will achieve maximum economic recovery of the Federal coal. Therefore, we recommend approval of the proposed Deer Creek Mine permit expansion.

If you have any questions, please contact Barry Grosely in the Price River/San Rafael Resource Area at (801) 636-3606.

Sincerely,



Area Manager

cc: Manti-LaSal National Forest
599 Price River Drive
Price, Utah 84501



United States Department of the Interior
FISH AND WILDLIFE SERVICE

UTAH FIELD OFFICE
LINCOLN PLAZA
145 EAST 1300 SOUTH, SUITE 404
SALT LAKE CITY, UTAH 84115

In Reply Refer To

(CO/KS/NE/UT)

March 11, 1997

Daron Haddock
Permit Supervisor/Permitting
Utah Department of Natural Resources
Division of Oil, Gas and Mining
1594 West North Temple, Suite 1210
P.O. Box 145801
Salt Lake City, UT 84114-5801

RE: North Rilda Lease Extension, PacifiCorp, Deer Creek Mine, ACT/015/018-97C

Dear Mr Haddock:

We have received your letters of February 7 and 21, 1997. The U.S. Fish and Wildlife Service offers no comment at this time. Should issues of concern arise, we may provide comments at a later date.

Sincerely,

Robert D. Williams
Assistant Field Supervisor

cc: Pamela Grubaugh-Littig, State of Utah, Department of Natural Resources, Division of Oil, Gas and Mining, 1594 West North Temple, Suite 1210, Box 145801, Salt Lake City, UT 84114-5801



State of Utah

Department of Community & Economic Development
 Division of State History
 Utah State Historical Society



Michael O. Leavitt
 Governor
 Max J. Evans
 Director

300 Rio Grande
 Salt Lake City, Utah 84101-1182
 (801) 533-3500 • FAX: 533-3503 • TDD: 533-3502
 cehistory.ushs@email.state.ut.us

July 8, 1997

Pamela Grubaugh-Littig
 Permit Supervisor
 Division of Oil, Gas and Mining
 1594 West North Temple, Suite 1210
 Salt Lake City UT 84114-5801

RE: North Rilda Lease Area, Deer Creek Mine, PacifiCorp. ACT/015/018-97-1, Folder #3,
 Emery County, Utah

In Reply Please Refer to Case No. 90-1579

Dear Ms. Grubaugh-Littig:

The Utah State Historic Preservation Office received the above referenced information. The report states that no cultural resources were located in the project area. We, therefore, concur with the report's recommendation that No Historic Properties will be impacted by the project.

This information is provided on request to assist the Division of Oil Gas and Mining with its Section 106 responsibilities as specified in 36CFR800. If you have questions, please contact me at (801) 533-3555, or Barbara L. Murphy at (801) 533-3563. My email address is: jdykman@history.state.ut.us

As ever

James L. Dykmann
 Compliance Archaeologist

JLD:90-1579

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United States
Department of
Agriculture

Forest
Service

Manti-La Sal
National Forest

599 West Price River Dr.
Price, Utah 84501
Phone # (801) 637-2817
Fax # (801) 637-4940

File Code: 2820-4

Date: July 3, 1997

Utah Division of Oil, Gas and Mining
ATTN: Pamela Grubaugh-Littig
1594 West North Temple, Suite 1210
P.O. Box 145801
Salt Lake City, Utah 84114-5801

RE: Response to Deficiencies, North Rilda Lease, PacifiCorp, Deer Creek Mine,
ACT/015/018-97-1, Folder #3, Emery County, Utah

Copy Done - PAM

Dear Pam:

The Manti-La Sal National Forest has completed a review of PacifiCorp's deficiency submittal for their application for a mine plan revision to expand the Deer Creek Mine permit area. Additionally, we have completed an analysis of impacts associated with potential failure of sandstone outcrops (escarpments) on the south side of Mill Fork Canyon and have decided to make an exception to the lease stipulation that precludes escarpment failure. We consent to the North Rilda mine plan revision subject to the following requirements:

1. Archaeology survey, and documentation and recording of cultural resources, in escarpment areas to be failed.
2. A survey for spotted bats (USDA-FS Sensitive Species) will be conducted for all escarpment areas to be failed. If bats are located, then evaluations will be made for mitigation needs. Mitigations could include avoidance during specific times and/or prevention of bat occupancy during periods of subsidence, such as by netting or screening. Mitigations will be evaluated on a case-by-case basis.
3. When the mains under the North Fork of Rilda Creek are no longer needed, the operator must backstow, backfill, and/or grout the mains, using the best technology available at that time.
4. The operator must delineate the Mill Fork Graben with some method other than direct mining. Acceptable methods include, but are not limited to, surface and in-mine drilling or geophysical methods.
5. Only full-support mining is permitted under escarpments along the north side of Rilda Canyon unless the lease stipulation prohibiting escarpment failure is waived by the Forest Service.

Pamela Grubaugh-Littig

Page 2

6. The operator must notify the surface management agency (Forest Service) if a water loss occurs on National Forest System lands.

Following are our comments/rationale for each of the above stipulations:

Stipulation #1

A cultural resources survey is required by Forest Service Special Stipulation #1 in the coal lease for this area, and by the National Historic Preservation Act of 1966.

Stipulation #2

A biological survey is required by Forest Service Special Stipulation #2 and by the Manti-La Sal National Forest Land and Resource Management Plan.

Stipulation #3

Engineering data have been provided to support the statement that there will be no subsidence of the North Fork of Rilda Creek for the long-term (hundreds of years). However, the engineering calculations are made using the assumption that the rock above the mined area is homogeneous, a situation which is seldom true in nature. We are also concerned with the shallow overburden at the point the mains cross under the creek, which consists of approximately 50 feet of alluvium/colluvium and 50 to 70 feet of competent rock (Attachment #1, Coal Lithologic Log, Drill Hole EM-158). The Forest Service would require that what ever methods are technically feasible be used to prevent any additional subsidence. This is provided for in 30 CFR 748.20(b)(5), which mentions specific methods to prevent subsidence, including backstowing or backfilling.

Stipulation #4

The revised plan states that the 4th North Mains will be driven to the northwest until they intersect the Mill Fork Graben or until they reach the western margin of the Blind Canyon coal seam. We do not feel that mining into the graben is an appropriate method of delineating the fault, due to the potential for impacting the groundwater resources. A resistivity survey done by PacifiCorp indicates the fault is wet. PacifiCorp stated that springs in the area may be related to the Mill Fork Graben. Mining into the fault could divert water into the mine.

