

UTAH DIVISION OF OIL, GAS AND MINING
STATE DECISION DOCUMENT AND
TECHNICAL ANALYSIS
FIVE-YEAR RENEWAL

COTTONWOOD/WILBERG MINE
ACT/015/019
Utah Power and Light Company
Emery County, Utah
July 6, 1989

RECEIVED

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DIVISION
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CONTENTS

- * Administrative Overview
- * Location Map
- * Permitting Chronology
- * Mine Plan Information Form
- * Findings
- * State Five-Year Renewal Permit
- * Technical Analysis
- * Cumulative Hydrologic Impact Assessment (CHIA)
- * Letters of Concurrence
- * Affidavits of Publication

AT94/2

ADMINISTRATIVE OVERVIEW
FIVE-YEAR PERMIT RENEWAL
COTTONWOOD/WILBERG MINE
ACT/015/019

UTAH POWER AND LIGHT COMPANY
July 6, 1989

Background

The Cottonwood/Wilberg Mine is located approximately eight miles northwest of Orangeville, Utah on the east side of the Wasatch Plateau Coal Field. The permit area encompasses 11,508 acres comprised of Federal coal leases and privately owned holdings.

The Cottonwood/Wilberg Mine was in operation prior to the enactment of SMCRA and the subsequent Utah Code Annotated (UCA) 40-10-1 et. seq.. A permanent program permit was issued to Utah Power and Light Company on July 6, 1984.

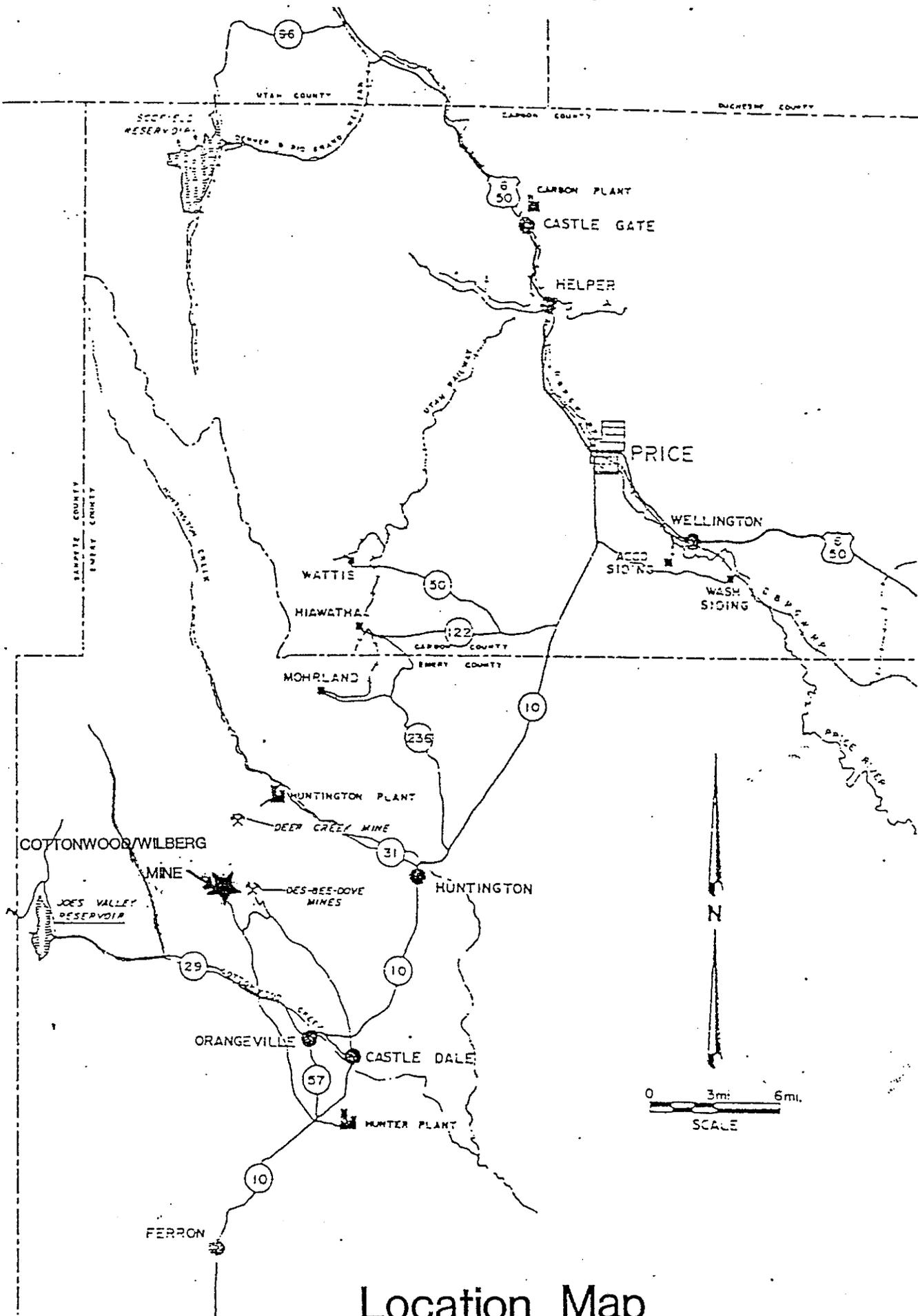
The applicant published notice for the five year permit renewal for four consecutive weeks ending on May 24, 1989. No comments were received.

Permit Changes

During the previous permit terms numerous permit changes were approved. Changes in text and illustrations that received approval have been incorporated into the Permit Application Package for the five year permit renewal.

Recommendation for Approval

Approval for the five-year permit renewal is recommended, based on a review of the Permit Application Package updated through July 5, 1989, including all permit changes approved to date and conformance with the criteria for the approval of permit renewal applications under UMC 788.14-.16 (See attached Findings). The permit renewal term will not exceed the original permit term of five years and will expire on July 6, 1994.



Location Map
 Cottonwood/ Wilberg Mine

**CHRONOLOGY
UTAH POWER AND LIGHT COMPANY
COTTONWOOD/WILBERG MINE
ACT/015/019**

March 3, 1989	Utah Power and Light Company (UP&L) submits updated maps and text, initiating 5-year permit renewal process.
April 3, 1989	Division notifies state and federal agencies of permit renewal. Provides copies of updated text and maps.
April 7, 1989	Division completes Initial Completeness Review (ICR) and provides comment on preliminary technical deficiencies.
April 21, 1989	UP&L submits materials addressing the ICR.
April 24, 1989	Division issues Determination of Completeness. UP&L initiates public notice for four consecutive weeks.
June 5, 13, 19, 22, 28 and 30, 1989	UP&L submits materials addressing technical deficiencies.
July 6, 1989	Public comment period concludes with no adverse comments received. Division makes necessary findings. Permit issued.

MINE PLAN INFORMATION

Mine Name Cottonwood/Wilberg Mine State ID: ACT/015/019

Operator Utah Power and Light Company County: Emery

Controlled By Utah Power and Light Company

Contact Person(s) David Smaldone Position: Director
Permitting & Compliance

Telephone: (801) 220-4227

New/Existing Existing Mining Method Longwall and Room & Pillar

BLM - Surface Leases U-37641 and U-37642

Forest Service Special Use Area UP&L - 2307

BLM-Coal Lease Nos. SL-064900, U-1358, U083066, U-040151, U-044025,

U-47978 and portions of SL-070645 and U-02292, U-084923 and U-084924

Legal Description(s) (see Attachment A)

Other Private Leases Coal and Surface - Estate of

Malcolm McKinnon and Cooperative Security Corporation (Attachment

A)

Legal Descriptions _____

Ownership Data: For _____

Surface Resources (acres)	Existing Permit Area	Proposed Permit Area	Total Life of Mine Area
Federal	_____	---	<u>10,978</u>
State	_____	_____	_____
Private	_____	_____	_____
Other	_____	_____	<u>530</u>
TOTAL	_____	---	<u>11,508</u>

Coal Ownership (Acres)

Federal	_____	_____	<u>10,919</u>
State	_____	_____	_____
Private	_____	_____	_____
Other	_____	_____	<u>530</u>
TOTAL	_____	_____	<u>11,449</u>

	<u>*Total Reserves</u>	<u>Total Recoverable Reserves</u>
<u>Coal Resource Data</u>		
Federal	<u>88 x 10⁶ Tons</u>	<u>53 x 10⁶ Tons</u>
State		
Private	<u>5 x 10⁶ Tons</u>	<u>3 x 10⁶ Tons</u>
Other		
TOTAL	<u>93 x 10⁶ Tons</u>	<u>56 x 10⁶ Tons</u>

Recoverable Reserve Data

	<u>Name</u>	<u>Thickness</u>	<u>Depth</u>
Seam	<u>Blind Canyon</u>	<u>5' - 16'</u>	<u>about 1700'</u>
Seam	<u>Cottonwood</u>	<u>Unmineable</u>	
Seam	<u>Hiawatha</u>	<u>5' - 16'</u>	<u>about 1800'</u>
Seam			
Seam			

Mine Life 30 + years
 Average Annual Production 2.5 x 10⁶ Tons Percent Recovery 60%
 Date Projected Annual Rate Reached 1983
 Date Production Begins Operating Date Production Ends 2022
 Reserves Recoverable by: (1) Surface Mining 0
 (2) Underground Mining 56.0 x 10⁶ Tons
 Reserves Lost Through Management Decision _____
 Coal Market Hunter Power Plant

<u>Modifications That Have Been Approved:</u>	<u>Date</u>
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

COTTONWOOD/WILBERG MINE
LEGAL DESCRIPTIONS
ACT/015/019

Utah Power and Light Company
Emery County, Utah

LEASE NO. SL-064900

Section 22 SE1/4 SW1/4, SW1/4 SE1/4
 NE1/4 SW1/4, NW1/4 SE1/4

Township 17 South, Range 7 East

LEASE NO. U-1358

Section 22 S1/2 NW1/4, W1/2 SW1/4,
 E1/2 SE1/4

Section 27 E1/2 NE1/4

Township 17 South, Range 7 East

LEASE NO. SL-070645, U-02292

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

Township 17 South, Range 7 East

LEASE NO. U-084923

Section 4 Lots 2, 3, 4, 5, 6, 7, 10,
 11, 12, NW1/4 SE1/4, N1/2 SW1/4
Section 5 Lots 1 through 12, N1/2 S1/2,
 SW1/4 SW1/4
Section 6 Lots 1 through 11, SE1/4
Section 7 Lots 1 through 4, E1/2
Section 8 W1/2 W1/2
Section 17 W1/2 NW1/4
Section 18 Lot 1 and 2, N1/2

Township 17 South, Range 7 East

Page 2
Attachment A (Continued)
Mine Plan Information
ACT/015/019
June, 1989

LEASE NO. U-084924

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

Township 17 South, Range 6 East

LEASE NO. U-083066

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 6 East

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

Township 17 South, Range 7 East

LEASE NO. 040151

Section 15	SW14
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

Township 17 South, Range 7 East

Page 3
Attachment A (Continued)
Mine Plan Information
ACT/015/019
June, 1989

LEASE NO. U-044025

Section 27 NW1/4 NE1/4

Township 17 South, Range 7 East

COAL LEASE U-47978

Section 27 S1/2 NW1/4, N1/2 SW1/4
Section 28 S1/2 N1/2, S1/2
Section 29 S1/2 N1/2, S1/2
Section 30 Lot 4, SE1/4 NE1/4
 NE1/4 SE1/4, S1/2 SE1/4
Section 31 Lot 1, E1/2
Section 32 All
Section 33 N1/2, SW1/4, W1/2 SE1/4
Section 34 NW1/4 NW1/4, S1/2 NW1/4

Township 17 South, Range 7 East

Section 4 Lots 2 through 4
Section 5 Lots 1 through 4
 S1/2 NW1/4

Township 18 South, Range 7 East

Surface Rights and Coal Leased by Estate of Malcolm McKinnon

Section 10 SE1/4
Section 14 W1/2 NW1/4

Township 17 South, Range 7 East

Surface Rights and Coal Leased by Cooperative Security Corporation

Section 15 SE1/4
Section 22 NE1/4

Township 17 South, Range 7 East

Page 4
Attachment A (Continued)
Mine Plan Information
ACT/015/019
June, 1989

Surface Rights and Coal Owned by Utah Power and Light Company

Section 14 SW1/4 (West of the Deer Creek Fault)

Township 17 South, Range 7 East

Beginning at the SE corner of NE1/4 SE1/4
Section 25, T17S, R6E, SLM, thence N 160 rods, W 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.

FINDINGS

Utah Power and Light Company
Cottonwood/Wilberg Mine
ACT/015/019
Emery County, Utah

1. The plan and the permit application are accurate and complete and all requirements of the Surface Mining Control and Reclamation Act (the "Act"), and the approved Utah State Program have been complied with (UMC 786.19[a]).
2. The applicant proposes acceptable practices for the reclamation of disturbed lands (PAP Chapter 4). These practices have been shown to be effective in the short-term; there are no long-term reclamation records utilizing native species in the western United States. Nevertheless, the Division has determined that reclamation, as required by the Act, can be feasibly accomplished under the Permit Application Package (PAP) (UMC 786.19[b]) (see Technical Analysis (TA) Section UMC 817.111-.117).
3. The assessment of the probable cumulative impacts of all anticipated coal mining and reclamation activities in the general area on the hydrologic balance has been made by the Division. The Operation and Reclamation Plan proposed under the application has been designed to prevent damage to the hydrologic balance in the permit area (UMC 786.19[c] and UCA 40-10-11[2][c]). (See East Mountain Cumulative Hydrologic Impact Analysis [CHIA].)
4. The proposed lands to be included within the permit area are:
 - a. not included within an area designated unsuitable for underground coal mining operations;
 - b. not within an area under study for designated lands unsuitable for underground coal mining operations;
 - c. not on any lands subject to the prohibitions or limitations of 30 CFR 761.11[a] (national parks, etc.), 761.11[f] (public buildings, etc.) and 761.11[g] (cemeteries);

Findings

- d. within 100 feet of a public road;
 - e. not within 300 feet of any occupied dwelling (UMC 786.19[d]).
5. The Division's issuance of a permit is in compliance with the National Historic Preservation Act and implementing regulations (36 CFR 800) (UMC 786.19[e]). (See attached letter from State Historic Preservation Officer [SHPO] dated April 27, 1989.)
 6. The applicant has the legal right to enter and complete mining and reclamation activities in the permit area through BLM rights of way (UMC 786.19[f]).
 7. 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; Utah Power & Light Company is not delinquent in payment of fees for the Abandoned Mine Reclamation Fund; and the applicant does not control and has not controlled mining operations (Attachment A) with a demonstrated pattern of wilfull violations of the Act of such nature, duration, and with such resulting irreparable damage to the environment as to indicate an intent not to comply with the provisions of the Act (UMC 786.19[g], [h] [i] ; {OSMRE Relatedness Report, re-verified July 6, 1989}).
 8. Mining and reclamation 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 (UMC 786.19[j]).
 9. A detailed analysis of the proposed bond has been made. The bond estimate is \$1,294,522.00. The Division has made appropriate adjustments to reflect costs which would be incurred by the state, if it was required to contract the final reclamation activities for the mine site. The bond was posted on June 15, 1984, and made payable to OSMRE and the Division of Oil, Gas and Mining (UMC 786.19[k]).
 10. The applicant has satisfied the requirements for alluvial valley floors and prime farmlands (UMC 786.19[l]). (See TA Section UMC 785.19 and 828.00.)

Findings

11. The proposed postmining land-use of the permit area has been approved by the regulatory authority (UMC 786.19[m]). (See TA, Section UMC 817.133.)
12. The Division has made all specific approvals required by the Act, the Cooperative Agreement and the Federal Lands Program (UMC 786.19[n]).
13. The proposed operation will not affect the continued existence of any threatened or endangered species or result in the destruction or adverse modification of their critical habitats (UMC 786.19[o]). (See TA UMC 817.97)
14. All procedures for public participation required by the Act, and the approved Utah State Program have been compiled with (UMC 786.11-.15).
15. The applicant proposes to use existing structures in connection with the proposed underground coal mining activities. These structures meet the performance standards of the Act and subchapter K and pose no significant harm to the environment or public health or safety (UMC 786.21) (see TA Section UMC 817.181).

Richard V. Smith

Permit Supervisor

Laurel P. Bryant

Associate Director, Mining

James R. Nielson

Director

ATTACHMENT A

IDENTIFICATION OF INTERESTS

UTAH POWER AND LIGHT COMPANY

According to information supplied by Utah Power and Light Company, all assets of Utah Power and Light Company are owned by Pacificorp, Oregon. Pacificorp is the majority shareholder in NERCO, Inc., which includes five coal companies with seven permits. The following lists the permit numbers, companies and attendant issuing regulatory authority for coal mines controlled by NERCO, Inc.