Stipulation #5

Full extraction mining under the north side of Rilda Canyon (the three southern panels) and the south side of Mill Fork Canyon (the three northern panels) would subside Castlegate sandstone escarpment areas, requiring an environmental analysis to disclose impacts before the lease stipulation on escarpment failure could be waived. The analysis for mining under the Castlegate sandstone on the south side of Mill Fork Canyon is being done at this time.

Pamela Grubaugh-Littig

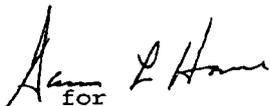
Page 3

Stipulation #6

The MRP contains the statement that they will notify the Utah Division of Oil, Gas and Mining if water loss occurs on National Forest System lands. The Forest Service also needs to know as soon as a water loss occurs.

Please contact Carter Reed or Dale Harber at (801) 637-2817 if you have any questions.

Sincerely,



for

JANETTE S. KAISER
Forest Supervisor

United States
Department of
Agriculture

Forest
Service

Manti-La Sal
National Forest

599 West Price River Dr.
Price, Utah 84501
Phone # (801) 637-2817
Fax # (801) 637-4940

Reply to: 2820-4

Date: July 15, 1997

Utah Division of Oil, Gas, and Mining
ATTN: Pamela Grubaugh-Littig
1594 West Temple, Suite 1210
P.O. Box 145801
Salt Lake City, Utah 84114-5801

RE: Response to Deficiencies, North Rilda Lease, PacifiCorp, Deer Creek Mine,
ACT/015/18-97-1, Folder #3, Emery County, Utah

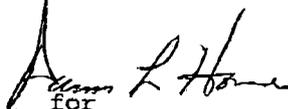
Dear Pam:

As discussed during yesterday's DOGM, BLM, FS conference call, clarification to our July 3, 1997 letter is needed. The referenced letter contained six requirements associated with Forest Service consent to the North Rilda Lease Extension. Clarifications in the form of reworking are provided as follows (numbers refer to requirements in the 07/03/97 letter):

3. When the mains under the North Fork of Rilda Creek are no longer needed, the operator must ensure long term stability for the riparian zone/alluvial hydrologic system through backstowing, backfilling, grouting, or other means utilizing best available technology at that time.
4. Appropriate measures, in consultation with the BLM and the Surface Management Agency (SMA), must be taken to locate and prevent dewatering of the Mill Fork Fault system. Where the fault system is penetrated, permanent seals must be installed.
5. Operator will not be permitted to subside under escarpments along the North side of Rilda Canyon unless consented to by the SMA.

Please contact Aaron Howe or Carter Reed at (801) 637-2817 if you have any questions relative to these clarifications.

Sincerely,



for

JANETTE S. KAISER
Forest Supervisor

DECISION MEMO

for

**Proposed Mine Plan Modification
North Rilda Canyon Extension
Deer Creek Mine**

July, 1997

**USDA, Forest Service, Region 4
Manti-La Sal National Forest
Ferron-Price Ranger District
Emery County, Utah****Purpose and Need and Proposed Action**

PacifiCorp (Energy West) has proposed to add their remaining Federal coal leases and fee lands in the North Rilda Canyon area to their Deer Creek Mine permit area. The Federal Coal Leases Involved include U-024317, SL-051221, U-2810, and a portion of U-06039. This proposal would enable them to extend underground workings northward to Mill Fork Canyon. The purpose is to recover remaining minable coal reserves in the area.

As proposed, underground mining in the area could subside the steep south slope of Mill Fork Canyon and cause minor spalling of the limited Castlegate Sandstone outcrop. The Manti-La Sal National Forest and Office of Surface Mining are conducting an environmental analysis to evaluate the proposal for consent/approval respectively. Existing Environmental Assessments for the leases have disclosed the potential impacts of underground mining and subsidence, but did not consider the effects of subsiding the Castlegate Sandstone outcrops due to lease stipulations that prevented subsidence of the escarpments. Therefore, anticipated surface disturbance associated this subsidence must be evaluated.

This analysis only considers impacts associated with escarpment failure on the south slope (north facing) of Mill Fork Canyon. The extraction of the northern longwall panels could cause spalling of the limited Castlegate Sandstone outcroppings referenced above. Full extraction mining that would subside the exposed Castlegate Sandstone on the south facing slope of Rilda ridge would require a separate environmental analysis to evaluate the potential impacts there.

Authority

Federal Regulations 43 CFR 3400 pertaining to Coal Management make provisions for the Surface Management Agency, the surface of which is under the jurisdiction of any Federal agency other than the Department of Interior, to consent to leasing and to prescribe conditions to insure the use and

protection of the lands. All or part of these leases contain lands, the surface of which are managed by the United States Department of Agriculture, Forest Service - Manti-La Sal National Forest.

Decision and Rationale

After careful review of the proposal, public comments, and the environmental analysis disclosed in the project file, I have decided to consent to the amendment of the mine plan, thereby excepting the stipulation for the protection of the outcroppings of Castlegate Sandstone on the south slope of Mill Fork Canyon. The stipulation is still in force for all other escarpments within these leases. I believe the remainder of the terms and conditions listed in the Forest Plan and contained in the leases adequately address and mitigate the anticipated impacts to the resource issues and are hereby incorporated into my decision as conditions of approval.

Additionally, surveys for cultural resources and Western Spotted Bats (sensitive species) in the escarpments will have to be conducted prior to undermining and subsiding the escarpments in Mill Fork Canyon. Further mitigation may be required depending on the results of the surveys and subsequent consultation(s) as necessary. Specifically, consultation with the State Historic Preservation Office, and appropriate Native American tribes will be required.

The US Fish and Wildlife Service was primarily concerned about impacts to raptors. I believe the stipulations on the leases involved directly address their concerns and adequately mitigate the anticipated impacts. Additionally the possible presence of the peregrine falcon (endangered) is addressed in the biological evaluation found in the project file (no effect determination)

The Emery Water Conservancy District expressed concern about the potential for loss of water quality/quantity due to mining activities. I believe that Forest Plan required stipulations attached to the leases address this concern and adequately provide for mitigations of any potential impacts.

Coal leasing and development are implemented under the authority of the following actions: the Mineral Leasing Act of 1920, as amended; the Federal Land Policy and Management Act (FLPMA) of 1976; the Surface Mining Control and Reclamation Act (SMCRA) OF 1977; the National Environmental Policy Act of 1969 (NEPA); the Federal Coal Leasing Amendments Act of 1976, as amended; regulations: Title 43 CFR Group 3400, and Title 30 CFR Group 700; and the Manti-La Sal National Forest Land and Resource Management Plan, Final Environmental Impact Statement, and Record of Decision, 1986.

The current approved Deer Creek Mine Mining and Reclamation Plan (MRP) is consistent with all special stipulations on the referenced leases.

Reasons for Categorically Excluding the Proposed Action

Based on the environmental analysis disclosed in the project file, along with the East Mountain Cumulative Hydrologic Impact Assessment, and the Technical Analysis & Findings, prepared by Utah Division of Oil, Gas, and Mining (UDOGM), I found no extraordinary circumstances or effects (FSH 1909.15, 30.3 and 30.5) to exist that might cause this action to have significant effects on the quality of the human environment (40 CFR 1508.27).

No known prime or unique farmlands, wetlands, timber lands, or rangelands; floodplains; alluvial valley floors; cultural or significant paleontological resources; nor Threatened, Endangered, or Sensitive floral or faunal species will be impacted. Biological Evaluations in the project file, developed for this action, contain "no effect" determinations.

Finding no extraordinary circumstances, I determined the proposed action may be categorically excluded under FSH 1909.15, Chapter 31.1b, category 7; sale or exchange of land, or interest in land and resources where resulting land use remains essentially the same.

Public Involvement

Scoping was initiated June 10, 1997. Legal Notices were published in the Sun Advocate and the Emery County Progress, and scoping letters were sent to a list of interested parties. Issues were raised by the US Fish and Wildlife Service and Emery Water Conservancy District and have been addressed above. In addition, a letter and telephone contact in support of the action were received from the Utah Mining Association and Mr. James Beason respectively. A telephone contact was also made by Bill Bates of the Utah Division of Wildlife Resources requesting further information.

Findings Required by other Laws

The analysis is tiered to the Manti-La Sal National Forest Land and Resources Management Plan, EIS, and Record of Decision (1986), as amended. Referenced are the Environmental Analysis Report/Part 23 Technical Examination, Peabody Coal Company Federal Leases U-06039, SL-051221, and U-014275 Lease Readjustment, 10/76; Environmental Assessment for the Readjustment of Federal Coal Lease U-024319, 1989; Environmental Assessment for the Readjustment of Federal Coal Lease SL-051221, 1994; Environmental Assessment for the Readjustment of Federal Coal Lease U-2810 and the Decision Notice/Finding of No Significant Impact for the Readjustment of Federal Coal Lease U-06039, 5/92; Environmental Assessment, PacifiCorp Deer Creek Mine Surface Facilities and Mining Under Escarpments in Rilda Canyon, 8/94 and the Deer Creek Coal Mine, Mining and Reclamation Plan. Additionally referenced is the East Mountain Cumulative Hydrologic Impact Assessment and the Technical Analysis prepared by UDOGM.

Management prescriptions contained in the Forest Plan for the lease area emphasize forage production, riparian area management, and leaseable mineral development. Mineral activities are allowed with "appropriate mitigation measures to assure continued livestock access and use"; "Those being authorized to conduct developments will be required to replace losses where development adversely affects long-term production or management" of range land (Forest Plan, page III-66). Mineral management activities should "avoid and mitigate detrimental disturbance to riparian areas" (Forest Plan, page III-72)

My decision is consistent with the Forest Plan and will not require amendments. I have considered and find the decision consistent with the National Forest Management Act requirements as expressed in 36 CFR 219.27. The decision complies with the Endangered Species Act of 1973 and Section 106 of the National Historic Preservation Act of 1966 (Project File).

Implementation Date

My decision may be implemented on or after the date of signature.

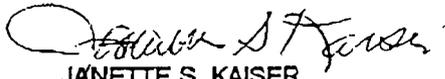
Administrative Review or Appeal Opportunities

I am willing to meet with the holder of a written instrument and hear any concerns or issues related to this decision. PacifiCorp may appeal this decision under 36 CFR 251, Subpart C. Any written notice of appeal must be fully consistent with 36 CFR 251.90 including the reasons for the appeal and must be filed within 45 days of this decision. The decision is not subject to appeal under 36 CFR 215 and 217.

Notice of Appeal and statement of reasons must be submitted in writing to ATTN: Regional Forester, Reviewing Officer, USDA Forest Service, 324 25th Street, Ogden, UT 84401. Simultaneously send a copy of the Notice of Appeal to: ATTN: Forest Supervisor, Manti-La Sal National Forest, 599 West Price River Drive, Price, UT 84501.

Contact Person

Persons with questions related to this decision may contact Jeff DeFrest at the Ferron-Price Ranger District, 599 West Price River Drive, Price, Utah 84523 or call (801) 637-2817.


JANETTE S. KAISER
Forest Supervisor

Date 7-3-97



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

Michael O. Leavitt
Governor
Ted Stewart
Executive Director
James W. Carter
Division Director

1594 West North Temple, Suite 1210
Box 145801
Salt Lake City, Utah 84114-5801
(801) 538-5340
(801) 359-3940 (Fax)

July 8, 1997

TO: File

FROM: Pamela Grubaugh-Littig, Permit Supervisor *PSL*

RE: Permittee Commitments to Forest Service Conditions, Letter dated July 3, 1997, North Rilda Lease Area, Deer Creek Mine, PacifiCorp, ACT/015/018 - 97-1, Folder #3, Emery County, Utah

The six conditions that were outlined in the letter dated July 3, 1997 from the Forest have been addressed by PacifiCorp in their permit application package. This memo will enumerate where these commitments are found in the application and attach the pertinent pages:

- #1 Archaeology, survey and documentation and recording of cultural resources, in escarpment area to be failed.

This is found in the engineering section, page 10 and 11, revised 5/6/97

- #2 A survey for spotted bats (USDA-FS Sensitive Species) will be conducted for all escarpment areas to be failed. If bats are located, then evaluations will be made for mitigation needs. Mitigations could include avoidance during specific times and/or prevention of bat occupancy during period of subsidence, such as by netting or screening. Mitigations will be evaluation on a case-by-case basis.