<u>PERMIT NUMBER</u>	<u>COMPANY</u>	<u>REGULATORY AUTHORITY</u>
291T2	Glenrock Coal Company	Wyoming Department of Environmental Quality
TFN24/90	Antelope Coal Company	Wyoming Department of Environmental Quality
PT33822	Bridger Coal Company	Wyoming Department of Environmental Quality
P3227	NERCO Eastern Coal Company	Alabama Surface Mining Commission
P3501	NERCO Eastern Coal Company	Alabama Surface Mining Commission
MT 79012R	Spring Creek Coal Company	Montanta Department of State Lands
819P	NERCO Eastern Coal Company	Office of Surface Mining, Tennessee
BT40/39		

STATE OF UTAH
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING
355 West North Temple
3 Triad Center, Suite 350
Salt Lake City, Utah 84180-1203
(801) 538-5340

This permit (five-year renewal), ACT/015/019, is issued for the state of Utah by the Utah Division of Oil, Gas and Mining (DOGM) to:

Utah Power and Light Company
P. O. Box 899
Salt Lake City, Utah 84110
(801) 220-4227

for the Cottonwood/Wilberg Mine. Utah Power and Light Company (UP&L) is the lessee of federal coal leases SL-064900, U-1358, SL-070645-U-02292, U-084923, U-084924, U-083066, U-040151, U-044025, U-47978, and the owner/lessee of certain fee-owned parcels. A performance bond is filed with the DOGM in the amount of \$1,294,522.00, payable to the state of Utah, Division of Oil, Gas and Mining and the Office of Surface Mining Reclamation and Enforcement (OSMRE). DOGM 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 (as shown on the map appended as Attachment B) within the permit area at the Cottonwood/Wilberg Mine, situated in the state of Utah, Emery County, and located:

Federal

Township 17 South, Range 6 East, SLM

Section 1: SE1/4, E1/2 SW1/4, S1/2 SE1/4 NE1/4,
SE1/4 SW1/4 NE1/4;
Section 12: E1/2, E1/2 W1/2;
Section 13: E1/2, E1/2 W1/2;
Section 24: E1/2, E1/2 W1/2;
Section 25: N1/2 NE1/4, E1/2 NW1/4 SE1/4;

Township 17 South, Range 7 East, SLM

Section 6: Lots 9, 10, 11; W1/2 W1/2 SW1/4;
Section 7: Lots 1, 2, 3, 4; W1/2 NW1/4 NW1/4; SW1/4 NW1/4;
S1/2;
Section 8: S1/2 SW1/4, S1/2 NW1/4 SW1/4, SW1/4 NE1/4
SW1/4, S1/2 S1/2 SE1/4, N1/2 SW1/4 SE1/4;
Section 9: S1/2 S1/2 SW1/4, SE1/4 SE1/4, S1/2 SW1/4 SE1/4,
NE1/4 SW1/4 SE1/4, SE1/4 NE1/4 SE1/4;
Section 10: S1/2 SW1/4, S1/2 N1/2 SW1/4;
Section 15: N1/2, SW1/4;
Section 16: All
Section 17: All
Section 18: All
Section 19: All
Section 20: All
Section 21: All
Section 22: NW1/4, S1/2;
Section 27: NW1/4, N1/2 SW1/4, NE1/4;
Section 28: All
Section 29: All
Section 30: All
Section 31: Lot 1, E1/2, E1/2 W1/2;
Section 32: All
Section 33: N1/2, SW1/4, W1/2 SE1/4;
Section 34: S1/2 NW1/4, NW1/4 NW1/4, E1/2 SE1/4 NW1/4
NE1/4, S1/2 SE1/4 NE1/4, E1/2 NW1/4 NE1/4
SE1/4, NE1/4 NE1/4 SE1/4, N1/2 SE1/4 NE1/4
SE1/4, E1/2 NE1/4 SE1/4, NW1/4 NE1/4 SE1/4;
Section 35: NW1/4 SW1/4 SW1/4, W1/2 NE1/4 SW1/4 SW1/4,
SW1/4 NW1/4 SW1/4, W1/2 NW1/4 NW1/4 SW1/4;

Township 18 South, Range 7 East, SLM

Section 4: NW1/4 NE1/4, N1/2 NW1/4;
Section 5: N1/2 NE1/4, NW1/4;

Fee

Township 17 South, Range 6 East, SLM

Section 25: NE1/4 SE1/4, SE1/4 NE1/4, E1/2 SW1/4 NE1/4;

Township 17 South, Range 7 East, SLM

Section 10: SW1/4 SE1/4, S1/2 SE1/4 SE1/4;
Section 11: S1/2 SW1/4 SW1/4;
Section 14: W1/2 W1/2 NW1/4, W1/2 E1/2 W1/2 NW1/4, W1/2
W1/2 W1/2 SW1/4;
Section 15: SE1/4;
Section 22: NE1/4;

Beginning at the SE corner of NE1/4 SE1/4 Section 25, Township 17 South, Range 6 East, 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.

This legal description is for the permit area (as shown on Attachment B) of the Cottonwood/Wilberg Mine and Waste Rock Disposal Area. The permittee is authorized to conduct underground coal mining activities and related surface activities on the foregoing described property subject to the conditions of the leases, the approved mining plan, including all conditions and all other applicable conditions, laws and regulations.

- Sec. 3 PERMIT TERM - This revised permit becomes effective on July 6, 1989 and expires on July 6, 1994.
- Sec. 4 ASSIGNMENT OF PERMIT RIGHTS - The permit rights may not be transferred, assigned or sold without the approval of the Director, DOGM. 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 UMC 788.17-.19.

- Sec. 5 RIGHT OF ENTRY - The permittee shall allow the authorized representative of the DOGM, including but not limited to inspectors, and representatives of OSMRE, 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, UMC 840.12, 30 CFR 842.13 and UMC 842.13; and
 - B. be accompanied by private persons for the purpose of conducting an inspection in accordance with UMC 842.12 and 30 CFR 842, when the inspection is in response to an alleged violation reported by the private person.
- Sec. 6 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 mining and reclamation plan and permit application and approved for the term of the permit and which are subject to the performance bond.
- Sec. 7 ENVIRONMENTAL IMPACTS - The permittee shall minimize any adverse impact to the environment or public health and safety through but not limited to:
- A. accelerated monitoring 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. 8 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. 9 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 DOGM in approving alternative methods of compliance with the performance standards of the Act, the approved Utah State Program and the Federal Lands Program.
- Sec. 10 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. 11 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. 12 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. 13 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 DOGM. DOGM, after coordination with OSMRE, shall inform the permittee of necessary actions required. The permittee shall implement the mitigation measures required by DOGM within the time frame specified by DOGM.
- Sec. 14 APPEALS - The permittee shall have the right to appeal as provided for under UMC 787.
- Sec. 15 SPECIAL CONDITIONS - In addition to the general obligations and/or requirements set out in the leases, the federal mining plan approval, and this permit, the permittee shall comply with the special conditions appended hereto as Attachment A.

The above conditions (Secs. 1-15) 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 in the contracts between and among them. These conditions may be revised or amended, in writing, by the mutual consent of DOGM and the permittee at any time to adjust to changed conditions or to correct an oversight. DOGM may amend these conditions at any time without the consent of the permittee in order to make them consistent with any new federal or state statutes and any new regulations.

THE STATE OF UTAH

By: Donne R. Nielson
Date: 7/6/89

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

C. Brett Johnson
Authorized Representative of
the Permittee
Date: 7-25-89

APPROVED AS TO FORM:

By: Barbara W Roberts
Assistant Attorney General
Date: July 5, 1989

Attachment A

UTAH DIVISION OF OIL, GAS AND MINING
COTTONWOOD/WILBERG MINE
STIPULATIONS
ACT/015/019
July 6, 1989

Stipulation UMC 817.24-(1)-(HS)

1. Within 30 days of permit approval, the applicant must submit an adequate topsoil redistribution and final revegetation plan for the Cottonwood Fan Portal area.

Stipulation UMC 871.41-(1)-(DW)

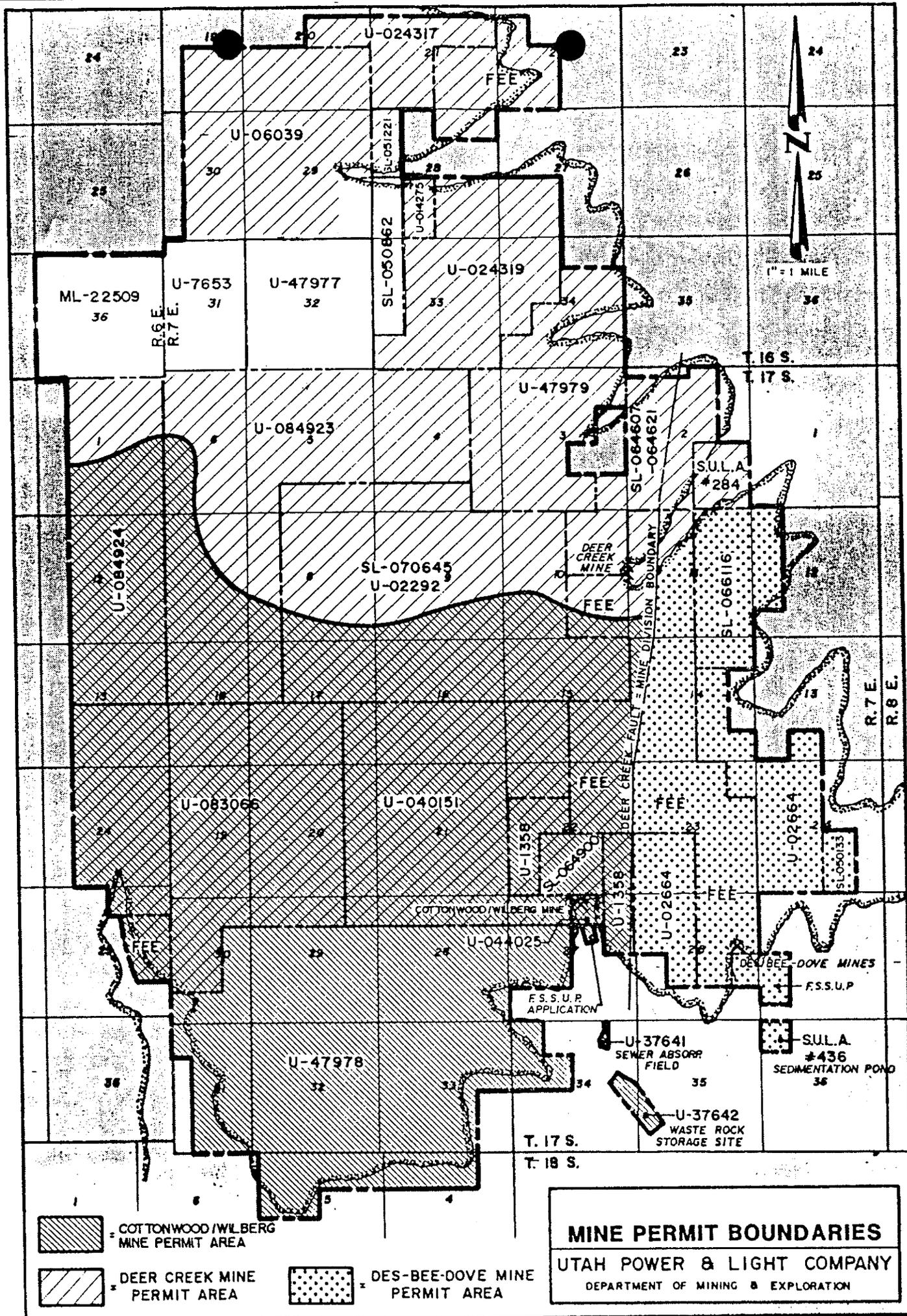
1. Within 30 days of permit approval, the applicant must submit a complete reclamation plan for the Cottonwood Fan Portal area. This plan must include calculations and designs for channel or drainage restoration according to the 100-year 24-hour event, if appropriate.

Stipulation UMC 817.48-(1)-(HS)

1. Within 30 days of permit approval, the applicant must submit: (1) Previous waste rock data collected from the completed waste rock cells (1 through 6); (2) Laboratory analysis of previously collected roof and floor samples, and sample location map; (3) A commitment to annually monitor roof, floor, and midseam material for its potential acid- and/or toxic-forming characteristics according to Division's Guidelines for the Management of Topsoil and Overburden. Top soil and Overburden (i.e. Water soluble Selenium and Boron, Clay Content, pH, Acid-Base Potential, SAR, E.C.); (4) a commitment to properly bury or otherwise treat all acid-and toxic-forming materials within 30 days of initial exposure at the mine site.

Stipulation UMC 817.52-(1)-(DW)

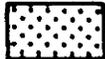
1. Within 30 days of permit approval, the applicant must submit a reclamation water monitoring plan for the Cottonwood Fan Portal area.



COTTONWOOD/WILBERG
MINE PERMIT AREA



DEER CREEK MINE
PERMIT AREA



DES-BEE-DOVE MINE
PERMIT AREA

MINE PERMIT BOUNDARIES
UTAH POWER & LIGHT COMPANY
 DEPARTMENT OF MINING & EXPLORATION

UTAH DIVISION OF OIL, GAS AND MINING
TECHNICAL ANALYSIS
COTTONWOOD/WILBERG MINE
ACT/015/019

Utah Power and Light Company
Emery County, Utah
July 6, 1989

RECEIVED

JUL 28 1989

DIVISION OF OIL
GAS & MINING
PRICE UTAH

UMC 785.19 Alluvial Valley Floors-(RVS)

Existing Environment and applicant's Proposal

Unconsolidated streamlaid deposits do not occur within, or in close proximity to, the permit area. Quarternary alluvium (Qa1) has not been identified along Grimes Wash (Doelling, 1972). Technical staff inspection of the mine site and adjacent area have not identified the existence of flood irrigation (or its historical use) or the capability of stream valleys to be flood irrigated or subirrigated.

Compliance

Sufficient information about alluvial streamlaid deposits and irrigation are available to determine, as required by UMC 785.19(c)(2), that no alluvial valley floors exist with or in close proximity to the proposed permit area.

The applicant is in compliance with this section.

Stipulations

None.

UMC 817.11 Signs & Markers-(WAW)

Existing Environment & Applicant's Proposal

The applicant's proposal for signs and markers commits to install and maintain each particular sign or marker during the conduct of all activities to which they pertain or until bond release (Page 3-20). All signs will be clearly legible and of uniform design.

Compliance

The applicant commits to post and maintain mine signs as required.

The applicant is in compliance with this section.

Stipulations

None.

UMC 817.13-.15 Casing and Sealing of Exposed Underground Openings-(WAW)

Existing Environment and Applicant's Proposal

Boreholes

From 1976 to 1988, the applicant drilled approximately 118 surface exploration holes on East Mountain (page 4-39 and Map 2-1). The East Mountain property is contiguous to the Cottonwood/Wilberg, Deer Creek, and Des-Bee-Dove coal mines. The applicant has committed to reclaim all surface drilled exploration holes according to the USGS published Drill Hole Plugging Procedure.

Entries

The applicant identifies existing and proposed access portals and ventilation breakouts (pages 3-6, 3-7, 3-4, 4-1 and Maps 3-1 and 3-16). Three portals at the Left Fork of Grimes Wash remain sealed due to the mine fire in December, 1984; one entry at the Wilberg Fan Portal was also sealed at a later date. A total of 15 remaining openings are depicted on Map 3-16 excluding the mine office facility area.

Upon completion, ventilation entries (breakouts) will be fenced with chain link to prevent entry and warning signs will be posted (page 3-6).

The applicant commits to sealing all mine entries upon completion of mining activities (pages 4-1, and 4-2, Figure I). Seals will be constructed of concrete blocks, double wall thickness, and backfilled with 25 feet (minimum) of noncombustible material. No drains or special hydrological containment seals are proposed except for the Cottonwood Fan Portal area drainage. Three portals, Channel Canyon, Miller Canyon, and Cottonwood Mine belt portal will be sealed from within the mine, the remaining portals will be sealed prior to backfilling and grading.

Compliance

As of fall 1988, all surface exploration drill holes on East Mountain have been reclaimed and permanently sealed. The applicant's plans for permanently sealing entries are designed to prevent access and keep acid or other toxic drainage from entering ground or surface waters.

The applicant is in compliance with this section.

Stipulations

None.

UMC 817.22 Topsoil: Removal-(HS)

Existing Environmental Applicant's Proposal

Topsoil was not salvaged from the disturbed area associated with the Wilberg Mine (page 2-143). Dr. A. L. Southard concluded (Soils Report, pages 2-143 through 2-148) "Basically no topsoil (Horizon-A) exists in sufficient quantities to warrant stockpiling" (page 2-143).

The applicant proposes to use substitute topsoil as a plant growth medium for reclamation (page 4-18.1). Existing material shown on Map 2-18 (upper fill, parking lot fill, sediment pond fill, spoil bank) if demonstrated to be suitable (pages 4-9.8 through 4-10), will be utilized for reclamation. Revegetation test plots will be constructed to determine the suitability of the fill material as a plant growth medium for final reclamation. Test plot design and success standards are given on pages 4-17 to 4-19.

Chemical and physical analyses and soil mapping unit descriptions of the Waste Rock Storage area are located on pages 2-152 through 2-154. The top 12 inches of soil material was separately removed and segregated prior to development of each waste rock cell (Appendix VII, page 4 and 5). Removed "topsoil" has been temporarily stored in the berms that will be used in cell reclamation.

Topsoil was separately removed and stockpiled from the Cottonwood Fan Portal area (page 3-24). Detailed analyses of the portal area soils are presented on pages 2-154 through 2-158 and page 4-28.

Compliance

Topsoil was not removed from the disturbed area associated with the Cottonwood/Wilberg Mine area. The Great Group classification (Soil Taxonomy, USDA/SCS) of the disturbed soil was Ustorthent. These soils typically lack horizonation within the first meter of the surface and have a shallow lithic contact with little biological activity.

The applicant proposes to use existing fill material as a plant growth medium for final reclamation. Preliminary data indicate potentially detrimental levels of electrical conductivity (EC) and sodium adsorption ratio (SAR) which may jeopardize reclamation success. Thus, the operator proposes to implement revegetation test plots to determine the suitability of existing fill material as a plant growth medium.

The Division will determine, based on the physical and chemical characteristics of the proposed substitute material and the results of revegetation test plots, whether existing fill material will be suitable substitute topsoil material.

Chemical and physical analyses of topsoil material removed from the Waste Rock Storage area and the Cottonwood Fan Portal area were performed. Profile descriptions and chemical and physical data indicate no characteristics that would jeopardize reclamation success within the salvaged material.

The applicant is in compliance with this section.

Stipulations

None.

UMC 817.23 Topsoil: Storage-(HS)

Existing Environment and Applicant's Proposal

No topsoil was removed or stockpiled at the Cottonwood/Wilberg Mine area.

Topsoil was removed at the Cottonwood Fan Portal area from approximately five acres and placed in two separate storage areas (page 3-29). The topsoil storage piles have been protected against wind and water erosion by establishing a perennial vegetative cover (field inspection by Division staff, conducted January 23, 1989).

The berm structures containing salvaged topsoil from the Waste Rock Storage area have and will be revegetated to minimize erosion (Appendix III, page 3).

Compliance

Removed topsoil from the Cottonwood Fan Portal area has been placed within the permit area and protected from wind and water erosion by a perennial vegetative cover. Immediate redistribution of topsoil is not practical because of the operational status of the area.

The area where topsoil has been stockpiled does not pose any imminent danger of slope failure (Appendix XVIII).

The "topsoil" salvaged from the Waste Rock Storage area is temporarily stored within the retainment berm surrounding each storage cell and is adequately protected from wind and water erosion by vegetation cover on the surface of the retainment berm.

The applicant is in compliance with this section.

Stipulations

None.

UMC 817.24 Topsoil: Redistribution-(HS)

Existing Environment and Applicant's Proposal

The final reclamation plan for the Cottonwood/Wilberg Mine area and the Waste Rock Storage area is described on pages 4-18 through 4-21.1.

The upper 18 inches of fill material, if demonstrated to be a suitable plant growth medium for final reclamation (see discussion under UMC 817.22), will be excavated from the fill slopes and temporarily stored while backfilling and grading activities occur. Prior to seedbed preparation and following scarification of the regraded spoils, temporarily stored "topsoil" will be placed on the newly-graded surface at a depth of 6-12 inches (page 4-11). All final grading and "topsoil" placement will be conducted parallel to the contour. If surface compaction has developed, it will be alleviated by hand or mechanical tillage. Topsoil will be mechanically roughened (backhoe or chisel plow) to maximize surface roughness. Mulch will be applied at a rate of two tons/acre and netting will cover mulch.