This is found in the biology section, page 3 and 4, revised 5/6/97

- #3 When the mains under the North Fork of Rilda Creek are no longer needed, the operator must backstow, backfill, and/or group the mains, using the best technology available at that time.

This is found in Appendix 1, page 5, revised 7/1/97

- #4 The operator must delineate the Mill Fork Graben with some method other than direct mining. Acceptable methods include, but are not



limited to, surface and in-mine drilling or geophysical methods.

This is found in Appendix 1, page 2, revised 7/1/97

- #5 Only full-support mining is permitted under escarpments along the north side of Rilda Canyon unless the lease stipulation prohibiting escarpment failure is waived by the Forest Service.

This is found in Appendix 1, pages 4 and 5, revised 7/1/97.

- #6 The operator must notify the surface management agency (Forest Service) if a water loss occurs on National Forest System lands.

This is found in the engineering section, pages 32 and 33, revised 7/1/97.

All of the conditions have been adequately addressed by the applicant to satisfy the Forest Service conditions in letter dated July 3, 1997.

Attachments
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detailed plan will be developed to position the 4th North #1 / 4th North #2 intersection to optimize the "no-subsidence" design of the 4th North #2 / Rilda Canyon Right Fork crossing route and rock slope access into the lower Hiawatha Seam as well as maximizing overall reserve recovery within the area.

From the 4th North #2 intersection, mainline development will proceed to the northern boundary of Federal Coal Lease U-024317. Longwall gateroad development sections will be driven due east from the 4th North Mains to the extent of mineable reserves. The sequence of longwall extraction will be from the northern portion of Federal Coal Lease U-024317 to the south (Federal coal leases U-06039, SL-051221, U-2810 and PacifiCorp patent fee claims). Six longwall panels are projected in each seam.

Based on the current layout, the two northern and two southern panels of each seam are projected to extend below the Castlegate Sandstone escarpment. As specified in the lease stipulations, "except at specifically approved locations, the Castlegate escarpment must be protected from mining induced failure". Where escarpment failure is proposed or anticipated, an environmental analysis will be needed to assess the following:

- a. How much escarpment could fail based on analytical methods, observation of similar areas, geologic/topographic conditions, and panel orientation.

- b. What resources would be affected by escarpment failure and description of the nature and magnitude of these effects, ie: vegetation, wildlife and habitat; threatened / endangered and sensitive species; cultural and paleontological resources; hazards; visual quality, etc.

The Castlegate Sandstone escarpment within the North Rilda Permit Application area has been defined in the permit application in two (2) distinct portions:

NORTH CASTLEGATE ESCARPMENT - NORTH RILDA AREA

SOUTH CASTLEGATE ESCARPMENT - NORTH RILDA AREA

NORTH CASTLEGATE ESCARPMENT: The Castlegate Sandstone escarpment within the northern portion of the North Rilda Area (north face of the ridge) has very limited surface exposure due to the presence of talus slopes and forest vegetation which cover most of the escarpment in this area. Due to the limited surface exposure of the Castlegate escarpment, no special monitoring or mine layout protection is planned for the escarpment in this area, i.e., the four (4) northernmost longwall panels in the Blind Canyon and Hiawatha Seams - North Rilda Area, refer to R645-301-500 Appendix 1 for complete description and comparison of the North Castlegate Escarpment to previously mined areas.

SOUTH CASTLEGATE ESCARPMENT: The Castlegate Sandstone escarpment within the southern portion of the North Rilda Area (south face of ridge) has a prominent surface exposure. Based on an on-going geotechnical study evaluating the potential effects of longwall (full-

FISH & WILDLIFE

Wildlife studies have been conducted within the Deer Creek Mine permit areas and those areas adjacent to it. The wildlife habitats of the North Rilda Area include Mixed Conifer and Pinyon-Juniper and probably some riparian communities. Descriptions of these and other habitats that exist within the permit boundaries have been given in previous wildlife sections of the MRP.

"Species of Special Significance", threatened, endangered, and "Special Status Species" have been described previously. Table 1 of Vol. 1, Part 2 of the MRP lists Vertebrate Species of the Wasatch Plateau of which the Deer Creek Mine permit area and the North Rilda Area are part. The tables include the species status (common, rare, threatened, etc.), the habitats in which they occur, and the likelihood of their occurrence within the boundaries of the lease area.

Mule deer habitats have been mapped for the permit and adjacent areas, part of which are within the North Rilda Area boundaries (Vol. 4, Map 2-19). Neither "Critical Deer Winter Range", nor "High Priority Deer Winter Range" exist in the North Rilda Area. Instead, the area is mapped as "High Priority Summer Habitat" (Vol. 4, Map 2-19).

Raptor nesting studies and nest mapping have been conducted in the North Rilda Area. Much of the area is raptor nesting habitat. Specific nests have been numbered and mapped in the area (see Biology Section Appendix). The status of these nests have also been included (see Biology Section Appendix). Nest information and locations are based on results from the 1996 annual raptor survey conducted by Energy West Mining Co., in conjunction with the Utah Department

of Wildlife Resources. Energy West Mining Co. will conduct annual raptor surveys in the area. The results of those surveys will be available upon request.

Due to the potential for Townsends Big-eared bats and Spotted bats to occur along the cliff escarpment in Rilda Canyon, a bat survey of the areas of potential failure will be conducted to determine the presence of these mammals. The bat survey will occur during the summer of 1997.

No surface disturbance has been proposed to the wildlife habitats in the North Rilda Area, therefore little or no influence on the proposed new permit area is expected.

Rilda Canyon.

BEAM ANALYSIS:

To further address the long term stability of the mine openings within the Right Fork area of Rilda Canyon, beam theory analysis was also employed (See Attachment #3).

Beam theory suggests, that when an underground opening is excavated, the immediate roof strata acts as a beam to support the strata overlying the opening. If the beam is strong enough to support itself and the effected overlying strata, then the opening will be stable.

When an underground opening is excavated, the stress distribution in the surrounding rock mass changes. The support that the excavated material supplied to the surrounding rock mass is no longer there. The stress therefore, arches over the opening and redistributes itself to the surrounding rock. In underground excavations, it is an accepted value that the zone of influence of an opening is determined to be approximately two (2) times the opening height. In beam theory, when an underground opening is excavated, the strata overlying the mine opening acts as a beam to support the immediate roof, or the material within the opening's affected zone.

Beam stability is evaluated by calculating the assumed beam's factor of safety. The factor of safety is the tensile strength of the beam divided by the maximum tensile stress that the beam is subjected to. It is assumed that a factor of safety of 1.5 - 2.0 (or greater) represents long term stability. Based on the proposed layout of the 4th North Mains within the area of the Right Fork of Rilda Canyon, this factor of safety is calculated at approximately 4.92 (See Attachment #3); indicating long term stability of the assumed roof beam and thus the mine entries.

SUPPLEMENTAL SUBSIDENCE MONITORING

Prior to development mining below the riparian zone of the right fork of Rilda Canyon, permanent subsidence monitoring sites will be established directly above the proposed mains to verify ground stability conditions. Location of the stations will be determined based upon the final mine layout for the proposed crossing. Monitoring will be conducted on a quarterly basis during accesible periods until lease relinquishment or an alternate schedule is approved by D.O.G.M. and surface land management agency (U.S.D.A. Forest Service).

FINAL RETREAT - NORTH RILDA ABANDONMENT

Prior to final mine retreat and abandonment of the North Rilda Canyon Area Mains, PacifiCorp will submit (for technical review and evaluation to the appropriate permitting management agencies) historical in-mine and surface stability data necessary to assess the long-term surface stability of the Right Fork area of Rilda Canyon. An on-site review will be conducted to evaluate long-term stability of the right fork of Rilda Canyon.

With regard to PacifiCorp's pending North Rilda Area Permit Application, the 4th North Mains are projected to be developed northwest (approximately 3000 feet) from the 4th North / 10th West Mains intersection. The 4th North Mains development then changes course to a northeast bearing, with development proceeding across the right fork area of Rilda Canyon. The proposed location and layout of the 4th North #1 / 4th North #2 intersection are currently only a projection. Preliminary mine plan sequence and layout provides for the current 4th North Mains to continue as a 5-entry development system to a point just south of the proposed 4th North #1/4th North #2 intersection. At this point the development is planned to be reduced to a 2-entry "exploration" section continuing on the original northwest bearing to delineate the western margin of the Blind Canyon coal seam or to intersect the projected Mill Fork Fault Graben. In addition to in-mine exploration, PacifiCorp has submitted a surface exploration plan to be conducted in 1997 prior to the proposed in-mine exploration to determine the extent of mineable reserves and evaluate potential faulting on the west side of Federal Coal Lease U-06039. The proposed plan includes drilling a series of exploration holes on 200-foot spacing from existing drill holes EM-158 to EM-56C. Information collected during this exploration will include depth of colluvial / alluvial deposits, structure and stratigraphy of the lower Blackhawk and upper Star Point formations, and hydrologic characteristics of the penetrated strata. Data from the exploration program will be submitted to the Division and both surface and underground management agencies.

Based on the information gained from the surface exploration drilling and proposed 2-entry "exploration" development, a detailed plan will be developed to position the 4th North #1 / 4th North #2 intersection to optimize the "no subsidence / long term stability" design the 4th North #2 / Rilda Canyon Right Fork crossing route and rock slope access into the lower Hiawatha Seam as well as maximizing overall reserve recovery within the area.

RIPARIAN ZONE - RIGHT FORK OF RILDA CANYON

The riparian zone within the Right Fork of Rilda Canyon (as shown on the above referenced enclosures) was delineated by field observation, aerial photography, and map contour analysis. The extent of the identified zone is based on the contact of the alluvial fill with the canyon's side slopes. The alluvial/colluvial fill contacts were inferred from existing map contours where rapid changes in slope gradient were assumed to indicate a material composition change. The alluvial/colluvial fill contact was assumed to occur where these grade changes occurred.

The riparian zone (as mapped) also includes an agency requested "buffer zone". This "buffer zone" is calculated from the lower Hiawatha seam's horizon/elevation @ 15 degrees to a point of intersection on the surface. The "buffer zone" delineates an area restricted from full extraction second mining.

This referenced 15 degree "angle-of-draw" / "angle-of-influence" is an industry/agency accepted standard used for delineation of surface influence protection from mining areas considered for full-extraction mining. Mining experience at Energy West's Deer Creek, Cottonwood, and Trail Mountain mines has provided a sound, scientific basis for using the 15° angle of draw mentioned above. The angle of draw of subsidence produced by full-extraction mining can be influenced by

(within the Left Fork area of Rilda Canyon). Both canyon crossings are considered designed and protected for " **ZERO-SUBSIDENCE** " to insure the required long term (hundreds of years) stability and integrity of the underground openings with regard to limiting the potential of any future surface impact.

To insure long term stability of the 4th North Mains and afford further protection to the riparian zone throughout the effected area of 4th North Mains crossing of the Right Fork area, entry/pillar configuration will consist of a 5-entry development with staggered cross-cuts on 80ft. x 150 ft. pillar centers (See Attachment #1). Primary roof support throughout the immediate area will consist of standard 5 ft. resin grouted roof bolts on 5 ft. centers. Secondary roof support (as ground/roof conditions dictate) will consist of a combination of available materials (ie: point-anchor [active/grouted] roof bolts, steel bearing plates, wire mesh, steel roof mats, grouted cable bolts, "CAN" cribs, wooden cribs, etc.).

STABILITY ANALYSIS

To address the concerns with regard to the long term stability of the mine openings proposed within the Right Fork area of Rilda Canyon, pillar stability and beam theory analysis is presented within this report.

PILLAR STABILITY:

The long term stability of the proposed 80 ft. x 150 ft. support pillars (proposed within the riparian zone of the Right Fork crossing) were evaluated using the Tributary Area Analysis Method (See Attachment #2).

This analysis is very conservative because it assumes that an in-mine pillar will support **ALL** of the immediate overburden directly above it. Actual in-mine studies have indicated that a support pillar will only see a portion (60% - 70%) of the actual vertical overburden weight. The overburden cross-section, along the projected bearing of the proposed 4th North Mains (Section A - A'; See Map HM-11), details the immediate area of the alluvial/riparian zone of the Right Fork of Rilda Canyon. Overburden thickness varies from 648 ft. at the northeast margin to 99 ft. in the bottom of the Right Fork Canyon.

Pillar stress and safety factors were calculated at different locations along the development bearing using the Tributary Area Analysis method. The pillar compressive strengths used in the analysis are actual measured (in-mine) strength values, averaging approximately 4000 psi.