The final revegetation plan may be revised to incorporate the results of interim revegetation efforts (pages 4-11 through 4-17) and test plot results (pages 4-17 to 4-19). Revisions will be approved by the Division prior to implementation.

Compliance

Existing fill material, if proven suitable, will be utilized to cover all disturbed areas at the Cottonwood/Wilberg Mine area with 6-12 inches of substitute topsoil.

Substitute topsoil will be prepared to promote favorable revegetation establishment. The redistribution plan is adequate to support the postmining land use of livestock grazing and wildlife habitat.

Scarification of regraded spoils and mechanical tillage of the substitute topsoil will alleviate compaction caused by machinery traffic and ensure good overburden/soil contact, thereby preventing potential slippage and create a soil profile conducive to root penetration.

Regraded "topsoil" will be left in a roughened condition to provide micro-relief to reduce runoff and promote infiltration.

Hay mulch and netting will ensure adequate protection from wind and water erosion by raising the wind profile above the soil surface and acting as a barrier against raindrop impact.

A topsoil distribution plan for the Cottonwood Fan Portal area has not been submitted.

The applicant will be in compliance when the following stipulation is met:

Stipulation 817.24-(1)-(HS)

1. Within 30 days of permit approval, the applicant must submit an adequate topsoil redistribution and final revegetation plan for the Cottonwood Fan Portal area.

UMC 817.25: Topsoil: Nutrients and Amendments-(HS)

Existing Environment and Applicant's Proposal

The applicant has committed to sample redistributed topsoil prior to seeding (Item 3, page 4-20). Necessary fertilization and soil amendment application will be instituted as determined by soil test results following redistribution.

Compliance

The applicant has committed to sampling redistributed topsoil to determine type and rate of fertilizer required.

The applicant is in compliance with this section.

Stipulations

None.

UMC 817.41 Hydrologic Balance: General Requirements

Existing Environment and Applicant's Proposal

Surface Water - (DW)

The applicant describes the current disturbed and undisturbed drainages in Appendix XX.

A general description of the existing environment is contained in Chapters I and II of Appendix XX.

The regional water quality and quantity monitoring plans for surface and ground waters are found in Chapter IV of Appendix XX.

Treatment facilities (i.e. sedimentation ponds) specifications are found in Appendix XIII.

Part 4 of the PAP includes a detailed description of the reclamation hydrology, including restoration of all disturbed areas, a reclamation monitoring plan and specific designs associated with restored channels for the Cottonwood/Wilberg Mine area. Specific information is not presented for the Cottonwood Fan Portal area.

Ground Water - (RVS)

The applicant provides information about aquifers, springs and mine inflows in Appendix XX. Supplementary information about ground water is given on Maps HM-1 through HM-5.

Aquifers. The applicant describes the North Horn Formation, Blackhawk Formation, and Star Point Sandstone as the major water-bearing lithostratigraphic units in the permit and adjacent area (Appendix XX, pages 4 through 11). The applicant concludes that a zone of "perched" aquifers occurs within certain permeable sandstone channels in the North Horn Formation and Blackhawk Formation, whereas the aquifer occurring in the Star Point Sandstone is of a more regional nature.

The applicant identifies the Roans Canyon Fault Graben, Straight Canyon Syncline and Deer Creek Fault (Map HM-1) as primary structural features that influence ground-water movement on East Mountain. The applicant suggests that the Roans Canyon Fault Graben and Straight Canyon Syncline acts to intercept and directs southerly ground water towards the southwest (Map HM-1). The Deer Creek Fault appears to be an aquiclude to eastward movement of ground water (Appendix XX, page 15).

Ground-Water Use. Ground water within and adjacent to the permit area is used by wildlife and for stockwatering and domestic purposes. Table HT-7 lists five springs with appropriated water rights within the permit area. Mining has occurred beneath two of the springs with water rights and is projected to occur beneath one additional spring with a water right. Flow from 17 springs is collected in ponds or troughs. Three springs are considered to be primarily used by wildlife.

Springs. Map HM-5 indicates 52 springs occur within the proposed permit area. Total discharge from springs is approximately 300 gpm (Annual Hydrologic Monitoring Reports, 1979-1988). Springs occurring in the North Horn Formation account for approximately 50 percent of the total spring discharge.

Table HT-2 summarizes water quality samples collected at 12 springs from 1979 through 1987. These data indicate water quality degrades in terms of TDS, SO₂, Ca, Mg, Na, K and Hardness as it passes through the Flagstaff Limestone and North Horn Formation and into the Price River Formation. The applicant also recognizes increases in TDS from north to south and suggests this change is due to an overall southerly direction in ground-water flow (Appendix XX, page 20).

Mine Water. Mine water is currently monitored at six locations in the Cottonwood/Wilberg Mine (Map HM-3). In the past, the applicant has monitored 53 separate mine inflows until they ceased flowing. Most mine inflows have been associated with sandstone channels (Maps HM-3).

Data from mine inflows and underground boreholes indicate water quality undergoes further degradation as it moves vertically through the East Mountain aquifer system (Table HT-3). Total mine inflow is estimated to be 47 gpm (Annual Hydrologic Monitoring Reports for 1988, page 56) and mine water discharge is approximately 15 gpm.

Most of the mine inflow is directed to the main Cottonwood/Wilberg Mine sumps (Figure HF-5). A portion of the sump water is utilized for underground mining operations and the remainder is discharged to the Left Fork of Grimes Wash according to the approved UPDES permit (Appendix XX, page 21). Mine inflow that does not report to the main sump is discharged at Miller Canyon according to an approved UPDES permit (Appendix XX, page 21).

Mining Methods. Longwall mining has occurred in the Hiawatha seam beneath Sections 15 and 22 (T17S, R7E) adjacent to the Deer Creek Fault and in portions of Section 29 and 28 (T17S, R7E) south of the Left Fork of Grimes Wash (Map 4-5). Six springs overlie these previously mined areas.

Longwall mining is continuing to occur in the Hiawatha seam in the remaining portions of Sections 28 and 29 (T17S, R7E) and is projected to occur in portions of Sections 32 and 33 (T17S, R7E) during the proposed permit term. One spring (84-56) overlies these areas of current and projected mining where overburden thickness is approximately 1500 feet (Map 2-10).

The Blind Canyon seam occurs in Sections 17, 18, and 19 (T17S, R76) and Sections 13 and 24 (T17S, R6E). These resources have been dedicated to the Cottonwood/Wilberg Mine. Mining is projected to begin, near the end of the proposed permit term, in this area during 1994 (Map 3-2). Nine springs overlie this area where overburden thickness ranges from 1250 to 2000 feet. (Maps HM-5 and 2-11).

Compliance

Surface Water -DW

The applicant has provided the necessary facilities to treat all disturbed drainage. The applicant provides plans that address erosion control methods, including designs for riprap protection.

The reclamation of the Cottonwood/Wilberg Mine area will be achieved in a manner which will safeguard against any long term adverse changes to the hydrologic balance.

The applicant will be in compliance with the surface water portion of this section when the following stipulation is met.

Ground Water - (RVS)

The applicant provides information about the use, occurrence and characteristics of ground-water resources within and adjacent to the permit area. Moreover, the extent and location of underground mining activities (past, present and future) have been identified and described.

Springs. Baseline and operational spring monitoring data are available to superimpose over projected areas of mining to identify potential impacts to the East Mountain ground-water resources. Although overburden thickness in conjunction with extraction methods suggests minimal longwall-induced aquifer deformation, the applicant recognizes that the potential for impacts to spring recharge and discharge above mine workings and productivity of ground water resources cannot be disregarded. The applicant proposes to conduct water monitoring at representative springs to identify longwall-induced mining impacts.

Mine Inflow. Mine inflow rates have been quantified and a suite of data indicates ground-water quality degrades as it vertically moves through permeable lithologies that occur on East Mountain.

Mine water discharge has occurred at the Left Fork of Grimes Wash and Miller Canyon Breakout. During 1988, no water was discharged to the Left Fork of Grimes Wash and 700,000 gallons were discharged at Miller Canyon (Annual Hydrologic Monitoring Report for 1988).

Mine development during the proposed permit term will primarily occur in Sections 28, 29, 32 and 33 (T17S, R7E) where ground-water resources appear to be more limited. Accordingly, it is anticipated that mine inflow will not significantly increase during the proposed permit term.

The applicant is in compliance with the ground-water portion of this section.

Stipulations UMC 817.41-(1)-(DW)

1. Within 30 days of permit approval, the applicant must submit a complete reclamation plan for the Cottonwood Fan Portal area. This plan must include calculations and designs for channel or drainage restoration according to the 100-year 24-hour event, if appropriate.

UMC 817.42 Hydrologic Balance: Water Quality Standards and Effluent Limitations-(DW)

Existing Environment and Applicant's Proposal

All disturbed area drainage at the Cottonwood/Wilberg Mine area is passed through a series of sedimentation ponds which discharge into Grimes Wash. All the undisturbed drainage is diverted around the disturbed areas by means of ditches and culverts and subsequently, discharged into Grimes Wash.

The same scenario exists at the Cottonwood Fan Portal area except all water is discharged into Cottonwood Creek. (Appendix XIII).

Mine water from the Cottonwood/Wilberg Mine is discharged in two locations: the Left Fork of Grimes Wash and Miller Canyon. Both locations are monitored according to an approved plan and are UPDES discharged points. (Appendix XX, Chapter I, Part E, page 21).

Compliance

Any discharge to either Grimes Wash or Cottonwood Creek is adequately treated to achieve compliance with all applicable state and federal effluent limitations.

Sedimentation ponds and other treatment facilities will be maintained until the disturbed area has been restored and the vegetation requirements of UMC 817.111-117 are met and the quality of the untreated drainage from the disturbed area meets all applicable state and federal water quality standards as described in Part 4, pages 4-2 through 4-7 of the PAP.

Drainage from the underground workings is passed through a series of sumps and then an oil skimmer before being discharged at two approved UPDES points (Appendix XX, Chapter I, Part E, page 21).

The applicant is in compliance with this section.

Stipulations

None.

UMC 817.43 Hydrologic Balance: Diversions and Conveyance of Overland Flow, Shallow Ground Water Flow, and Ephemeral Streams-(DW)

Existing Environment and Applicant's Proposal

All temporary diversions were designed and constructed according to the new Utah Rules Pertaining to Coal Mining and Reclamation Operations and the current 30 CFR. The design storm was the 10-year 6-hour event.

Compliance

Cottonwood/Wilberg Mine area: Disturbed and undisturbed drainage diversions and conveyance systems are all adequately sized to pass the 10-year 6-hour storm.

Cottonwood Fan Portal area: Disturbed and undisturbed temporary diversions and conveyance systems are designed to adequately pass the 10-year 6-hour storm (Appendix XIII).

No permanent diversions exist.

Ditches UD-3, UD-4 and UD-5 at the Cottonwood Fan Portal area have riprap linings. Linings with D50 of 1.5 feet and filter blankets of a 12-inch thick layer of Type II granular bedding were included (Appendix XIII, page 8). Ditch DD-5 drains a disturbed area which is not treated with a sedimentation pond. Four gabion structures are used to effectively trap any sediment, slow erosive velocities of any flow and act as energy dissipators.

Ditches UD-3 and UD-4 at the Cottonwood/Wilberg mine area have riprap linings with D50 of 1.5 feet. Filter blanket gradation of a 12-inch thick layer of Type II granular bedding was included. This will prevent failure of the fine grained subsoils (Appendix XIII, page 31).

All temporary diversions at the Cottonwood/Wilberg mine area will be removed and the affected area reclaimed when the structures are no longer needed. (Part 4, pages 4-2 through 4-7).

All temporary diversions have been designed with adequate freeboard of 0.5 feet (Appendix XIII).

The applicant is in compliance with this section.

Stipulations

None.

UMC 817.44 Hydrologic Balance: Stream Channel Diversions-(DW)

Existing Environment and Applicant's Proposal

This regulation covers any diversion of flow from perennial and intermittent streams which drain areas greater than one square mile. UA-1 and UA-6, undisturbed areas at the Cottonwood/Wilberg mine area meet this criteria. (Appendix XIII).

These temporary diversions were designed according to the new Utah Rules Pertaining to Coal Mining and Reclamation Operations and the current 30 CFR. The design storm was the 10-year 6-hour event.

Compliance

The longitudinal profile of the stream, channel and floodplain were designed and constructed to remain stable and to prevent additional contributions of suspended solids to streamflow or to runoff outside the permit area. (Appendix XIII).

These ditches will be reclaimed according to the reclamation plan described in Part 4, pages 4-2 through 4-7. The natural drainage pattern will be restored to establish a shape with environmentally acceptable gradient, cross sections, riffles, pools, and drops that approximates natural stream channel characteristics.

The applicant is in compliance with this section.

Stipulations

None.

UMC 817.45 Hydrologic Balance: Sediment Control Measures-(DW)

Existing Environment and Applicant's Proposal

The applicant has provided plans for sediment and erosion control (Appendix XIII). All drainage from disturbed areas is treated by conveying drainage to sediment ponds or effectively treating the water with alternative sediment control measures (i.e. gabion structures).

Compliance

The ability to effectively treat disturbed drainage has been demonstrated by the applicant meeting effluent limitations at UPDES discharge points and not degrading the overall water quality from undisturbed and disturbed areas. Documentation is given in both Appendix XX (Hydrology) and the applicant's annual report for 1988.

Water produced in-mine is treated in a series of sumps located in 1st North and Wilberg Main. These sumps act as settling basins to effectively remove settleable solids. Mine water discharge is passed through an oil skimmer in accordance with the stipulations of the Cottonwood/Wilberg Mine Discharge Permit UT-0022896-01. Mine water then is subsequently discharged into the Left Fork of Grimes Wash. Small quantity discharges occur at the Miller Canyon breakout, after undergoing treatment. This discharge is in accordance with the stipulations of Cottonwood/Wilberg Mine Discharge Permit UT-0022896-04.

The applicant is in compliance with this section.

Stipulations

None.

UMC 817.46 Hydrologic Balance: Sedimentation Ponds-(DW)

Existing Environment and Applicant's Proposal

All disturbed area surface drainage is passed through one, or a series of sedimentation ponds, with the exception of one region at the Cottonwood Fan Portal area. Four gabion structures are in place (area DA-4).

The ponds were sized according to the new Utah Rules Pertaining to Coal Mining and Reclamation Operations and the current 30CFR. This involves total containment of at least one year of sediment and the 10-year 24-Hour storm volume. Temporary inlet structures are sized to pass the 10-year 6-hour event and emergency decant structures for the 25-year 6-hour event.

Primary decant devices exist on the two Cottonwood/Wilberg Mine area ponds. Decants consist of one, three inch diameter pipe for each pond. The ponds at Cottonwood Fan Portal area do not have primary decant devices.

Compliance

Cottonwood/Wilberg Mine area - The total runoff volume produced from a 10-year 24-hour event is 2.9 acre-feet. One year sediment volume, calculated using .1 acre-feet of sediment/acre of disturbed land and a sediment delivery ratio of 64.5 percent, was 0.85 acre-feet. The total volume needed between the two ponds is 3.75 acre-feet. The two ponds contain 4 acre-feet of storage volume.

Cottonwood Fan Portal area-north pond - Calculations were made in the same manner as previously described.

Runoff volume, 10-year 24-hour storm	- 0.008 acre-feet
Sediment volume, 1 year accumulation	- 0.118 acre-feet
Combined, total pond volume needed	- 0.126 acre-feet*
Actual pond volume	- 0.100 acre-feet*

* The method used to estimate sediment volume overestimates actual amounts under most conditions. The 0.026 acre-foot discrepancy can be attributed to this fact. The pond is sized correctly.

Cottonwood Fan Portal area-south pond - Calculations were made in the same manner as previously described.

Runoff volume, 10-year 24-hour storm	- 0.267 acre-feet
Sediment volume, 1 year accumulation	- 0.300 acre-feet
Combined, total pond volume needed	- 0.567 acre-feet
Actual pond volume	- 0.600 acre-feet

A breakdown of the applicant's calculations are found in Appendix XIII.

Four rock gabion structures are effectively being used as sediment traps, controlling runoff and erosion from DA-4 at the Cottonwood Fan Portal area.

All above ponds meet effluent limitations according to their UPDES permits. (See 1988 Annual Hydrologic Monitoring Report and Appendix XX).

The applicant will remove sediment from the ponds when the volume of sediment accumulates 60 percent of the design sediment storage volume (1 year accumulation). See pages 3-26 and 3-33.

Each pond was designed, constructed and is inspected under the supervision of a registered professional engineer.

The sedimentation ponds will be maintained and remain functional until the disturbed area has been reclaimed. Drainage entering ponds meets the applicable state and federal water quality standards for the receiving streams. After pond removal, the areas will be regraded and revegetated. See pages 4-2 through 4-7.

The applicant is in compliance with this section.

Stipulations

None.

UMC 817.47 Hydrologic Balance: Discharge Structure-(DW)

Existing Environment and Applicant's Proposal

Discharge structures have been sized for the 25-year 6-hour event according to the new Utah Rules Pertaining to Coal Mining and Reclamation Operations and the current 30CFR.

Compliance

Discharge structure designs are adequate to meet the requirements of this section.

The operator is in compliance with this section

Stipulations

None.

UMC 817.48 Hydrologic Balance: Acid and Toxic Forming Materials-(HS)

Existing Environment and Applicant's Proposal

The applicant commits to covering any toxic-and/or acid-forming material with four feet of material (Appendix VII, page 7).

Procedures to identify acid-and toxic-forming materials and coal/rock ratio within the Waste Rock Storage area are described in Appendix VII, pages 8, 9 and 12.

Compliance

The applicant's proposal for identifying acid-and toxic-forming materials does not adequately address the requirements of this section.

Analysis of disposed material in waste rock cells 1 through 6 has not been submitted. The waste rock cells are not designed to bury acid-and toxic-forming materials (Appendix VII, Figures 1 and 2).

Data given in Appendix VII, Table 2, indicate roof and floor materials have unacceptable levels of SAR (Mean = 17.36 S.D. = 15.14). High SAR's may detrimentally affect revegetation.

Appendix VI Coal Lithologic Log, Drill Hole EM-23 C indicates a low pH (3.3, 2.9, 3.7) within the mudstone and siltstone directly below the Hiawatha seam. Additionally, roof and floor analyses (Appendix VII, Table 2) indicate high FeS₂ (pyritic/marcasite) levels (% FeS Mean = 8.15 S.D. = 10.82). These materials may be detrimental to surface and ground water as well as established vegetation.

The applicant will be in compliance when the following stipulation is met.