Once pillar strength and pillar stress is known, a factor of safety is calculated. The factor of safety is calculated by dividing the pillar strength by the pillar stress. A factor of safety of 1.0 or greater indicates stability. A factor of safety of 1.5 - 2.0 (or greater) indicates long term stability. The calculated factors of safety along the projected bearing of the 4th North Mains range from 3.57 under the deepest cover to 23.94 in the canyon bottom. These factors of safety indicate long term stability for the 4th North Mains layout throughout the area of the crossing of the Right Fork of

have been lost or adversely affected as a result of operator's mining operations if such loss or adverse impact occurs prior to final bond release. The water will be replaced from an alternate source in sufficient quantity and quality to maintain the current and postmining land uses as stated herein.

During the course of regular monitoring activities required by the permit, or as the operator otherwise acquires knowledge, the operator will advise DOGM and the surface land management agency of the loss or adverse occurrence discussed above, within ten working days of having determined that it has occurred. Within ten working days after DOGM notifies operator in writing that it has determined that the water loss is the result of the operator's mining operation, the operator will meet with DOGM to determine if a plan for replacement is necessary and, if so, establish a schedule for submittal of a plan to replace the affected water. Upon acceptance of the plan by DOGM, the plan shall be implemented. The operator reserves the right to appeal DOGM's water loss determinations as well as the proposed plan and schedule for water replacement as provided by Utah Code Ann. 40-10-22(3)(a). As outlined earlier, there are no springs or seeps located above the projected mining activities in the North Rilda Area. Most of the streams within the permit area are ephemeral and/or intermittent. Only the lower portion of Rilda Canyon Creek below the forks is considered perennial. The streams are fed by springs that emanate primarily in the North Horn Formation west of the permit boundary. Second mining, ie. longwall extraction, room & pillar, of the North Rilda area will be limited to the ridge separating Rilda and Mill Fork canyons and subsidence will not occur beneath the stream channels of these canyons. First mining, ie. mainline, gateroad development, will occur below the Right Fork of Rilda Canyon. For a complete analysis of the proposed "no subsidence / long term stability" design of the 4th North Mains development within the Right Fork of Rilda and long-term

stability analysis refer to the Engineering Section R645-301-500 Appendix 1. To protect the alluvial/colluvial system of the Right Fork of Rilda Canyon a stream buffer zone was established based on the extent of the riparian zone and the angle of draw from the Hiawatha Seam, the lowest seam to be mined. The riparian zone within the Right Fork of Rilda Canyon was delineated by field observation, aerial photography, and map contour analysis. The extent of the identified zone is based on the contact of the alluvial/colluvial fill with the canyon's side slopes. The angle of draw was calculated from the Hiawatha Seam horizon/elevation @ 15 degrees to the point of intersection on the surface. The stream buffer zone delineates the area restricted to full extraction mining. The referenced 15 degree angle of draw is an industry/agency accepted standard used for delineation of surface influence protection from mining areas considered for full extraction mining. Mining experience at Energy West's Deer Creek, Cottonwood, and Trail Mountain mines has provided a sound, scientific basis for using the 15° angle of draw mentioned above (refer to Annual Subsidence Reports of the Deer Creek MPR).

Subsidence Control

The operator will conduct the underground mining operations so as to prevent subsidence from causing material damage to the surface and to maintain the value and reasonable foreseeable use of that surface in accordance with the preceding subsidence control plan.

A 200 feet barrier will protect the northern mine permit boundary from mine-induced subsidence. The northern boundary projection of mine-induced subsidence is shown on Figure R645-301-500c.



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

Michael O. Leavitt
Governor
Ted Stewart
Executive Director
James W. Carter
Division Director

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(801) 538-5340
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June 27, 1997

To: File

From: Pamela Grubaugh-Littig, Permit Supervisor *pgl*

Re: Compliance Review for Section 510 (c) Findings, Deer Creek Mine, PacifiCorp, Folder #3, Emery County, Utah

As of the writing of this memo, there are no NOVS or COs which are not corrected or in the process of being corrected. There are no finalized Civil Penalties which are outstanding and overdue in the name of PacifiCorp. PacifiCorp does not have a demonstrated pattern of willful violations, nor have they been subject to any bond forfeitures for any operation in the state of Utah.

The OSM recommendation from the Applicant Violator System (AVS) denotes a "conditional issue". As a Special Condition of the Deer Creek Mine permit, "PacifiCorp must notify the Division with 14 days of the decision on the appeal of outstanding cessation order 94-020-370-002, 1 of 1."



State : UT Permit No : ACT015018 Appl No : ACT015018
 Applicant : 108521(PACIFICORP) Seqno : 3

SYSTEM RECOMMENDATION IS BASED ON ENTITY OFT

SYSTEM RECOMMENDATION : COND ISSUE 06/27/97
 PREVIOUS SYSTEM RECOMMENDATION : COND ISSUE 06/17/96

Records retrieved : 1

ST	PERMIT	RP ID	SEQ	VTTYPE	VIOLNO	VIOLDATE
UT	NONE	108521	0	CMIS	C94-020-370-002	09/15/94

RCM_MNT(F7) PERMIT/APPL(F8) REPORTS(F9)
 PRV_SCR(F3) VIOL(F4) EVOFT(F5) VOFT(F6) CHOICES(F10)

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■ avsdg Capture Offsing 10:59

State : UT Permit No : ACT015018 Appl No : ACT015018
 Permittee : 108521(PACIFICORP) Seqno : 3
 Applicant : 108521(PACIFICORP)

SYSTEM : C (COND ISSUE) Date : 27-Jun-1997 Mode : VIEW

Reason: 0 AML, 0 AUD, 1 CMIS, 0 FORF, 0 STATE, 0 NRSP VIOLATION(S)

OSMRE : C (COND ISSUE) Date : 17-Jun-1996 Mode : VIEW
Reason: Condition based on the outcome of the hearing on the Federal violation
C94-020-370-002, which is written to the applicant. cc

SRA : Date : 27-Jun-1997 Mode : UPDATE
Reason:

SAVE (F5) DELETE (F8)
PRV_SCR (F3) QUIT (F4) CHOICES (F10)

■ avsdg

Capture Offsing 10:59



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

Michael O. Leavitt
Governor

Ted Stewart
Executive Director

James W. Carter
Division Director

1594 West North Temple, Suite 1210
Box 145801
Salt Lake City, Utah 84114-5801
801-538-5340
801-359-3940 (Fax)
801-538-7223 (TDD)

April 9, 1997

Chuck Semborski, Environmental Supervisor
PacifiCorp
P.O. Box 310
Huntington, Utah 84528

Re: North Rilda Lease, PacifiCorp, Deer Creek Mine, ACT/015/018-97-1, Folder #2,
Emery County, Utah

Dear Mr. Semborski:

The Division has completed a review of your application to permit the North Rilda Lease Area. We have coordinated with other agencies and solicited their input as well. Your plan is considered to be administratively complete, however, the review has identified a number of technical deficiencies. The enclosed technical analysis (TA), documents the findings that the Division has made to date on the application. Please review the TA and make sure you understand the requirements. The deficiencies must be adequately addressed in order for us to complete the permitting action.