Stipulation UMC 817.48-(1)-(HS)

1. With 30 days of permit approval, the applicant must submit: (1) Previous waste rock data collected from the completed waste rock cells (1 through 6); (2) Laboratory analysis of previously collected roof and floor samples, and sample location map; (3) A commitment to annually monitor roof, floor, and midseam material for its potential acid- and/or toxic-forming characteristics according to Division's Guidelines for the Management of Topsoil and Overburden (i.e. Water soluble Selenium and Boron, Clay Content, pH, Acid-Base Potential, SAR, E.C.); (4) a commitment to properly bury or otherwise treat all acid-and toxic-forming materials within 30 days of initial exposure at the mine site.

UMC 817.49 Hydrologic Balance: Permanent and Temporary Impoundments-(DW)

Existing Environment and Applicant's Proposal

No permanent or temporary impoundments are proposed to be left in place following final reclamation. Sedimentation ponds at the

Cottonwood/Wilberg Mine area will be left in place during initial reclamation and through the bonding liability period. (See Part 4, pages 4-2 through 4-7).

The Cottonwood Fan Portal area also has no permanent impoundments.

Compliance

No permanent impoundments will be retained and temporary impoundments meet the requirements of UMC 817.46.

The applicant is in compliance with this section.

Stipulation

None.

UMC 817.50 Hydrologic Balance: Underground Mine Entry and Access Discharge -(DW)

Existing Environment and Applicant Proposal

Rocks in the mine plan and adjacent areas strike northeast and dip approximately three degrees to the northwest. However, northwest of the Straight Canyon Syncline, the dip is generally southeast. Mine inflow is measured to be 46 gpm and is collected in two sump areas prior to discharge or in-mine use. Mine inflow is of marginal quality with high historical concentrations of calcium, magnesium, chloride and sulfate.

Portals are up dip from the workings and located at elevations ranging from 7300 to 7600 feet. Due to the Straight Canyon Syncline, the Cottonwood Fan Portal is located at the lowest elevation. A gravity drain piping system will be implemented at this site during final reclamation (portal sealing) to alleviate concerns of direct discharge after abandonment. This will accommodate the flooding of workings and associated build-up of hydraulic head.

Compliance

Portals have been located and constructed to control gravity discharge from the mine. The mine currently experiences inflow of marginal water quality.

Following mine closure, workings will flood and unplanned discharges of marginal water quality may occur. The applicant commits to monitoring unplanned discharges after mining for compliance with UMC 817.42 and other applicable state and federal regulations. Monitoring will be conducted quarterly (as accessible) and treatment will be initiated, if necessary, during the period of discharge or until bond release (Appendix XX, page 21).

The applicant is in compliance with this section.

Stipulations

None.

UMC 817.52 Surface and Groundwater Monitoring-(DW)

Existing Environment and Applicant's Proposal

The applicant monitors streams (Hydrology Map, 1988 Annual Hydrologic Monitoring Report), springs (Spring Map, 1988 Annual Hydrologic Monitoring Report), mine water discharge, sediment pond outlets (both under UPDES regulation) and mine inflow (Map #4, 1988 Annual Hydrologic Monitoring Report) locations. Current monitoring plans are discussed in the 1988 Annual Hydrologic Monitoring Report.

Compliance

The applicant monitors both surface and ground water following the Division's Water Monitoring Guidelines. Monitoring is adequate to measure any changes in the hydrologic balance.

The applicant submits quarterly reports that include laboratory analyses and field parameters. Long term effects are addressed in annual reports.

Monitoring will continue through the cessation of mining activities and the reclamation of all surface disturbed areas. Monitoring points prior to and directly after the final sedimentation pond will be implemented during this time at the Cottonwood/Wilberg Mine area (See Chapter IV, Appendix XX). No reclamation monitoring plan has been established for the Cottonwood Fan Portal area.

The applicant will be in compliance when the following stipulation has been met.

Stipulation UMC 817.52-(1)-(DW)

1. Within 30 days of permit approval, the applicant must submit a reclamation water monitoring plan for the Cottonwood Fan Portal area.

UMC 817.53 Hydrologic Balance: Transfer of Wells-(DW)

Existing Environmental and Applicant's Proposal

The applicant does not propose to transfer exploratory or monitoring wells. Therefore, this section is not applicable.

Stipulations

None.

UMC 817.55 Hydrologic Balance: Discharge of Water into an Underground Mine-(DW)

Existing Environment and Applicant's Proposal

The applicant currently does not discharge or transfer water between underground workings. All water produced in the mine is either used for mining, dust suppression, culinary purposes, or is discharged to the Right Fork of Grimes Wash, or at the Miller Canyon breakout under UPDES regulation. Locations of the breakouts can be found on the Hydrology Map, 1988 Annual Hydrologic Monitoring Report.

Compliance

Water produced and subsequently discharged from the Cottonwood/Wilberg Mine workings does not show any water quality problems or potential detrimental impacts to the hydrologic balance.

The applicant is in compliance with this section.

Stipulations

None.

UMC 817.56 Hydrologic Balance: Postmining Rehabilitation of Sedimentation Ponds, Diversions, Impoundments, and Treatment Facilities-(DW)

Existing Environment and Applicant's Proposal

The applicant does not propose to retain ponds, diversions or culverts following final reclamation.

Compliance

This section is not applicable.

Stipulations

None.

UMC 817.57 Hydrologic Balance: Stream Buffer Zones-(DW)

Existing Environment and Applicant's Proposal

Grimes Wash below the mine contains a biologic community as described under paragraph (c) of this rule and therefore, must be protected and a buffer zone established.

Above the mine, both Right and Left Forks of Grimes Wash are ephemeral and cannot be determined to have a community as described under paragraph (c).

The main drainage through the Cottonwood/Wilberg Mine area was completely interrupted during construction of the surface facilities. The undisturbed drainage from above the site is transferred to below the site by an extensive culvert system (See Appendix XIII). The reclamation plan contained in Part 4 outlines methods of stream channel rehabilitation which will establish a biologic community described in paragraph (c) of this rule.

Compliance

Proposed upgrades to the hydrologic system which include drop structures, steps and energy dissipators will enhance stream habitat following reclamation (See Part 4).

All sensitive areas are identified and protected as critical stream habitat by buffer zones.

The applicant is in compliance with this section.

Stipulation

None.

UMC 817.59 Coal Recovery-(PGL)

Existing Environment and Applicant's Proposal

The applicant has an approved Resource Recovery and Protection Plan (R2P2) issued August 17, 1982 by the Bureau of Land Management (BLM). Recovery methods to obtain the maximum amount of coal are described on page 3-13.

Compliance

The applicant is conducting mining operations so as to maximize the utilization and conservation of coal at the Cottonwood/Wilberg Mine.

The applicant is in compliance with this section.

Stipulations

None.

UMC 817.61-.68 Use of Explosives-(PGL)

Existing Environment and Applicant's Proposal

There are no explosive storage and handling facilities at the Cottonwood/Wilberg Mine (page 3-52.1). Therefore, this section is not applicable.

UMC 817.71-.74 Disposal of Underground Development Waste and Excess Spoil-(WAW)

Existing Environment and Applicant's Proposal

The applicant's proposal for the Waste Rock Storage area is contained in Appendix VII. The applicant presently disposes underground development waste, sediment from sedimentation ponds, and trommel reject in a 16-acre site which is part of an approved 48 acre BLM right-of-way. The present site is nearing capacity and the applicant plans to initiate a permit application for a new Waste Rock Storage area in mid 1989.

The Waste Rock Storage area is situated on a gently sloping (approximately seven percent slope) and naturally stable area (Exhibit 10, page 10). The disposal area is constructed of earthen retainment berms which incorporate topsoil or substitute soil medium for reclamation. Typical slopes of the berms are 2h:1v (Figures 1 and 2, DWG CM-10361-WB) with a varying top width. Drawing CM-10361-WB and as-built drawings KS1142E have been certified by a professional engineer. The earthen containment structures are designed to contain, without discharge, all storm runoff from a 10-year 24-hour storm event (page 4, Figures 1 and 2).

Fill material will be hauled by truck to the facility then placed in horizontal lifts two feet thick and compacted. The applicant also proposes to limit the coal/rock ratio to 50/50 (Appendix VII, page 8). During reclamation, the interior berms will be removed and used to cover the stored rock.

The applicant commits to conduct inspections quarterly and during critical construction periods. Reports will be submitted to the Division within two weeks of inspection and retained at the Huntington office (Appendix VII, page 11).

Compliance

The applicant's proposal addresses the designs and precautionary measures that will be taken to ensure surface and ground waters are not degraded, stability of the fill, and the land is reclaimed and revegetated. Topsoil or substitute soil mediums were collected and stored in the retainment berms for utilization during reclamation. The applicant has taken steps to minimize erosion including maintaining 2h:1v slopes and revegetation of disturbed areas.

The facility is located on a moderately sloping area (approximately seven percent), therefore, keyway cuts or rock toe buttresses are not required.

The fill material is placed in horizontal lifts, two feet thick, and compacted. The final configuration of the fill will be compatible with the postmining land use. The stability analysis demonstrates a safety factor of at least 1.5 (Appendix XVIII).

The applicant commits to continually inspect the site for stability on a quarterly basis and during critical construction periods.

The disposal area does not contain springs, natural or man-made water courses, or wet weather seeps, therefore, an underdrain system is not required. Also, adequate stability of the structure has been demonstrated and therefore the requirements of foundation or abutment testing are not required.

There are no plans to return underground development waste or excess spoil to underground workings.

The applicant is in compliance with this section.

Stipulations

None.

UMC 817.81-.88 Coal Processing Waste Banks: General Requirements-(PGL)

Existing Environment and Applicant's Proposal

The applicant disposes of coal processing wastes in the Waste Rock Storage area (See Appendix VII). This material is placed and

compacted in two foot horizontal lifts. The applicant commits to cover any acid-or toxic-forming materials with four feet of non-acid, non-toxic-forming materials.

No coal processing waste will be returned to underground workings.

Compliance

The construction, inspection, and reclamation plans for the Waste Rock Disposal area are adequate (see UMC 817.71-.74). Therefore, the disposal of coal processing waste in the Waste Rock Storage area meets the requirements of this section.

The applicant is in compliance with this section.

Stipulations

None.

UMC 817.89 Disposal of Non-Coal Waste-(PGL)

Existing Environment and Applicant's Proposal

A trash chute and collection box have been provided for disposal of non-coal waste material. When the dumpster is full it is transported to an approved landfill. During reclamation, the concrete trash chute and collection box will be demolished and used for backfill (page 3-43).

Compliance

The applicant's proposal for disposal of non-coal waste meets the requirements of this section.

The applicant is in compliance with this section.

Stipulations

None.

UMC 817.91-93 Coal Processing Waste: Dams and Embankments:
General Requirements-(PGL)

Existing Environment and Applicant's Proposal

There are no coal processing dams or embankments at the Cottonwood/Wilberg Mine. Therefore, this section is not applicable.

UMC 817.95 Air Resources Protection-(WAW)

Existing Environment and Applicant's Proposal

The applicant's Air Pollution Control Plan is found on pages 3-59 and 3-60. Fugitive dust control measures have been applied during construction of the facilities (i.e., dust collection system, pages 3-41 to 3-43) and will be applied throughout the life and subsequent reclamation of the site.

All service and haul roads at Cottonwood/Wilberg Mine are asphalt surfaced with the exception of the fan access.

Revegetation efforts have been implemented on all non-use areas in the portal yard, and will be repeated (as necessary) until vegetation is established (page 3-59).

Fugitive dust controls are implemented throughout the coal handling process. All conveyors are covered and equipped with belt scrapers. Dust collection systems with baghouses are located at the storage sites, crushing and cleaning facility, and the truck loadout (pages 3-59, 3-60). The high moisture content of the coal also aids in fugitive dust control.

Compliance

The applicant has implemented approved fugitive dust controls at the Cottonwood/Wilberg Mine facility, and has taken additional steps to ensure that fugitive dust is controlled (i.e. revegetation). Moreover, the State Department of Health determined that the applicant's proposal to modify the Cottonwood/Wilberg Mine to produce 6 million tons/yr. are consistent with the requirements of the Utah Air Conservation Regulations (UACR) and the Utah Air Conservation Act. No PSD permit is required for this source (letter dated January 31, 1985 from Brent C. Bradford, UAC committee).

The applicant is in compliance with this section.

Stipulations

None.

UMC 817.97 Protection of Fish, Wildlife, and Related Environmental Values-(BAS)

Existing Environment and Applicant's Proposal

Fish and wildlife resource information is located on: (1) pages 2-159 to 2-175 and page 4-50 et seq. (which includes a plan for fish

and wildlife protection); (2) Maps 2-19, 2-20a, and 2-20b; and (3) Appendix XVI. The Utah Division of Wildlife Resources (DWR) was the primary contributor, although the applicant, the U.S. Fish and Wildlife Service (USFWS), the U.S. Forest Service (USFS) and the Bureau of Land Management (BLM) provided supplemental information and input.

The most important biological concerns involve subsidence impacts to: (1) Nesting golden eagles (Appendix XVI); and (2) Hedysarum occidentale var. canone (page 2-107) and native vegetation as a result of slumping or talus deposition (pages 2-142.1 and 2-142.2). Evaluations of impact and impact mitigation plans are included in the above citations.

Compliance

The applicant has conducted aerial raptor surveys encompassing a 10-mile radius (Appendix XVI). Nests which may be jeopardized by mining disturbances are monitored annually.

The applicant has obtained the necessary permits from USFWS and DWR to take golden eagle nests in Newberry Canyon.

A commitment has been made to notify USFWS of nests and raptors not previously reported (page 4-52). Cliff subsidence will be monitored (pages 4-44 to 4-47), as well as subsidence impacts to nesting golden eagles (Appendix 16). Powerlines have been constructed to raptor safety standards, and have received USFWS approval (page 4-50).

No important fisheries occur within the permit area (page 4-50). Creeks and drainages in the impact zone of surface disturbance will be protected by diversions and dust control measures (page 4-51).

In the event that subsidence interrupts streamflow, the applicant commits to appropriate restoration (page 4-54). Springs or seeps which are lost for wildlife or livestock use will be replaced by guzzlers (page 4-54).

The applicant has committed to prevent, control and suppress range, forest, and coal fires (page 4-55).

Because wildlife habitat is a postmining land use (page 4-38), species selected for revegetation (page 4-19) have been selected on the basis of proven nutritional and cover values for wildlife.

The applicant will not use persistent pesticides, unless approved by the Division (page 4-55).

The applicant is in compliance with this section.

Stipulations

None.

UMC 817.99 Slides and Other Damage-(PGL)

Existing Environment and Applicant's Proposal

The applicant commits to notify the Division as soon as possible at any time a slide occurs which may have a potential adverse effect on health, safety, and the environment. Remedial measures, agreed upon by the applicant and the Division, will be employed to remedy the situation (page 3-73).

Compliance

The applicant's commitment meets the requirements of this section.

The applicant is in compliance with this section.

Stipulations

None.

UMC 817.100 Contemporaneous Reclamation-(BAS)

Existing Environment and Applicant's Proposal

The applicant has committed to revegetate, as contemporaneously as practicable, all disturbed areas which are no longer required for mining operations (pages 4-15 to 4-17).

Compliance

The applicant is in compliance with this section.

Stipulations

None.

UMC 817.101 Backfilling and Grading: General Requirements-(PGL)

Existing Environment and Applicant's Proposal

The applicant constructed several major cut and fill areas to provide sufficient working areas for the Cottonwood/Wilberg Mine facilities. The applicant proposes to regrade the mine facilities

area to the approximate premining topography. The grading plan for the facilities area is described on pages 4-1 through 4-5. Postmining topographic drawings (Plates 4-1 and 4-2) indicate the volumes of material to reclaim the area. Highwalls to be retained are shown on Plates 4-1 and 4-2 and justified on pages 4-7.1. The final configuration for the Cottonwood Fan Portal area is shown on Plate 3-14 and explained on pages 4-4-A and 4-5. A commitment to submit within 60 days prior to approval the stability analysis for the final reclaimed slopes demonstrating static safety factor of at least 1.5 was included on page 4-10.3.

Compliance

The applicant proposes to return the surface disturbances associated with Cottonwood/Wilberg facilities area and Cottonwood Fan Portal area to approximate original contours. All roads will be backfilled except for the haul road, which is a county road. The applicant's justification for retention of highwalls is adequate. The commitment to submit analysis slope stability of the fills after reclamation that demonstrates a safety factor of at least 1.5 meets the requirements of this section.

The applicant is in compliance with this section.

Stipulations

None.

UMC 817.103 Backfilling and Grading: Covering Coal and Acid-and Toxic-Forming Materials-(PGL)

Existing Environment and Applicant's Proposal

The applicant proposed a sampling program to detect the presence of acid-and toxic-forming materials (Appendix VII, pages 8, 9, and 12) at the Waste Rock Storage area. The applicant has committed to cover any acid-and toxic-forming materials with four feet of non-toxic and non-acid forming materials (Appendix VII, pages 7 and page 4-6).

Compliance

The applicant's commitment to bury any acid-or toxic-forming materials at the Waste Rock Storage area meets the requirements of this section.

The applicant is in compliance with this section.

Stipulations

None.

UMC 817.106 Regrading or Stabilizing Rills and Gullies-(PGL)

Existing Environment and Applicant's Proposal

The applicant commits to fill, regrade and otherwise stabilize rills and gullies which develop in areas that have been regraded and topsoiled (page 4-6).

Compliance

The applicant's commitment meets the requirements of this section.

The applicant is in compliance with this section.

Stipulations

None.

UMC 817.111 Revegetation: General Requirements-(BAS)

Existing Environment and Applicant's Proposal

Following completion of topsoiling and seedbed preparation, the final revegetation plan will be implemented (pages 4-18 to 4-20.1).

The final revegetation seed mix consists of six grass, six forb, four shrub, and two tree species, and follows USFS recommendations. Plantings of trees and shrubs will take place in the spring, following final reclamation (pages 4-20 and 4.20.1). Seed will be hand-broadcast with a hurricane spreader or applied by hydro-seeder at a rate of 83 Pls/ft² (page 4-20). Woody plants will be hand-planted at a rate of 1600 stems/acre. Mulch will be applied as described under UMC 817.114. Fertilizer will be incorporated, if soil test results warrant.

Compliance

The applicant has provided an acceptable revegetation plan, which will be followed, except where interim revegetation and test plot results dictate otherwise. All changes will be contingent upon prior Division approval (page 4-18).

All plant species in the final revegetation seed mix (page 4-19) are perennial, and capable of succession and regeneration.

Bond liability will continue for not less than 10 years. Sampling efforts, described on pages 4-20.2 and 4-20.3, will document whether vegetation is at least equal in extent to the reference area vegetation parameters, which are described on pages 2-101 to 2-114.

Revegetation methods, materials and timetables, are expected to achieve a permanent and diverse vegetative cover and recovery of pre-disturbance productivity.

The applicant is in compliance with this section.

Stipulations

None.

UMC 817.112 Revegetation: Use of Introduced Species-(BAS)

Existing Environment and Applicant's Proposal

Three introduced species are proposed for use in the final revegetation seed mix (page 4-19). An additional three species are proposed for interim revegetation (pages 4-15 and 4-16). These are smooth brome, crested wheatgrass, intermediate wheatgrass, small burnet, alfalfa, and yellow sweetclover. Each was recommended by the USFS as being: (1) consistent with regional forest management plans, and (2) adapted to the area to be reclaimed.

Compliance

The applicant proposes to test the revegetation seed mix, provided by USFS, as justification for the inclusion of introduced species. Proposed field trials are described on pages 4-17 to 4-19. A further justification, the applicant reported greenhouse study results, involving each species. Publications were cited, affirming the desirability of each species (pages 4-18.4, 4-18.5).

Inasmuch as all species in the seed mix (page 4-19) are present on the Manti-LaSal National Forest, all introduced species are believed to be compatible with the regional flora. As all species are highly palatable, compatibility with regional animal species may also be assumed.

The applicant is in compliance with this section.

Stipulations

None.

UMC 817.113 Revegetation: Timing-(BAS)

Existing Environment and Applicant's Proposal

Where necessary to effectively control erosion on disturbed areas before final reclamation, seeding and planting will take place as contemporaneously as practicable with completion of backfilling and grading (page 4-15). Where circumstances prevent immediate seeding, hand or mechanized tilling will be employed to break the surface crust (page 4-16). On interim reclamation, a 60 percent ground cover on the majority of the revegetated area will serve as the criterion for success--provided erosion has been adequately controlled (page 4-17).

Final reclamation seeding will take place contemporaneously with soil grading. Time of seeding will be late fall or early spring (page 4-18). If time lapses between seedbed preparation and seeding, any surface crust which develops will be broken up mechanically or by hand (page 4-19).

If over a month lapses between seedbed preparation and seeding, the soil will be protected with a mulch cover which will be mechanically or chemically anchored (page 4-18).

Compliance

The applicant meets the requirements of this section by proposing to: (1) seed immediately after seedbed preparation, during the normal period for favorable planting conditions (i.e., late fall or early spring), and (2) protect the soil with a temporary vegetative cover or mulch.

The applicant is in compliance with this section.

Stipulations

None.

UMC 817.114 Revegetation: Mulching and Other Soil Stabilizing Practices-(BAS)

Existing Environment and Applicant's Proposal

The applicant has opted to choose from among three types of mulch: (1) two tons per acre of hay mulch, anchored with plastic netting; (2) commercial erosion-control blanket, anchored per manufacturer's specifications; and (3) one ton per acre chemically tackified hydromulch (page 4-20).

The relative benefits of each will be tested in the applicant's test plots (page 4-17 to 4-19). Test plot results will influence ultimate mulch choice.

Compliance

All three mulch options, rates of application, and methods of anchoring meet the requirements of this section.

The applicant is in compliance with this section.

Stipulations

None.

UMC 817.116 Revegetation: Standards for Success-(BAS)

Existing Environment and Applicant's Proposal

Success of revegetation will be measured by comparison with approved reference areas. Three reference areas have been established to represent pre-disturbance vegetation types for the mine's disturbed areas. Locations of reference areas are depicted on Plate 2-15.

Vegetative parameters of each reference area have been measured. Methods and results of all reference area sampling are described on pages 2-101 to 2-142.

The applicant commits to reassessment of the range condition of all reference areas at five year intervals to assure that they will be maintained in fair or better condition (page 4-20.2).

Compliance

Bond liability will continue for not less than 10 years under the conditions of this section.

Ground cover, woody plant density and production shall be considered equal to their respective reference area counterparts, when there is 90 percent success at 90 percent statistical confidence (page 4-20.2).

Monitoring commitments (pages 4-20.1, 4-20.2, and 4-21) are adequate to document progress toward realization of reclamation objectives. Should problems occur, requiring maintenance or repair work, the applicant has committed to take appropriate action (page 4-20.1).

The applicant is in compliance with this section.

Stipulations

None.

UMC 817.117 Revegetation: Tree and Shrub Stocking for Forest Land-(BAS)

Existing Environment and Applicant's Proposal

All surface-disturbed land is owned and managed by USFS (Map 1-2). Although limited timber harvest may occur within the permit area (Map 2-19), the disturbed area is non-commercial forest land, and as such, falls under part (c) of this section.

The applicant has adopted USFS species recommendations for both trees and shrubs (page 4-19). Recommended stocking levels, however, were increased fourfold to 1600 stems/acre in order to meet reference area woody plant density standards (1461 shrubs and 78 trees, per page 2-110). Trees and shrubs will be planted in the spring.

Compliance

The applicant has satisfied USFS requirements in adopting that agency's recommendations for both species and stocking levels. The applicant commits to establishment of 90 percent of the stocking level of live, woody plants of the same life form of the approved reference areas with 90 percent statistical confidence (pages 4-20.2, 4-20.3).

Measurement of tree and shrub density will utilize the approved point-quarter method (page 4-20.2).

The applicant is in compliance with this section.

Stipulations

None.

UMC 817.121-.126 Subsidence Control-(RVS)

Existing Environment and Applicant's Proposal

The applicant provides information about subsidence on pages 4-41 through 4-49, Appendix XVI, and Maps 4-4 and 4-5. Supplementary subsidence information is provided in the Annual Subsidence Monitoring Reports from 1980 to 1988, and the document entitled "Assessment of Mining Related Impacts in Newberry Canyon, December 1987."

Mining will occur in the Hiawatha seam and Blind Canyon seam (Maps 2-4 and 2-5). Coal extraction will primarily occur by longwall methods (70 percent) with the remaining production occurring by continuous mining development (page 3-2). Multiple seam mining where the Blind Canyon seam directly overlies the Hiawatha seam will not occur during this permit term (Maps 3-1 and 3-2). The applicant estimates that maximum subsidence will be approximately 75 percent of extraction height (page 4-44). Accordingly, where a full ten feet are extracted, maximum subsidence is anticipated to be less than eight feet.

Overburden thicknesses range from approximately 500 to 2000 feet over longwall panels in the Hiawatha seam (Map 2-10). Whereas, overburden thicknesses range from 1600 to 2000 feet for longwall panels in the Blind Canyon seam (Map 2-11).

A review of the Annual Subsidence Monitoring Report for 1988 indicates 15 areas have undergone measureable vertical movement above the underground workings. An angle-of-draw was calculated for nine of the subsided areas. The average angle-of-draw is approximately 26 degrees. Map 4-5 shows areas where more than two feet of vertical movement has occurred.

Ground failure, both in the form of surface tension cracking and cliff spalling, has occurred in Newberry Canyon above and adjacent to extracted longwall Panels 6 East and 7 East. Major spalling has occurred along cliffs that overlie and parallel the long axis of panels whereas, lesser spalling has occurred along cliffs that overlie and parallel headgate and/or tailgate areas of panels. Tension cracks have developed above and adjacent to Panel 6 East. They are oriented approximately parallel to the long axis of the panel. Approximately 1200 feet of overburden is present where tension cracking occurred 500 feet north of Panel 6 East. Longwall mining of the Hiawatha seam is proposed to occur beneath cliffs in Sections 33 and 32, T17S, R7E. Approximately 3.0 miles of cliffs that have been identified as raptor nesting habitat will be undermined (Map 2-19A).

The applicant identifies renewable resource lands above areas of current and projected mining (page 4-41). The applicant concludes, on the basis of mining methods, overburden thickness and past mining experience that impacts to renewable resource lands will be minimal (Pages 4-41 through 4-44). However, when subsidence impacts occur, the applicant commits to restore surface lands to a condition capable of supporting reasonably foreseeable use (page 4-48). The applicant also commits to repairing structures such as roads, fences and stock ponds that are damaged by subsidence.

The applicant has monitored subsidence since 1980 by photogrammatic and conventional surveys. Five subsided areas were initially identified in the 1980 survey. Ten areas have been added to the monitoring program since 1984. The applicant has compared photogrammatry and conventional ground surveys for monitoring subsidence above the Cottonwood/Wilberg 5-13th Right workings. Data indicate the photogrammatic method of surveying provides more detail because of the greater number of surveyed stations (Map 4-4). Accordingly, the applicant proposes to conduct subsidence monitoring by photogrammatic methods (Appendix XVI and Map 4-4).

The applicant commits to conducting photogrammatic subsidence monitoring once a year and a field survey (surface traverse) twice each year, during the spring and fall (Appendix XVI, page 4). Results of surveys will be submitted to the Division on an annual basis (Appendix XVI, page 5). The applicant will notify surface owners of the mining schedule (page 4-49).

No perennial streams, significant aquifers, public buildings or major impoundments occur within the areas projected to be mined during the proposed permit term.

Compliance

The applicant has provided information about mining methods and locations, overburden thickness and lithology, vertical movement, renewable resource lands and structures.

Maximum subsidence of eight feet is projected for areas at the southern end of East Mountain, primarily within Section 32, 33, and 28, T17S, R7E. Spring 84-56 occurs in Sections 28 (Maps 3-1 and 4-5 where overburden thickness is approximately 1750 feet (Map 2-10). In early 1994, at the end of the proposed permit term, mining of the Blind Canyon seam is projected to begin in the Flag Lake Canyon and Roans Canyon area of East Mountain (Section 18 and 19, T17S, R7E and Sections 13 and 24, T17S, R6E). Springs 84-53, 79-32, 79-33, 79-26 and 79-27 occur (Map 4-5) within the area of proposed mining where maximum subsidence is also projected to be eight feet. Overburden thickness ranges from 1250 to 2000 feet beneath these springs (Map 2-11).

Longwall mining of the Hiawatha seam is proposed for areas that underlie cliffs. Mining in Panels 10th East and 17th West appear to pose the greatest risk for cliff spalling because the panels are oriented parallel to cliffs. Development in Panels 9th East and 13 West through 16th West will be at a somewhat lower risk for cliff spalling because panels are oriented perpendicular to the cliffs.

Although the cliff area has been identified as raptor nesting habitat, no nests are currently located above the proposed mine workings. No other renewal resources have been identified in the areas that may be impacted by cliff spalling.

Although subsidence monitoring data suggest a low potential for subsidence-induced surface impacts when overburden thickness is greater than 1,200 feet, the possibility of subsidence-induced material damage that results in the reduction of reasonably foreseeable use of surface lands cannot be excluded. Accordingly, the applicant has provided plans to restore surface lands and structures in compliance with UMC 817.24.

The applicant has provided a subsidence monitoring plan that describes surveying methods, schedules for collecting and submitting quantitative data as required by UMC 817.121 and notifying surface owners according to UMC 817.122.

Mining will not occur beneath structures or resources described under UMC 817.126. Therefore, the requirements of UMC 817.126 are not applicable.

The applicant is in compliance with this section.

Stipulation

None.

UMC 817.131-.132 Cessation of Operations -(PGL)

Existing Environment and Applicant's Proposal

The applicant commits that before cessation of mining and reclamation operations for a period of thirty (30) days or more, a Notice of Intention to Cease or Abandon Operation will be submitted to the Division (page 4-47.2).

The applicant proposes to permanently reclaim the Cottonwood/Wilberg Mine.

Compliance

The applicant's commitment to submit the Notice of Intention to Cease or Abandon Operations to the Division with all of the required information as well as conduct the required monitoring meets the requirements of this section.

The PAP meets the requirements to permanently reclaim the site.

The applicant is in compliance with this section.

UMC 817.133 Postmining Land Use-(BAS)

Existing Environment and Applicant's Proposal

Land use information is described on pages 2-175 to 2-182. Land uses within the permit area include mining, recreation, livestock grazing, wildlife habitat, and limited timber harvest.

Postmining land uses are described on pages 4-38 and 4-39. Primary uses are wildlife habitat and livestock grazing.

Compliance

The reclamation plan (Part 4) is compatible with postmining land uses, and will restore wildlife, recreation, and livestock uses, commensurate with those conditions which existed prior to mining.

The applicant is in compliance with this section.

Stipulations

None.

UMC 817.150-.176 Roads-(WAW)

Existing Environment and Applicant's Proposal

There are five facility roads at the Cottonwood/Wilberg Mine area: 1) haul road, 2) truck turn-around, 3) service road 4) portal road, 5) fan access road (page 3-52).

The haul road is a continuation of the plant access highway, State Road No. 57. It is 28 feet wide for two-way traffic, with a grade of 8 to 12 percent. Construction consists of a 6-inch thick gravel base course on a prepared subgrade, topped with a 6-inch thickness of asphalt. Super-elevations on curves are designed for speeds of 40-50 mph.

The truck turn-around is also 28 feet wide. The road is level from the point of exit from the haul road through the platform scale at the truck loadout bin and around the 180° turn heading back to the haul road. A vertical curve in the road provides the transition to a 12 percent slope matching the slope of the haul road at the

junction of the two roads. Construction of the truck turn-around is the same as the haul road. Super-elevations on curves are designed for speeds of 5-30 mph. The haul road and truck turn-around are used for the transportation of coal, and therefore, are defined as Class I roads.

The haul road was designed and constructed by the Utah Department of Transportation (UDOT). The truck turn-around was included in the Roberts and Shaefer Facilities Design and Certification (page 3-58). Road plans and cross sections are in Appendix IX and a copy of the road construction variance is in Appendix X.

The service road starts with a 150-foot long transition section at the junction of the haul road and truck turn-around and terminates at the upper storage yard. The service road is 20 feet wide for two way traffic, with a nominal grade of 12 percent.

The portal road starts at the upper storage area, then turns west at a 6 percent grade to the elevation of the facility portals where it follows the existing grade, approximately 3 percent. Surfacing of the road terminates near the promontory substation. From this point, the road turns into the fan access road.

The fan access road is a dirt road constructed along an existing alignment and is essentially level.

The Cottonwood Mine access utilizes the portal road, to a point adjacent to the upper storage yard where a spur road was cut along the western coal outcrop providing an access to the main portal and fan portal.

The service road, portal road, and fan access road are used more than six months out of the year and therefore, are classified as Class II roads.

A class II access road is proposed for the Cottonwood Fan Portal. The road will utilize an existing road that originally served the Old Johnson Mine (page 3-21). Plans and cross sections are depicted on Maps 3-7, 3-8, and 3-12.

Roads will be cleared of snow and debris as needed to maintain proper drainage and utility. Resurfacing of roads will be performed as needed to maintain grade and prevent erosion (page 3-55).

The applicant's proposal for reclamation of roads is discussed on pages 4-3 through 4-5. The asphalt and gravel road base from the service road and truck turn-around, and concrete in the lower parking lot will be removed and disposed on site. Material will be excavated from berms along roads, the upper and lower parking lots, Cottonwood/Wilberg Mine storage yard, and the upper storage yard to use as backfill for each facility area and adjacent road cuts. Final slopes will be 2h:1v. The unpaved access road at the Waste Rock Storage area will be scarified prior to revegetation.

Compliance

The applicant adequately addresses the designs, locations, maintenance, and reclamation of Class I and Class II roads. There are no existing or proposed Class III roads at the Cottonwood/Wilberg Mine.

Large sections of the Class I and Class II road grades exceed 10 percent and were granted a construction variance by the Division on May 25, 1978.

The applicant is in compliance with this section.

Stipulations

None.

UMC 817.180 Other Transportation Facilities-(PGL)

Existing Environment and Applicant's Proposal

The coal handling circuit at the Cottonwood/Wilberg Mine includes seven conveyors which are covered to prevent wind erosion. These conveyors are regularly maintained and will be dismantled and removed from the site (page 3-57).

Compliance

The applicant commits to maintain and reclaim the conveyors so that damage to fish, wildlife, and related environmental values are prevented.

The applicant is in compliance with this section.

UMC 817.181 Support Facilities and Utility Installations-(PGL)

Existing Environment and Applicant's Proposal

The Cottonwood/Wilberg Mine has a truck loadout and scales, rock dust and storage tank, concrete storage silo, 69 KV powerlines, exhaust fans, and a power substation (pages 3-47, 48, 68 and 70). These facilities are regularly maintained and will be removed at the end of the mine life.

Compliance

The support facilities associated with the Cottonwood/Wilberg Mine will be maintained throughout the life of the facility to prevent environmental degradation. All of these facilities will be removed at the end of mining.

The applicant is in compliance with this section.

Stipulations

None.

UMC 828.00 Prime Farmland Investigation-(HS)

Existing Environment and Applicant's Proposal

The applicant on page 2-181 asserts a negative prime farmland determination within or adjacent to the proposed permit area due to: (1) absence of historical cropland land use, (2) disturbed area slopes in excess of 10 percent, and (3) absence of a developed irrigation source.

The SCS affirms a negative prime farmland determination (page 2-181A), by their finding: (1) no prime farmland soils on the disturbed area, and (2) slopes too steep for irrigation.

Compliance

On the basis of a soil survey and field review of the lands within the permit area, there are no soil map units that may be designated prime farmland by the SCS.

The applicant is in compliance with this section.

Stipulations

None.

**LETTERS
OF
CONCURRENCE**

**CHRONOLOGY
UTAH POWER AND LIGHT COMPANY
COTTONWOOD/WILBERG MINE
ACT/015/019**

March 3, 1989	Utah Power and Light Company (UP&L) submits updated maps and text, initiating 5-year permit renewal process.
April 3, 1989	Division notifies state and federal agencies of permit renewal. Provides copies of updated text and maps.
April 7, 1989	Division completes Initial Completeness Review (ICR) and provides comment on preliminary technical deficiencies.
April 21, 1989	UP&L submits materials addressing the ICR.
April 24, 1989	Division issues Determination of Completeness. UP&L initiates public notice for four consecutive weeks.
June 5, 13, 19, 22, 28 and 30, 1989	UP&L submits materials addressing technical deficiencies.
July 6, 1989	Public comment period concludes with no adverse comments received. Division makes necessary findings. Permit issued.

**LETTERS
OF
CONCURRENCE**



State of Utah

DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

Norman H. Bangerter
Governor

Dee C. Hansen
Executive Director

Dianne R. Nielson, Ph.D.
Division Director

355 West North Temple
3 Triad Center, Suite 350
Salt Lake City, Utah 84180-1203
801-538-5340

July 6, 1989

TO: Richard V. Smith, Permit Supervisor
FROM:  Joseph C. Helfrich, Regulatory Program Coordinator
RE: Five-Year Permit Renewal, Utah Power and Light Company,
Cottonwood/Wilberg Mine, ACT/015/019, Folder #3, Emery County,
Utah

As of the writing of this letter, there are no NOV's or CO's which are not corrected or in the process of being corrected. Any NOV's or CO's that are outstanding are in the process of administrative or judicial review. There are no finalized Civil Penalties which are outstanding and overdue in the name of Utah Power and Light Company, or Pacificorp and associated mining entities.