At this time you should publish a Notice of Complete Application for the North Rilda Lease Addition as required by R645-300-121. A copy of the publication should be sent to the Division as soon as it is available. You should also insure that a copy of the application is on file at the Emery County Courthouse during the comment period.

We look forward to working with you on completing this permitting action. Please call if you have any questions.

Sincerely,

A handwritten signature in black ink that reads "Daron R. Haddock".

Daron R. Haddock
Permit Supervisor

enclosure

cc: P. Grubaugh-Littig, w/o enclosure
Pete Hess, PFO, w/o enclosure

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United States Department of the Interior
OFFICE OF SURFACE MINING
Reclamation and Enforcement
BROOKS TOWERS
1020 15TH STREET
DENVER, COLORADO 80202

SEP 30 1985

MEMORANDUM

TO: Director, Office of Surface Mining

FROM: *Allen D. Klein*
Allen D. Klein, Administrator, Western Technical Center

SUBJECT: Recommendation for Approval of Utah Power and Light Company's Deer Creek Mining Plan and Permit, Emery County, Utah, Federal Leases: SL-064607-064621, SL-064900, U-1358, SL-070645, U-02292, U-084923, U-084924, U-083066, U-040151, U-044025, U-014275, U-024319, and U-47979.

I. Recommendation

I recommend approval with conditions of the Utah Power and Light Company's Deer Creek Mine permit for an underground operation. This is a repermitting application under the permanent program for an existing mine. The mining plan and permit were approved under the Federal lands and State interim programs. My recommendation is based on the technical analysis and environmental assessment of the complete application. The applicant has proposed to continue underground mining on Federal coal leases SL-064607-064621, SL-064900, U-1358, SL-070645, U-02292, U-084923, U-084924, U-083066, U-040151, U-044025, U-014275, U-024319, and U-47979, during the 5-year permit, and later to develop additional portions of Federal coal leases U-06039, U-024317, and SL-051221, and private fee coal as a new area permit during the 47-year life-of-mine. The permit with conditions included with this memorandum will be in conformance with the applicable Federal regulations, the Utah Regulatory Program, and the Mineral Leasing Act, as amended. I also recommend that you advise the Assistant Secretary for Land and Minerals Management, under 30 CFR 746, that the Utah Power and Light Company's Deer Creek mining plan is ready for approval. I concur that a bond in the amount of \$1,224,000 is adequate.

The Utah Division of Oil, Gas, and Mining (UDOGM) and the Office of Surface Mining (OSM), identified elements of the applicant's proposal which require conditions to comply with State and Federal law. The State regulatory authority will issue their permit subsequent to the Federal permit.

My recommendation for approval is based on the complete mining plan and permit application package, updated to September 13, 1985. I have determined that this action will not have a significant impact on the human environment.

II. Background

The Deer Creek Mine is located in Emery County, in central Utah, approximately 8 miles west of Huntington, Utah. The permit area contains 14,620 surface acres, of which 8,225 and 6,395 acres are Federal and non-Federal surface, respectively. The estimated 47 year life of operation contains 16,900 surface acres, of which 10,065 and 6,675 acres are Federal and private, respectively. All of these acres have been leased. This mine operation will not affect any environmentally sensitive areas. The proposed majority of the underground operations will utilize longwall mining methods. The Blind Canyon and Hiawatha coal seams will be mined to yield a production rate of 2.5 million tons per year. All surface and underground operations are scheduled to cease around the year 2032.

The Deer Creek Mine permit area overlaps much of the Wilberg permit area. The Deer Creek, Wilberg, and Des-Bee-Dove Mines represent three adjacent and overlapping permit areas owned by Utah Power and Light Company (UP&L) and operated by Emery Mining Company. Wilberg's permit was effective on June 15, 1984. Des-Bee-Dove's permit was effective on June 20, 1985.

In response to the newspaper notice of a complete application for the Wilberg Mine, a letter was received from Herm Olson of the law firm of Hillyard, Low and Anderson, requesting an informal conference on the Wilberg Mine and Deer Creek Mine applications, on behalf of his client, Edward Crawford. Mr. Crawford and his brother, Clay, are owners of approximately one half section on the surface of East Mountain, within the overlapping permit areas for the UP&L Deer Creek and Wilberg Mines. The coal under the Crawford property is in two mineable seams. The upper seam is to be mined by the Deer Creek mine, and the lower is to be mined by the Wilberg mine.

The informal conference was held in Salt Lake City, Utah on March 29, 1984. At that time, Mr. Crawford petitioned to have East Mountain declared unsuitable for mining. The unsuitability petition was denied by OSM on April 27, 1984. On April 13, 1984, Mr. Crawford filed a request for an informal conference specifically addressing the Deer Creek permit application. The conference was held on May 31, 1984, at the Utah Division of Oil, Gas and Mining offices, and a site visit was later held on July 10, 1984. The issues raised at the informal conferences have been addressed in both the Wilberg decision document, and the attached Deer Creek decision document. These issues include a number of former deficiencies in the permit application package which the applicant has since responded to, and a water replacement issue which we have addressed in condition number 5 of the Federal permit.

When the Wilberg Mine was permitted in June of 1984, Utah Power and Light Company filed an appeal concerning the condition that required replacement of any water lost to users by the mining process. The appeal challenged both the State and Federal requirements for water replacement. The hearing has been held on the State appeal and the Utah Board of Oil, Gas, and Mining has since ruled in favor of the State regulatory requirements. The Federal hearing has not yet occurred. Because the Wilberg and Deer Creek Mines are overlapping operations for the most part, water replacement related concerns are mutual. The State will require strict compliance with the water replacement requirements for the Deer Creek Mine as a result of the Board's ruling in their favor on Wilberg. In addition, lease stipulations and concerns identified by the Bureau of Land Management and the Manti-LaSal National Forest require water replacement. Therefore, OSM has included the water replacement compliance requirements as a condition to the Deer Creek Federal permit.