Finally, they do not have a demonstrated pattern of willful violations, nor has either been subject to any bond forfeitures for any operation in the state of Utah.

cl
Attachment
BT37/19



State of Utah
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF WILDLIFE RESOURCES

Norman H. Bangerter
Governor
Dee C. Hansen
Executive Director
Timothy H. Provan
Division Director

1596 West North Temple
Salt Lake City, Utah 84116-3195
801-533-9333

*Copy sent to
Admitted by
CC R.V. Smith*

RECEIVED
APR 28 1989
DIVISION OF
OIL, GAS & MINING

April 25, 1989

Dr. Dianne R. Nielson, Director
Utah Division of Oil, Gas & Mining
355 West North Temple
3 Triad Center, Suite 350
Salt Lake City, Utah 84180

RE: Utah Power & Light's Five-Year Permit Renewal for Cottonwood/Wilberg Coal Mine

AR

Attn: Rick Smith and Brent Stettler

Dear Dianne:

The Division has reviewed the five-year permit renewal for Utah Power and Light Company's Cottonwood/Wilberg Coal Mine. The material presented is accurate and complete from a wildlife perspective. We have no concerns at this time relative to the permit renewal.

Thank you for an opportunity to review and provide comment.

Sincerely,

Timothy H. Provan
Timothy H. Provan
Director



State of Utah

Division of State History
(Utah State Historical Society)
Department of Community and Economic Development

Norman H. Bangertter
Governor
Max J. Evans
Director

300 Rio Grande
Salt Lake City, Utah 84101-1182
801-533-5755

April 27, 1989

RECEIVED
MAY 01 1989

DIVISION OF
OIL, GAS & MINING

Mr. Richard V. Smith
Acting Permit Supervisor
Division of Oil, Gas and Mining
355 West North Temple
3 Triad Center, Suite 350
Salt Lake City, Utah 84180-1203

RE: Updated Text and Maps, Five-Year Permit Renewal, Utah Power and Light Company, Cottonwood/Wilberg Mine, ACT/015/019, Folder #2, Emery County, Utah

In Reply Please Refer to Case No. K522

Dear Mr. Smith:

The Utah State Historic Preservation Office received the letter on the above referenced project on April 4, 1989. Portions of this proposed mine were surveyed for cultural resources by AERC in 1977 and resulted in the location of five prehistoric sites, one of which was considered eligible for the National Register. At the time, the archaeologist recommended that the area containing the prehistoric sites be avoided by construction activities. Similar recommendations for avoiding these sites could be made today.

Our office has no information on historic structures in the mine area which might qualify for the National Register. If any exist in the mine area that are older than 50 years of age, they may qualify for the National Register. Utah Power and Light may wish to evaluate any such structure for its National Register status, if they will be impacted by project activities.

This information is provided on request to assist the Utah Power and Light with its Section 106 responsibilities as specified in 36 CFR 800. If you have questions or need additional assistance, please contact me at (801) 533-7039.

Sincerely,

Diana Christensen
Regulation Assistance Coordinator

DC:K522/6894V OFR/NP

4477015/019 #2

SL-064900

RECEIVED
JUN 16 1989

Office of the District Mining Supervisor
2040 Administration Building
1745 West 1700 South
Salt Lake City, Utah 84104

DIVISION OF
OIL, GAS & MINING

August 17, 1982

Memorandum

To: Regional Director, Office of Surface Mining (OSM), Denver
From: District Mining Supervisor
Subject: Utah Power & Light Company, Wilberg Mine, Esery County,
Utah, Mining and Reclamation Plan

A modification dated July 1, 1982, to the subject plan was hand carried to this office on July 30, 1982, by Mary Boucek and Salley Kefer from the Division of Oil, Gas, and Mining (DOG&M), Utah. We were requested to review the one-volume document and send our comments through appropriate channels.

The document has been reviewed. Our comments follow:

This modification to the permit application is principally to make some additions to the surface plant. These additions will eventually handle the coal that will be mined from the newly acquired Federal coal lease U-47978.

The underground facilities associated with the proposed surface additions shown with this application are all located on Federal coal leases U-044025 and U-040151, which are presently being operated under the approved plans authorized by the 30 CFR 211 regulations dated May 17, 1976. The 211 regulations were amended August 22, 1978, and an updated mining and reclamation plan was submitted to OSM and DOG&M the forepart of 1981. Our review of this plan was completed on July 10, 1981.

The underground changes included in this submittal are not significant and will be handled by minor modifications to the approved plan, which directs the present mine operations.

The projected mine development into the new Federal coal lease U-044025 as shown on drawing CM-10415-WB is a major modification and is a part of the 1981 mining and reclamation plan now being reviewed by OSM and DOG&M.

The present coal handling facilities of the Wilberg mine are not adequate to handle the mined tonnages that will be required in the near future. The proposed new facilities will provide a coal handling system for both the Blind Canyon and Hiawatha seams in the Federal coal lease U-044025. This system will also have a potential of assisting in coal haulage from other Wilberg properties to the west.

This submittal is in conformance with Federal Regulations 30 CFR 211 and will not interfere with our administration of the Federal coal lease associated with the Wilberg mine. As restricted by our responsibilities we have determined that the plan is technically correct and should safely achieve maximum economic recovery of the coal reserve within the plan area.

Jackson W. Moffitt

cc: Denver
UP&L
DOGM
McKean (2)

JEMcKean:ot
1a/UPL-CSM.1

NOTICE

AFFIDAVIT OF PUBLICATION

STATE OF UTAH }
County of Emery, } ss.

I, Dan Stockburger, on oath, say that I am the General Manager of the 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.....Four (4).....consecutive issues, and that the first publication was on the 2nd...day of.....May....., 19..89..... and that the last publication of such notice was in the issue of such newspaper dated the

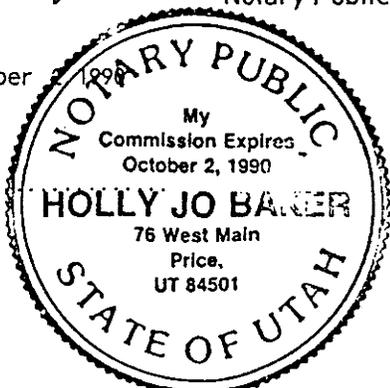
..... 23rd...day of.....May....., 19..89.....

[Signature]

Subscribed and sworn to before me this

..... 23rd...day of.....May....., 19..89.....

[Signature]
Notary Public.



My Commission expires October
Residing at Price, Utah

Publication fee, \$ 499.20.

Utah Power & Light Company, P. O. Box 899, Salt Lake City, Utah 84110, hereby announces its intent to file an application for renewal of a Coal Mining Permit for the Cottonwood/Wilberg Coal Mine with the Division of Oil, Gas and Mining under the laws of the State of Utah and the Office of Surface Mining.

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 State of Utah, Division of Oil, Gas and Mining, 355 W. North Temple, 3 Triad Center, Suite 350, Salt Lake City, Utah 84180-1203. Said comments must be submitted within thirty (30) days from May 24, 1989, the date of last publication of this notice.

The area to be mined is contained on the U.S.G.S. 7.5-minute "Red Point" and "Mahogany Point" quadrangle maps. A map depicting the general area of the Cottonwood/Wilberg Mine is published herewith.

Approximately 10,600 acres are contained in the permit area described as follows:

- Township 17 South, Range 6 East, SLM
Section 1: SE1/4, E1/2 SW1/4, S1/2 SE1/4 NE1/4, SE1/4 SW1/4 NE1/4;
Section 12: E1/2, E1/2 W1/2;
Section 13: E1/2, E1/2 W1/2;
Section 24: E1/2, E1/2 W1/2;
Section 25: N1/2 NE1/4, E1/2 NW1/4 SE1/4;
Township 17 South, Range 7 East, SLM
Section 6: Lots 9, 10, 11; W1/2 W1/2 SW1/4;
Section 7: Lots 1, 2, 3, 4; W1/2 NW1/4 NW1/4; SW1/4 NW1/4; S1/2;
Section 8: S1/2 SW1/4, S1/2 NW1/4 SW1/4, SW1/4 NE1/4 SW1/4, S1/2 S1/2 SE1/4, N1/2 SW1/4 SE1/4;
Section 9: S1/2 S1/2 SE1/4, SE1/4 NE1/4 SE1/4, S1/2 SW1/4 SE1/4, NE1/4 SW1/4 SE1/4, SE1/4 NE1/4 SE1/4;
Section 10: S1/2 SW1/4, S1/2 N1/2 SW1/4;
Section 15: N1/2, SW1/4;
Section 16: All
Section 17: All
Section 18: All
Section 19: All
Section 20: All
Section 21: All
Section 22: NW1/4, S1/2;
Section 27: NW1/4, N1/2 SW1/4, NE1/4;
Section 28: All
Section 29: All
Section 30: All
Section 31: Lot 1, E1/2, E1/2 W1/2;
Section 32: All
Section 33: N1/2, SW1/4, W1/2 SE1/4;
Section 34: S1/2 NW1/4, NW1/4 NW1/4, E1/2 SE1/4 NW1/4 NE1/4, S1/2 SE1/4 NE1/4, E1/2 NW1/4 NE1/4 SE1/4, NE1/4 NE1/4 SE1/4, N1/2 SE1/4 NE1/4 SE1/4, E1/2 NE1/4 SE1/4, NW1/4 NE1/4 SE1/4;
Section 35: NW1/4 SW1/4 SW1/4, W1/2 NE1/4 SW1/4 SW1/4, SW1/4 NW1/4 SW1/4, W1/2 NW1/4 NW1/4 SW1/4;
Township 18 South, Range 7 East, SLM
Section 4: NW1/4 NE1/4, N1/2 NW1/4;
Section 5: N1/2 NE1/4, NW1/4;
Township 17 South, Range 6 East, SLM
Section 25: NE1/4 SE1/4, SE1/4 NE1/4, E1/2 SW1/4 NE1/4;
Township 17 South, Range 7 East, SLM
Section 10: SW1/4 SE1/4, S1/2 SE1/4 SE1/4;
Section 11: S1/2 SW1/4 SW1/4;
Section 21 All

NOTICE

Utah Power & Light Company, P. O. Box 899, Salt Lake City, Utah 84110, hereby announces its intent to file an application for renewal of a Coal Mining Permit for the Cottonwood/Wilberg Coal Mine with the Division of Oil, Gas and Mining under the laws of the State of Utah and the Office of Surface Mining.

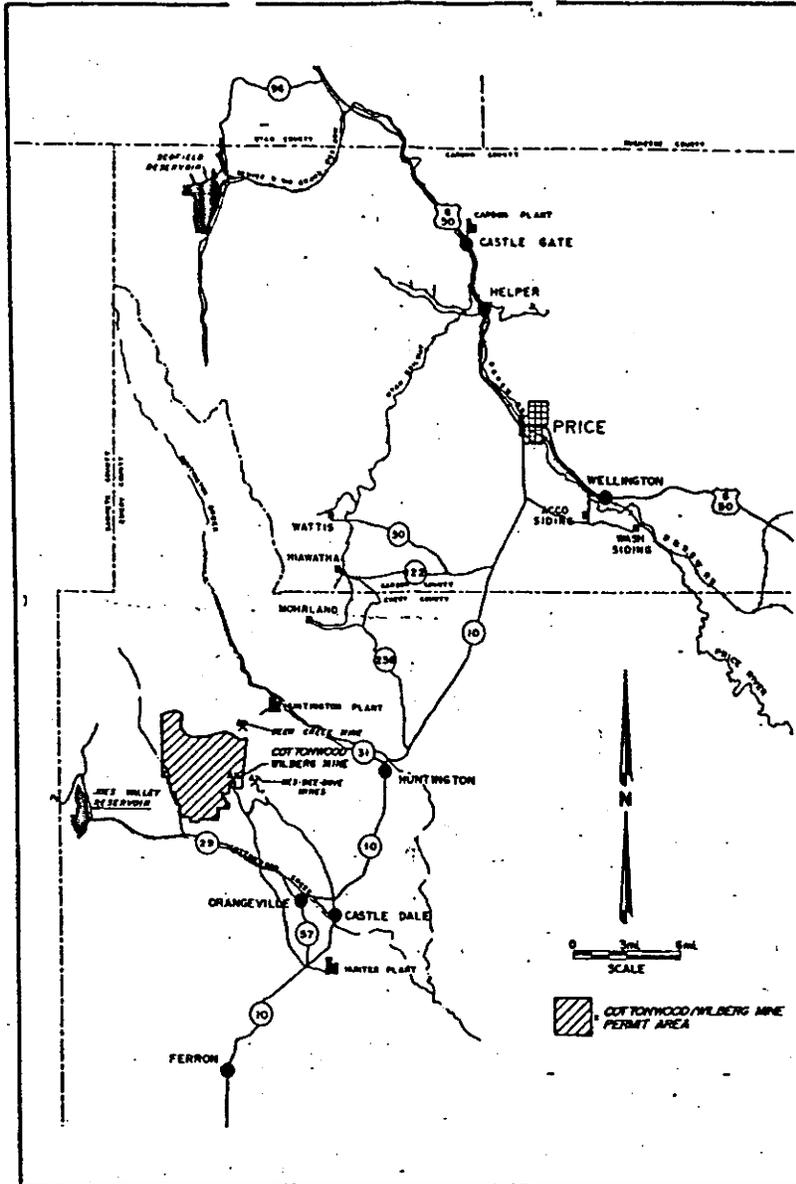
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- Section 12: E1/2, E1/2 W1/2;
- Section 13: E1/2, E1/2 W1/2;
- Section 24: E1/2, E1/2 W1/2;
- Section 25: N1/2 NE1/4, E1/2 NW1/4 SE1/4;
- Township 17 South, Range 7 East, SLM
- Section 6: Lots 9, 10, 11; W1/2 W1/2 SW1/4;
- Section 7: Lots 1, 2, 3, 4; W1/2 NW1/4 NW1/4; SW1/4 NW1/4; S1/2;
- Section 8: S1/2 SW1/4, S1/2 NW1/4 SW1/4, SW1/4 NE1/4 SW1/4; S1/2 S1/2 SE1/4, N1/2 SW1/4 SE1/4;
- Section 9: S1/2 S1/2 SW1/4, SE1/4 SE1/4, S1/2 SW1/4 SE1/4, NE1/4 SW1/4 SE1/4, SE1/4 NE1/4 SE1/4;
- Section 10: S1/2 SW1/4, S1/2 N1/2 SW1/4;
- Section 15: N1/2, SW1/4;
- Section 16: All
- Section 17: All
- Section 18: All
- Section 19: All
- Section 20: All
- Section 21: All
- Section 22: NW1/4, S1/2;
- Section 27: NW1/4, N1/2 SW1/4, NE1/4;
- Section 28: All
- Section 29: All
- Section 30: All
- Section 31: Lot 1, E1/2, E1/2 W1/2;
- Section 32: All
- Section 33: N1/2, SW1/4, W1/2 SE1/4;
- Section 34: S1/2 NW1/4, NW1/4 NW1/4, E1/2 SE1/4 NW1/4 NE1/4, S1/2 SE1/4 NE1/4, E1/2 NW1/4 NE1/4 SE1/4, NE1/4 NE1/4 SE1/4, N1/2 SE1/4 NE1/4 SE1/4, E1/2 NE1/4 SE1/4, NW1/4 NE1/4 SE1/4;
- Section 35: NW1/4 SW1/4 SW1/4, W1/2 NE1/4 SW1/4 SW1/4, SW1/4 NW1/4 SW1/4, W1/2 NW1/4 NW1/4 SW1/4;
- Township 18 South, Range 7 East, SLM
- Section 4: NW1/4 NE1/4, N1/2 NW1/4;
- Section 5: N1/2 NE1/4, NW1/4;
- Township 17 South, Range 6 East, SLM
- Section 25: NE1/4 SE1/4, SE1/4 NE1/4, E1/2 SW1/4 NE1/4;
- Township 17 South, Range 7 East, SLM
- Section 10: SW1/4 SE1/4, S1/2 SE1/4 SE1/4;
- Section 11: S1/2 SW1/4 SW1/4;
- Section 21 All



- Section 22 N1/2NW1/4
- Section 27 N1/2NW1/4
- Section 28 N1/2N1/2
- Section 29 NE1/4NE1/4
- Township 17 South, Range 7 East, S.L.M. Utah, containing 1720 acres
- Lease No. U-044025
- Issued to Cooperative Security Corp. 8/1/60
- Section 27 NW1/4NE1/4
- Township 17 South, Range 7 East, S.L.M. Utah, containing 40 acres
- In addition, Federal Coal Lease U-47978 issued to Utah Power & Light Company October 1, 1981.
- Township 17 South, Range 7 East, S.L.M. Utah
- Section 27 S1/2NW1/4, N1/2SW1/4
- Section 28 S1/2N1/2, S1/2
- Section 29 S1/2N1/2, S1/2
- Section 30 Lot 4, SE1/4NE1/4 NE1/4SE1/4, S1/2SE1/4
- Section 31 Lot 1, E1/2
- Section 32 All
- Section 33 N1/2, SW1/4, W1/2SE1/4
- Section 34 NW1/4NW1/4, S1/2NW1/4
- Township 18 South, Range 7 East, S.L.M.
- Section 4 Lots 2 thru 4
- Section 5 Lots 1 thru 4 S1/2NW1/4

Section 14: W1/2 W1/2 NW1/4, W1/2 E1/2 NW1/4,
W1/2 W1/2 W1/2 SW1/4;
Section 15: SE1/4;
Section 22: NE1/4;
Beginning at the SE corner at NE1/4 SE1/4 Section 25,
Township 17 South, Range 6 East, 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
West of the beginning; thence East 84 rods to the
beginning.

The permit area involves all or part of the following federal
and fee coal leases:

Lease No. SL-064900
Issued to Cyrus Wilberg 2/3/45
Section 22 SE1/4SW1/4, SW1/4SE1/4, NE1/4SW1/4,
NW1/4SE1/4

Township 17 South, Range 7 East, S.L.M. Utah, containing
160 acres

Lease No. U-1358
Issued to Castle Valley Mining Co. 8/1/67
Section 22 S1/2NW1/4, W1/2SW1/4, E1/2SE1/4
Section 27 E1/2NE1/4

Township 17 South, Range 7 East, S.L.M. Utah, containing
320 acres

Lease No. SL-070645, U-02292
Issued to Clara Howard Miller 4/1/52
Section 4 SW1/4SE1/4, S1/2SW1/4
Section 5 SE1/4SW1/4, S1/2SE1/4
Section 8 E1/2, E1/2W1/2
Section 9 All
Section 10 W1/2
Section 15 N1/2
Section 16 N1/2
Section 17 NE1/4, E1/2NW1/4

Township 17 South, Range 7 East, S.L.M. Utah, containing
2560 acres.

Lease No. U-084923
Issued to Malcom N. McKinnon 8/1/64
Section 4 Lots 2, 3, 4, 5, 6, 7, 10, 11, 12, NW1/4SE1/4,
SW1/4

Section 5 Lots 1 thru 12, N1/2S1/2, SW1/4SW1/4
Section 6 Lots 1 thru 11, SE1/4
Section 7 Lots 1 thru 4, E1/2
Section 8 W1/2W1/2
Section 18 Lot 1 and 2, N1/2
Section 17 W1/2NW1/4

Township 17 South, Range 7 East, S.L.M. Utah, containing
2252.42 acres

Lease No. U-084924
Issued to Malcolm N. McKinnon 8/1/64
Section 1 Lots 1, 2, 3, S1/2NE1/4 SE1/4NW1/4, E1/2SW1/4,
SE1/4

Section 12 E1/2, E1/2W1/2
Section 13 NE1/4, E1/2NW1/4
Township 17 South, Range 6 East, S.L.M. Utah, containing
1211.48 acres

Lease No. U-083066
Issued to Cooperative Security Corp. 3/1/62
Section 13 E1/2SW1/4, SE1/4
Section 24 E1/2W1/2, E1/2
Section 25 N1/2NE1/4

Township 17 South, Range 6 East, S.L.M. Utah
Section 17 SW1/4, W1/2SE1/4
Section 18 Lots 3 and 4, SE1/4
Section 19 Lots 1, 2, 3, 4, E1/2
Section 20 W1/2, W1/2E1/2
Section 29 NW1/4NE1/4, N1/2NW1/4
Section 30 Lots 1, 2, 3, N1/2NE1/4, SW1/4NE1/4,
W1/4SE1/4

Township 17 South, Range 7 East, S.L.M. Utah, containing
2400 acres

Lease No. U-040151
Issued to Cooperative Security Corp. 3/1/62
Section 15 SW1/4
Section 16 S1/2
Section 17 E1/2SE1/4

Section 20 E1/2E1/2
Section 21 All

Containing 3347.31 acres
Owners of Coal to be Mine Other than the United States
Description of Land Owner
SE1/4— Section 10, The Estate of Malcolm McKinnon
W1/2NW1/4— Section 14, c/o Frank Armstrong 1300
Walker Bank Bldg.
S1/2SW1/4SW1/4— Section 11, Salt Lake City, Utah
84111

All T17S, R7E, S.L.M.
Surface rights and coal leased to Utah Power & Light
Company

SE1/4— Section 15, Cooperative Security Corp 115 East
South Temple

NE1/4— Section 22, Salt Lake City, Utah 84111
All T17S, R7E, S.L.M.

Also:
Beginning at the SE corner of NE1/4SE1/4 Section 25,
T17S, R6E, SLM, thence N 160 rods, W 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.

Surface rights and coal leased to Utah Power & Light
Company

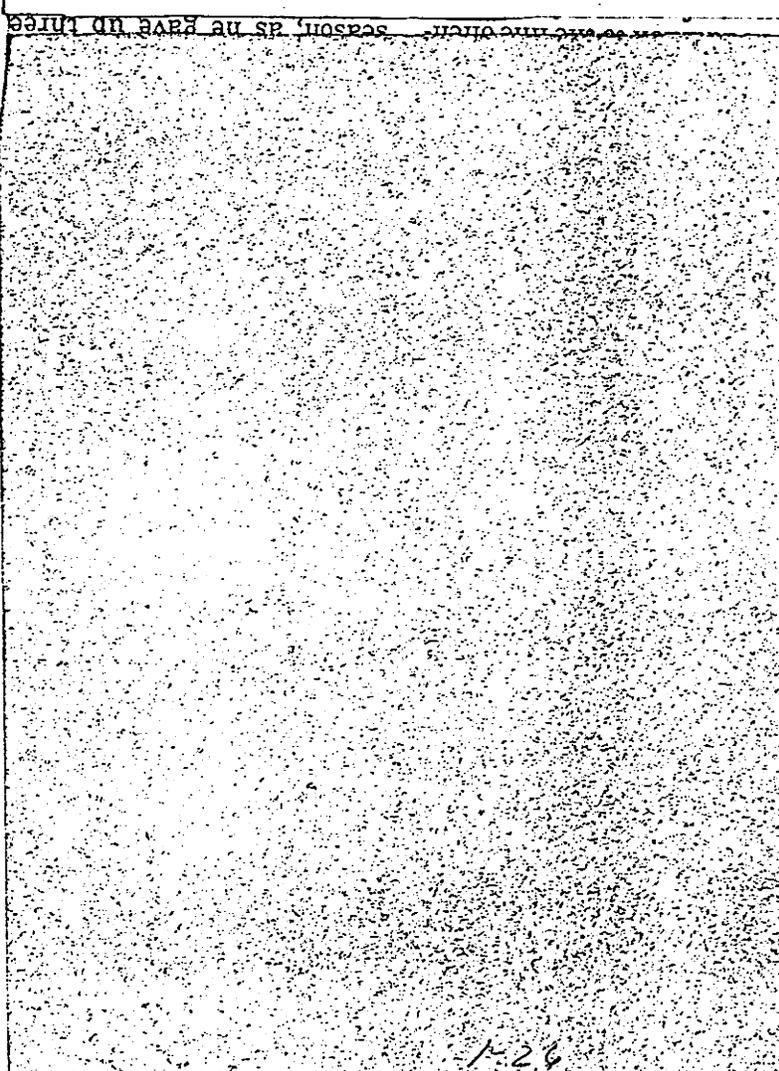
SW1/4 (west of the Deer Creek Fault)— Section 14, Utah
Power & Light Company, P. O. Box 899, Salt Lake City, Utah
84110

All T17S, R7E, S.L.M.

Additional Lands to be Affected by Mining
BLM R/W grant U-37641 utilized for sewer line and
absorption field. 3.7 acres located in the North Half of the
Northeast Quarter of Section 34, T17S, R7E, SLM.

BLM R/W grant U-37642 utilized for waste rock disposal.
48.62 acres located in the East Half of Section 34 and the
Southwest Quarter of Section 35, T17S, R7E, SLM.

Published in the Emery County Progress May 2, 9, 16 and
23.





355 W. North Temple • 3 Triad Center • Suite 350 • Salt Lake City, UT 84180-1203 • 801-538-5340

January 15, 1988

Mr. Ray Christensen, Director
Utah Power & Light Company
Permitting & Compliance Services
Mining Division
31 North Main Street
Huntington, Utah 84528

Dear Mr.  Christensen:

Re: Approval, Mid-Term Permit Review, Utah Power and Light Company,
Wilberg/Cottonwood Mine, ACT/015/019, Folder #2, Carbon County,
Utah

The Division has reviewed materials submitted September 23, 1987 in response to the Mid-Term Review of the Wilberg/Cottonwood Mining and Reclamation Plan. All concerns raised in the Division's correspondence of August 4, 1987 have been addressed, with the exception of three minor issues raised by the Manti-LaSal National Forest and the escarpment stability issue related to longwall panels in federal coal lease U-47978. The scope of the Forest Service concerns is such that the formal Mid-Term Review can be concluded with the Forest Service items stipulated to be resolved no later than July 1, 1988.

Due to the issues related to undermining and failure of escarpments, the Division will issue decisions on the longwall panels proposed for federal lease U-47978 on a panel-by-panel basis until such time as sufficient data permits more long range approvals.

The Division finds that approval can be given for the Mining and Reclamation Plan as updated, with the exception noted in the preceding sentence and with Utah Power and Light Company's written acceptance of the following stipulation.

*Permit renewal up to
3/89*

Page 2
Ray Christensen
ACT/015/019
January 15, 1988

Stipulation

Utah Power and Light Company will update the approved Wilberg/Cottonwood Mine Permit Application to address the requirements of the U.S. Forest Service, Manti-LaSal National Forest, letter of November 23, 1987 (copy attached) by July 1, 1988.

Please feel free to contact Lowell Braxton or John Whitehead should you have any questions.

Best regards,



Dianne R. Nielson
Director

JJW/djh
Attachment(s)
cc: G. Morris
P. Rutledge
H. Sandbeck
J. Whitehead
0800R/24

DOG M DIRECTOR'S SIGNATURE TRACKING SHEET

The attached Mid term approval Wilberg was reviewed and endorsed by the following persons prior to recommending your approval.

K. May _____ LSM 1/20 Date: _____
L. Braxton _____ LMB 1/15 Date: _____
M. Wright _____ Date: _____
J. Helfrich _____ Date: _____
Permit super. _____ JW 1/15 Date: _____
Staff _____ Date: _____

RECEIVED
JAN 29 1988

DIVISION OF
OIL, GAS & MINING

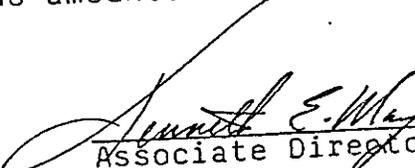
FINDINGS

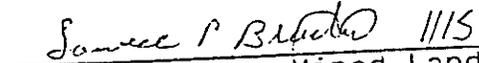
Mid Permit Term Review
Utah Power and Light Company
Wilberg/Cottonwood Mine
ACT/015/019

January 15, 1988

1. The Mining and Reclamation Plan (MRP) has been updated by submittals up through September 23, 1987, and is now complete and current.
2. The consolidated MRP has been reviewed and found to comply with current Division of Oil, Gas and Mining (Division) policy and rules with the exception of longwall mining proposed for federal coal lease U-47978.
3. The applicant has proposed no changes to the application which would require a change in bond amount.

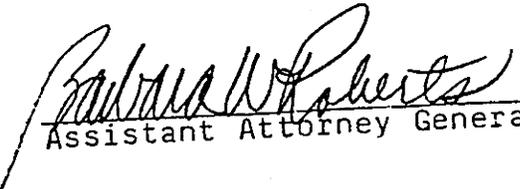

Permit Supervisor


Associate Director, Mining


Administrator, Mined Land
Development and Reclamation
Program


Director

APPROVED AS TO FORM:


Assistant Attorney General

JJW/djh
0800R/26

United States
Department of
Agriculture

Forest
Service

Manti-LaSal
National Forest

599 West Price River Drive
Price, Utah 84501

Reply to: 2820

Date: November 23, 1987

RECEIVED
DEC 02 1987

DIVISION OF
OIL, GAS & MINING

Mr. Lowell Braxton
State of Utah Natural Resources
Division of Oil, Gas and Mining
355 West North Temple
3 Triad Center, Suite 350
Salt Lake City, Utah 84180-1203

Dear Lowell:

We have reviewed Mid-term Review Response, Utah Power and Light Company, Wilberg/
Cottonwood Mine, ACT/015/019, Folder #2, Emery County, Utah.

Our comments on the response are as follows:

1. Golden Eagle Nesting/Cliff Subsidence Monitoring Plan, Page 6, Paragraph 3

This paragraph states that significant subsidence events which affect nests will be immediately reported to Utah DOGM, OSMRE, FWS and DWR. The Forest Service must also be notified immediately, either directly by UP&L Company or by the DOGM.

2. Vegetation Monitoring Plan, Page 2-142-A

There is no discussion of the frequency of flying color infrared aerial photography for vegetation monitoring. The photography should be flown at three to five year intervals to be able to trace any vegetative trends associated with mining.

3. A recent investigation in Newberry Canyon has shown that *Hedysarum occidentale* var. *canone*, a sensitive plant species, inhabits the bottom and north slope of the canyon. The existing rock falls on the north side of the canyon, resulting from longwall mining, have to some degree impacted the sensitive plant community. UP&L needs to map this community and monitor the impacts from mining.

If you have any questions, contact the Forest Supervisor's Office in Price, Utah.

Sincerely,

W.H. Bailey

for
GEORGE A. MORRIS
Forest Supervisor



STATE OF UTAH
NATURAL RESOURCES
Oil, Gas & Mining

ACT/015/019#2
Norman H. Bangerter, Governor
Dee C. Hansen, Executive Director
Dianne R. Nielson, Ph.D., Division Director

5 W. North Temple • 3 Triad Center • Suite 350 • Salt Lake City, UT 84180-1203 • 801-538-5340

August 4, 1987

Mr. Ray Christensen
Utah Power and Light Company
Permitting and Compliance
Mining Division
31 North Main Street
Huntington, Utah 84528

Dear Mr. Christensen:

Re: Wilberg/Cottonwood Mid-Term Review, Unresolved Items, Utah Power and Light Company, Wilberg/Cottonwood Mine, ACT/015/019, Folder #2, Emery County, Utah

The materials submitted on May 8 and May 13, 1987, by Utah Power and Light Company in response to the Division's letter of April 7, 1987, have been reviewed.

There are still unresolved items which Utah Power and Light must address to complete the Mid-Term Review for the Wilberg/Cottonwood mine.

Waste Rock Disposal

At this time the Division has not received from Utah Power and Light, plans for a new waste rock disposal site. Concerns attendant to waste rock such as chemical analysis and a sampling program to obtain this data are still unresolved. Given that the preparation of permit application materials for a new site is a significant undertaking, the Division requests a date by which a complete application will be filed with this office. This commitment will satisfy the issue for the Mid-Term Review.

The as-built drawings for the current waste rock disposal cell (6-11-87) depict one remaining active cell which is portrayed as two separate cells on the approved drawing in the MRP (5/84). If it is Utah Power and Light's desire to amend the approved waste rock cell configuration, please formally notify the Division of such.

Page 2
Ray Christensen, UP&L
ACT/015/019
August 4, 1987

Mine Sequence, Raptor Monitoring and Vegetation Monitoring

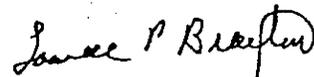
Attached is a Technical Memo outlining concerns which remain on the above-noted issues. Please respond as noted in the Memo to the raptor monitoring and vegetation monitoring issues. At this time the mine sequence issue can not proceed further until UP&L submits its Newberry Canyon eagle and subsidence monitoring program report in September or early October. As discussed at the July 9th meeting, this report should include not only UP&L's analysis of what has occurred in Newberry Canyon, but also potential impacts of other proposed cliff undermining.

Compliance With Federal Lease Stipulations and Conditions

In the May 13, 1987 submittal, UP&L took issue with the imposition of U.S. Forest Service requests for additional monitoring of vegetation on the permit area. UP&L's point that USFS did not include this requirement specifically in the SMCRA permitting process is well taken. However, in reviewing the Division's permit, Section 2 authorizes the permittee to conduct mining operations subject to the conditions of leases. Thus, in order to comply with the existing permit issued by the Division, UP&L must comply with all lease conditions and stipulations.

Thank you for your cooperation in this matter. There may still be concerns and questions received from other federal agencies. These will be forwarded to you promptly upon receipt. Your response is requested on items outlined in this letter by August 31, 1987.

Sincerely,



Lowell P. Braxton
Administrator
Mineral Resource Development
and Reclamation Program

JJW/djh
Attachments
cc: D. Duce
0800R/34



STATE OF UTAH
NATURAL RESOURCES
Oil, Gas & Mining

Norman H. Bangerter, Governor
Dee C. Hansen, Executive Director
Dianne R. Nielson, Ph.D., Division Director

355 W. North Temple • 3 Triad Center • Suite 350 • Salt Lake City, UT 84180-1203 • 801-538-5340

April 7, 1987

Chris Shingleton, Director
Permitting, Compliance & Service
Mining Division
Utah Power & Light Company
P. O. Box 899
Salt Lake City, Utah 84110

Dear Mr. ^{Chris} Shingleton:

Re: Wilberg Mid-Term Review, Outstanding Concerns, ACT/015/019,
Folder #2, Emery County, Utah

Several items identified in the Division's November 3, 1986 mid-term deficiency letter were not adequately addressed in your December 23, 1986 mid-term response. These deficiency items are:

UMC 771.23 Permit Applications - General Requirements for
Format and Contents

All of the updated mine maps and mine sequence maps must be submitted.

The surface water monitoring program must be revised. A meeting has been scheduled with UP&L and DOGM for this revision.

UMC 783.14 Geology Description

(a)(1)(iii) A distributed suite of roof and floor rock analyses for each seam to be mined must be incorporated into the MRP. Sample locations must be depicted on an appropriate map and a calculated volume of waste rock for each seam to be mined during the remainder of the permit term must be provided.

The permittee must provide a plan for, in the future, systematically sampling roof and floor rock and providing underground development waste rock quantity and quality data as part of the operational phase of monitoring activities.

UMC 784.20 Subsidence Control Plan

The Division is unable to locate, in the approved MRP, either a map showing or a specific description of areas of aquifer recharge. Please identify the pertinent text pages and/or drawing number(s) that address the comments under UMC 784.20.

Page 2
C. Shingleton, UP&L
ACT/015/019
April 7, 1987

(A)(2) Although the permittee has depicted areas of observed subsidence in annual reports and Drawing Number CM-10742-WB, the areas that are anticipated to experience surface subsidence based on data derived by Utah Power and Light and USBM could be beneficially utilized to predict the lateral and vertical extent of subsidence above areas of future mining. This type of prediction could be further utilized to assess potential mining-induced impacts to the hydrologic balance, etc.

UMC 817.71 Disposal of Excess Spoil and Underground Development
Waste

The present and future waste rock disposal plans must be submitted.

The Division's Mid-Term review of the Wilberg Mine has been slowed due to the untimely intervention of the Office of Surface Mining and subsequent other federal agencies. Attached are letters from OSM, U.S. Forest Service and U.S. Fish and Wildlife Service.

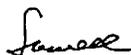
It appears that all items except Comment No. 5 of the OSM letter have been adequately addressed. Comment No. 5 should be addressed by UP&L's submittal of a permit change on a waste rock disposal expansion or alternative site.

Please address the other concerns in the Forest Service and Fish and Wildlife Service letters in your response to the previously noted items from the Division's review.

The Division requests a response to these deficiency items by May 4, 1987.

If you have any questions, please call me or John Whitehead, Permit Supervisor.

Sincerely,



Lowell P. Braxton
Administrator
Mineral Resource Development
and Reclamation Program

PGL/djh
cc: A Team
8808R/3

J. Whitehead



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

RECEIVED
MAR 20 1987

March 18, 1987

DIVISION OF
OIL, GAS & MINING

Mr. Lowell Braxton
Division of Oil, Gas and Mining
355 W. North Temple
Salt Lake City, Utah 84180

Dear Mr. Braxton:

The Office of Surface Mining Reclamation and Enforcement, Western Field Operations (OSMRE/WFO) transmitted Federal comments for the mid-term review of the Wilberg mine permit no. UT-001 to your office on February 12, 1987. This was followed by a field visit to the Wilberg mine on February 25, 1987. Representatives from your office, the Albuquerque Field Office and WFO participated.