The Deer Creek Mine permit application was for a 16,900 acre permit area. Included was 2,280 acres of Federal and fee leases physically separate from the remaining 14,620 acres. These leases are adjacent to the main permit area at only one common corner point. The Western Technical Center recommends approval for the 14,620 acre permit area and mining plan approval area only. The applicant does not currently own surface or underground property that would enable the applicant to legally proceed from the permit area to the northern leases with right-of-access. Therefore, by letter of March 11, 1985, I notified the applicant that the recommendation for permit approval would not include the northern leases, thereby reducing the permit area size from 16,900 acres to 14,620 acres. The applicant was advised that once they had completed the necessary agreements and provided the required mining description for the additional leases as required by UMC 784.11, they could submit the details as a new permit and mining plan modification according to the requirements of UMC 788.12(d), and the Mineral Leasing Act.

The surface facilities at the Deer Creek Mine are constructed on a valley fill. Although the fill and the facilities were originally constructed before enactment of the Surface Mining Control and Reclamation Act (SMCRA), they remain in use today and are therefore subject to the requirements of SMCRA and the approved Utah regulatory program. During final reclamation, the applicant proposes to leave the fill in place and construct a permanent diversion of the Deer Creek channel over the top of the fill. The requirements of UMC 817.72(d) call for diversions to be routed away from fill. On September 13, 1985, Utah Power and Light Company, by letter to the Utah Division of Oil, Gas and Mining, requested that their proposed diversion over the fill be designated as an experimental practice according to UMC 785.13. Utah Power and Light Company provided the justification and alternative proposals required by the rule.

AFFIDAVIT OF PUBLICATION

STATE OF UTAH)

ss.

County of Emery,)

I, Kevin Ashby, on oath, say that I am the Publisher of the Emery County Progress, a weekly newspaper of general circulation, published at Castle Dale, State and County aforesaid, and that a certain notice, a true copy of which is hereto attached, was published in the full issue of such newspaper for 4 (Four) consecutive issues, and that the first publication was on the 22nd day of April, 1997 and that the last publication of such notice was in the issue of such newspaper dated the 13th day of May, 1997.

Kevin Ashby

Kevin Ashby - Publisher

Subscribed and sworn to before me this 13th day of May, 1997.

Linda Thayne

Notary Public My commission expires January 10, 1999 Residing at Price, Utah

Publication fee, \$366.08

NOTICE

PacifiCorp, an Oregon Corporation, One Utah Center, 201 South Main, Salt Lake City, Utah 84140, hereby announces that an application to significantly revise the Deer Creek Mine Permit has been determined administratively complete by the Division of Oil, Gas & Mining. This revision involves the addition of approximately 1,960 acres of leased property to the Deer Creek Mine permit area.

A copy of the complete application is available for public inspection at the Emery County Recorder's Office, Emery County Courthouse, Castle Dale, Utah 84513.

Written comments on the application should be submitted to the Utah Coal Regulatory Program, State of Utah, Division of Oil, Gas and Mining, 1594 West North Temple, Suite 1210, PO Box 145801, Salt Lake City, Utah 84114-5801. Said comments must be submitted within thirty (30) days from the date of last publication of this notice.

The area to be mined is contained on the USGS 7.5 minute "Rilda Canyon" quadrangle map. A map depicting the general area of the Deer Creek Mine is published herewith.

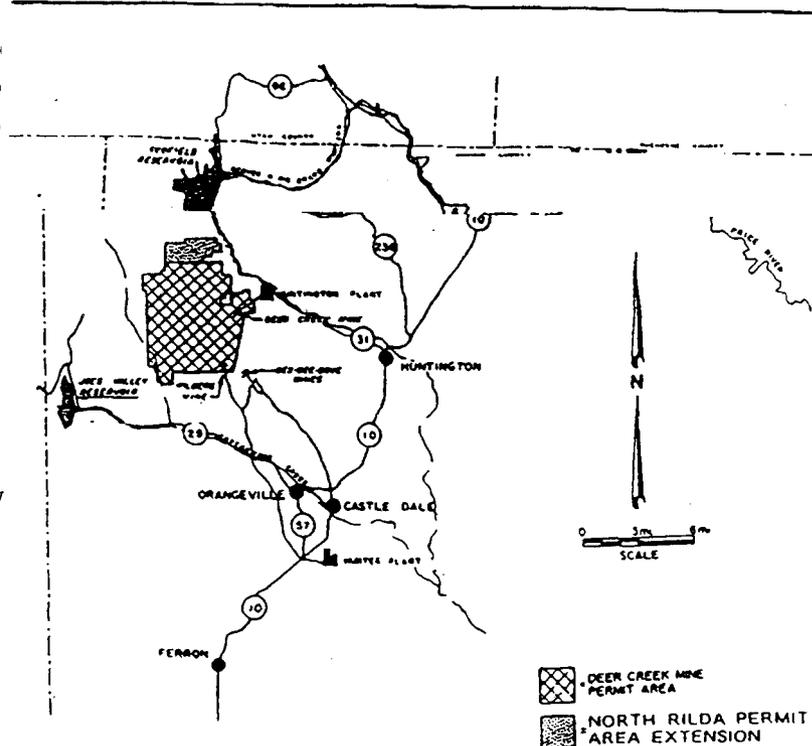
The Mine Permit Extension Area includes four (4) patent fee claims; three (3) complete Federal Coal Leases (U-024317, U-2810 and SL-051221; and the northern portion of Federal Coal Lease U-06039.

The extension area is more particularly described as follows:

Township 16 South, Range 7 East, SLM, Utah

- Section 19 SE 1/4
- Section 20: S1/2, S1/2 NE 1/4
- Section 21: S1/2 NW 1/4, S1/2 NE 1/4, SW 1/4, SE 1/4
- Section 22: SW 1/4 NW 1/4, SW 1/4
- Section 30: NE 1/4
- Section 29: N 1/2
- Section 28: NW 1/4, N 1/2 NE 1/4

All together containing 1,960 acres, more or less.



 DEER CREEK MINE PERMIT AREA
 NORTH RILDA PERMIT AREA EXTENSION

Published in the Emery County Progress April 22, 29 and May 6 and 13, 1997.