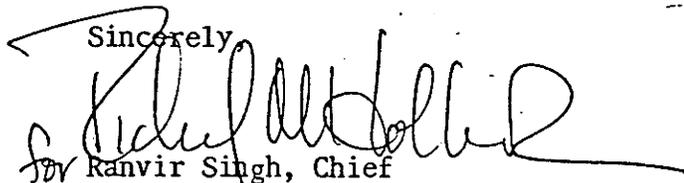
Pursuant to the field visit and discussions with your staff and the operator, it is our understanding concerns raised in our letter are being resolved as follows:

1. Failure to meet total dissolved solids effluent limitations. The operator is pursuing revision of their NPDES permit to allow up to one ton per day of dissolved solids discharge. The operator will be able to meet this discharge limit. Approval of this NPDES permit revision was imminent;
2. Annual report for 1985 on subsidence monitoring was not submitted. The operator provided a letter dated in 1986 which transmitted a copy of the report to OSMRE. A second copy was sent by the operator and received by this office in March 1987;
3. Insufficient volume for waste rock disposal. The operator stated plans were being developed for a new disposal site. These plans will be submitted as a revision to the approved permit. This site was observed during the field visit;
4. Surface runoff ^{District} facilities at Cottonwood Portal had not been approved. The Department of Oil, Gas and Mining (DOGGM) provided a copy of correspondence approving modifications of these control structures. The approval was granted in 1986. A copy of the approval letter had been sent to OSMRE; and
5. Remedial measures had been taken to control surface runoff from main haulroad. This site was observed during the field visit. Measures to control runoff appeared adequate.

We have enclosed comments by the Forest Service and Fish and Wildlife Service. Please address their concerns directly to the respective office and copy your correspondence to this office.

This office will process concurrently with DOGM any revisions required pursuant to this mid-term review. If you have any questions, please contact David Costain or Rick Holbrook.

Sincerely,


for Ranvir Singh, Chief
Federal Lands Branch

Enclosure

cc: Albuquerque Field Office

1385M

United States
Department of
Agriculture

United States Department of the Interior
Forest Service
Manti-LaSal
National Forest Service

599 West Price River Drive
Price, Utah 84501

209 ADMINISTRATION BUILDING
1745 WEST 1000 SOUTH
SALT LAKE CITY, UTAH 84119
Reply to: 2820

Date: March 10, 1987

February 9, 1987

Richard M. Holbrook, Director, Administration, Department of the Interior
Office of Surface Mining, Reclamation and Enforcement
Brooks Towers
1020 15th Street, Suite 1000
Denver, Colorado 80202

Dear Richard:

We have reviewed UP&L's Mine and Reclamation Plan for the Wilberg Mine Mid-Term Review and have identified the following concerns:

1. Sensitive plant Hedysarum occidentale var. canone has been identified by the Forest Service within the permit area at two different locations. The first location is on the slope north of the parking area in Grimes Wash. The second is in Miller Canyon approximately 1/4 mile east of the Cottonwood Canyon Road along the creek. Since this is a protected species it must be located, mapped and discussed in the vegetation report.
2. The lessee or operator is required to conduct a monitoring program to locate, measure and quantify the progressive and final effects of underground mining activities on topography, hydrology and vegetation. The Forest has routinely received the annual subsidence and hydrologic reports from UP&L. The last records received were the annual reports for 1984. We have not received the 1985 and 1986 reports. In addition, we have not received any indication that UP&L has conducted any vegetation monitoring in the subsided areas other than the baseline vegetative mapping and monitoring of the reference areas. UP&L must monitor the effects of mining on the affected areas as they are progressively mined. The most cost effective method of monitoring vegetation and studying the inter-relationships with topography, geology, hydrology due to mining and subsidence would be by conducting color infrared photography at 2 - 5 year intervals. The vegetative monitoring information must be incorporated into the mine plan and/or submitted as additional material in the annual reports.

We have also reviewed UP&L's response to the mid-term review letter 01/05/87 UT DOGM Transmittal of Revisions for mining and Reclamation Plan in Response to Mid-Term Review Letter of 11/03/86. We have the following comments:

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DIVISION OF
OIL, GAS & MINING

1. Page 3-26

We are concerned that the gabion structures to be constructed in the road template along the inside ditch of the Cottonwood Canyon Road could cause a potential safety problem. If a vehicle should slide off the road into the ditch, the gabions would be a rigid barrier. In addition, maintenance of the gabions and sediment clean-out may require obstruction of traffic.

2. Page 3-35

Provisions have been made for an additional emergency ground storage beside the silo of 5,000 ton capacity. We object to permanent open coal storage.

3. Map 2-13 (Revised 12/19/86)

This map shows a mine water discharge point in Miller Canyon. This was added to the revised map and there is no discussion of this discharge location in the text. A NPDES permit must be obtained and the discharge approved through the permitting process.

The surface water monitoring stations in Cottonwood Canyon, above and below the disturbed area, have been eliminated. Considering the Miller Canyon Mine discharge and the disturbed area and sediment ponds, justification for eliminating the monitoring stations is needed.

If you have any questions, please contact us.

W. H. Boley

for
REED C. CHRISTENSEN
Forest Supervisor

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MAR 20 1987

DIVISION OF
OIL, GAS & MINING



United States Department of the Interior **BMRE-WFO**

FISH AND WILDLIFE SERVICE

ECOLOGICAL SERVICES

2060 ADMINISTRATION BUILDING

1745 WEST 1700 SOUTH

SALT LAKE CITY, UTAH 84104-5110

WE HAVE ENCLOSED COMMENTS

IN REPLY REFER TO: PLEASE CONTACT

FEB 27 11:19

WESTERN FIELD OPERATIONS

(ES)

February 5, 1987

To: Acting Deputy Administrator, Office of Surface Mining
contact: Dave Denver, Colorado
Attn: Richard Holbrook

From: Field Supervisor, Ecological Services
Fish and Wildlife Service, Salt Lake City, Utah

Subject: Mid-term Review of the Wilberg Mine

As per your request of December 19, 1986, we are providing the following comments. We are including the Cottonwood Mine in our review because of the joint use of facilities and because production in Wilberg or Cottonwood appear closely intertwined.

Our review of the attachment to the DOGM letter dated November 3, 1986 found us in agreement with the points they raised. There should be a clearer picture of their proposed mining sequence. Will the production in Wilberg be resumed in areas away from the area of the fire. We note that planned mining under the eagle nests in Miller Canyon has been postponed several years. Has the crisis for immediate production been resolved? We strongly recommend returning to the original 5 year sequence which emphasized development of the southernmost part of the Cottonwood Mine prior to mining under the Miller Canyon nests. This would allow thorough review of the impacts to nests in Newberry Canyon without an operational commitment in Miller Canyon.

cc: DOGM-SLC
DWR-Price, SLC

RECEIVED
MAR 20 1987

DIVISION OF
OIL, GAS & MINING



STATE OF UTAH
NATURAL RESOURCES
Oil, Gas & Mining

Norman H. Bangerter, Governor
Dee C. Hansen, Executive Director
Dianne R. Nielson, Ph.D., Division Director

55 W. North Temple • 3 Triad Center • Suite 350 • Salt Lake City, UT 84180-1203 • 801-538-5340

November 3, 1986

Mr. Chris Shingleton, Director
Property Management, Mining Division
Utah Power & Light Company
P. O. Box 899
Salt Lake City, Utah 84110

Dear Mr. ^{Chris} Shingleton:

Re: Mid-Term Review, Utah Power & Light Company, Wilberg Mine,
ACT/015/019, Folder #2, Emery County, Utah

The Division staff have completed the initial portion of the Wilberg Mid-Term Review. Thank you for accommodating the staff during the mid-term review site visit on October 21, 1986.

Attached are several items which must be addressed by Utah Power and Light Company to complete the Mid-Term Review, and items which are pertinent to the 5-year permit renewal. A response is not necessary on the 5-year renewal items, however, several of these items will require action by Utah Power and Light prior to the 5-year renewal date.

In order to achieve completion of the mid-term review within the time frames of my September 24, 1986 letter, would you please respond to the mid-term items by December 5, 1986.

Sincerely,

Lowell P. Braxton
Administrator
Mineral Resource Development
and Reclamation Program

JJW/djh
Attachments
cc: A. Klein, OSM
Tech Review Team "A"
0800R/53

MID-TERM REVIEW

Utah Power and Light Company
Wilberg Mine
ACT/015/019, Emery County, Utah

November 3, 1986

UMC 771.23 Permit Applications - General Requirements for Format
and Content (TM/RVS)

- (b) The location of flume and water monitoring stations needs to be updated on the Hydrology Data Map to accurately reflect what is found on the ground for Cottonwood Creek, Grimes Wash, Deer Creek and Meetinghouse Creek. There appear to be stations that are not currently being monitored and discrepancies between water monitoring stations and flume locations as shown on this map. The map needs to be properly updated.

The information on the surface drainage plan at the Cottonwood Portal needs to be updated to reflect the changes implemented in 1986 (see pages 3-22 through 3-30).

- (b) All changes including approved revisions, amendments, and those alterations resulting from the fire, in the configuration of surface facilities and underground workings and operation plans must be delineated.

(1) Update all mine maps and mining sequence maps.

(2) Update maps showing current and proposed underground water monitoring locations, sump areas and discharge points.

Submitted
Plate 2-12 shows 2 monitoring locations
UMC 782.13(a)(5) Identification of Interests (JJW)

✓ Information in the legal financial section of the MRP which refers to Emery Mining as the operator at the Wilberg Mine should be corrected with updated pages.

UMC 783.13 Description of Hydrology and Geology: General Requirements (TM)

(a)(2) Ground Water

Of the 70 springs sampled by Utah Power and Light Company (UP&L) in 1985, 12 springs had recession curve data collected as shown in Table 21 (1985 monitoring report), but only 10 springs had recession curves drawn. Spring 84-56 and Burnt Tree Spring did not have any recession curves drawn up in the monitoring report for 1985. The 1986 report should fulfill all MRP commitments.

The permittee has eliminated underground water monitoring locations number 1-3, 5, and 7, from the 1984 water monitoring report. In the 1985 water monitoring report, holes #6 and #4 have been renumbered to holes #2 and #1 respectively. The 1985 report also has included a new hole #3, which then dried up in 1985 (personal communication- Chuck Semborski). The reasons for these changes were spelled out on page 43 of the 1985 monitoring report. UP&L should include the most current monitoring locations in the MRP.

A map which depicts the past and planned mining sequence with subsided areas shown for both Wilberg and Deer Creek, and which shows spring locations for the 70 springs currently monitored by UP&L must be included in the MRP. This will allow an assessment of and potential adjustment to:

1. Springs included in the recession curve analysis;
2. Springs currently analyzed for water quality;
3. Parameters currently included in water quality sampling.

Springs with established baseline information which are outside the influence of mining and subsidence are candidates for elimination until a time prior to their being affected by mining or subsidence. The map depicting the mining sequence with spring locations shown on it will allow this analysis to be undertaken.

UMC 783.14 Geology Description (RVS)

(a)(1)(iii) The approved PAP presents chemical analyses (Table A, Part 2) for overburden/interburden/underburden, from four sampling locations ambiguously identified on Figure 2-4. Apparently, samples were obtained external to the mine from:

1. F.S.S.U.P. APP.
2. U-044025
3. U-37961 ABSORP. FIELD
4. U-37962 WASTE ROCK
5. S.U.L.A. #436 SED. POND

Moreover, data presented in Table A have been combined from all sampling areas and averaged. These data, as collected and presented, are inconclusive for the purposes of identifying whether those horizons to be removed contain potential acid-forming, toxic-forming or alkalinity-producing materials.

The permittee must derive overburden/interburden/underburden data pertinent to identifying potential acid-forming, toxic-forming or alkalinity-producing materials within non-coal bearing horizons that may be extracted during the remainder of the permit term. In addition, a calculated volume of waste rock for each seam to be mined during the remainder of the permit term must be provided.

The permittee must also develop and provide a plan for systematically deriving, in the future, overburden/interburden/underburden quality and volume data as part of the operational phase of monitoring activities.

UMC 783.15 Ground Water Information (RVS)

(a)(4) The permittee must provide a discussion of ground-water quality and final disposition for portions of the mine closed due to the fire.

UMC 784.20 Subsidence Control Plan (RVS)

The survey of renewable resource lands within the approved PAP does not identify areas for aquifer recharge (p. 4-41). The permittee must identify areas

of aquifer recharge on a plan view map that encompasses the area to be mined during the current permit term.

(a)(2) The permittee identified renewable resource lands above the area to be mined. Accordingly, the permittee must derive a plan view map that shows the maximum area of projected subsidence at the surface. The Division recommends using site-specific angle-of-draw values.

UMC 817.71 Disposal of Excess Spoil and Underground Development
Waste (DD)

To date, the volumes of waste rock generated by the Wilberg and Des-Bee-Dove Coal Mines have greatly exceeded original estimates. Since, there are only two cells left for disposal of waste rock on the permitted site, volumes of waste rock to be produced for the remainder of the permit term must be accurately estimated so alternative disposal procedures can be addressed.

Volume 7, Appendix VII, page 11 of the MRP states that SAR values should not pose a problem, and that high SAR material will be diluted by material with low SAR values. Recent analysis of the waste rock show that very high SAR and Ec values exist (data submitted July 21, 1986 for NOV N86-10-1-1 abatement). This emphasizes the importance of sampling the waste rock as proposed in the MRP before the cells are reclaimed to insure proper topsoil coverage (i.e., 4 feet of material where toxicities exist). The plan also states that the coal/rock ratio shall not exceed 50/50. A quantitative method needs to be submitted, proposing how this ratio will be determined so it is not exceeded.

Please provide waste rock volume estimates and a coal/rock ratio testing program for insertion into the MRP. If waste rock volume estimates exceed the disposal volume permitted, please submit a plan addressing future waste rock disposal.

UMC 817.100 Contemporaneous Reclamation (KMM)

UP&L will be in compliance with this section when plans for interim reclamation described in the MRP are implemented. This should occur no later than October 31, 1987.

UMC 817.111-114 Revegetation (KMM)

1. Pages 4-11 through 4-13 of the MRP describe the importance of interim revegetation for developing substitute topsoil, testing plant materials and techniques and evaluating soil productivity. Pages 4-13 through 4-15 describe the mechanics of interim revegetation including seeding and shrub test plantings. The Division feels that the plan is, in general, reasonable and appropriate to the requirement for contemporaneous revegetation (UMC 817.100). Interim revegetation should be implemented on all areas not vegetated to date. Any modifications of the plan should be submitted to the Division for approval.

Two aspects of both the interim and final revegetation plans should be seriously reconsidered:

- (1) Hand cultivation to remove weeds: On steep slopes this technique would probably do more damage than good. On both steep and gentle slopes it may be unnecessary considering the limited competitive ability of Russian thistle if a good native plant cover is established. UP&L should summarize any quantitative or qualitative data on weed abundance and the effects of hand cultivation on revegetation areas in order to justify deletion of this provision of the reclamation plan.
- (2) The MRP currently calls for employing a licensed applicator for the first three years after plantings to place rodent poison. Considering the importance of rodents as a food source for raptors, poison should only be used if other techniques are not available. UP&L's evaluation of fencing to exclude wildlife, including rodents, should provide valuable information for future revegetation projects. Consideration should be given to expanding the study to include larger areas, e.g., an entire waste rock cell.

2. Both the interim and final reclamation plans include seeding, raking to cover the seed, and mulching. In semi-arid areas covering the seed by raking, drilling, etc., is very important to successful revegetation. The interim plan calls for applying mulch before raking, while the final plan rakes before mulching. The latter is more appropriate. Both interim and final plans should specify raking before mulching.
3. Since final reclamation of the sewage drain field should not disturb the surface (i.e., pipes will not be removed), the area should be planted and treated as a final revegetation area. This should occur no later than October 31, 1987.
4. The MRP should be changed to clearly identify which seed mixes are/will be used for interim and final reclamation. For example, Table 1 should be removed if the seed mix is not applicable. Re-evaluation of seed mixes should include results of qualitative or quantitative monitoring of Cottonwood Fan Portal and Waste Rock Disposal sites. Species which could be increased or added may include: Great Basin Wildrye and Fourwing Saltbush. Species which could be decreased or deleted include: Galleta and Green Mormon Tea.

UMC 817.116 Revegetation: Standards for Success (KMM)

1. Maintenance and monitoring as described on pages 4-15 through 4-16 should be implemented. Monitoring of interim revegetation (p.4-16) includes qualitative evaluation in the spring and quantitative evaluation in August in years 2 through 6 of the bond liability period (Reclamation Schedule chart following page 4-31). Results are to be supplied to the Division in an annual report. Any changes in the schedule or techniques (e.g., substitution of 50 point transects for the 100' line intercept transect) should be submitted to the Division for approval.
2. Since adequate vegetation must be demonstrated in the last two years of the bond liability period, the monitoring schedule should be amended to include sampling in both years 9 and 10.

Preliminary Comments Pertaining to the Five-Year Permit Renewal

1. Applicant should acquire data to derive piezometric surface maps for the Starpoint Sandstone, Blackhawk Formation, North Horn Formation, and Flagstaff Limestone.
2. Additional poor water quality, such as that encountered in the 4th East section (p.2-78), should be identified and quantified with regard to flow and quality.
3. Applicant should compare and contrast approved PAP water quality data (circa 1978-79) with subsequently derived water quality data for mine water discharge.
4. Applicant should utilize data collected since PAP approval to derive values for post-mining flooding and the potential for unplanned discharges (p. 3-17).
5. Applicant will need to derive a functional Probable Hydrological Consequences document. See Draft Guidelines for Preparation of a Probable Hydrologic Consequences Determination (PHC), December 1985.
6. Applicant will need to incorporate data derived from rock mechanics studies that were undertaken in 1976 (p. 3-18).
7. Applicant will need to comprehensively discuss planned post-mining discharges including volumes of water and impacts to the wildlife, vegetation, ground-water regime and stream drainages.
8. Applicant should incorporate updated USBM angle-of-draw and other pertinent subsidence data and interpretations.

0964R



1407 West North Temple
P.O. Box 899
Salt Lake City, Utah 84110

December 23, 1986

RECEIVED
MAR 22 1989

DIVISION OF
OIL, GAS & MINING

Mr. Lowell P. Braxton
Administrator, Mineral Resource
Development and Reclamation Program
State of Utah
Department of Natural Resources
Division of Oil, Gas & Mining
355 West North Temple
3 Triad Center, Suite 350
Salt Lake City, Utah 84180-1203

RECEIVED
MAR 24 1989
DIVISION OF OIL,
GAS & MINING
PRICE UTILITY

Re: Response to Mid-Term Review, Wilberg Mine,
Act/015/109, Folder #2, Emery County, Utah

Dear Mr. Braxton:

In response to the Wilberg Mine MRP Mid-Term Review, submitted are twelve (12) copies each of both text material and maps to update the MRP as per your letter dated November 3, 1986.

Attached with this letter is a four (4) page listing summarizing our response to your staff's mid-term questionnaire.

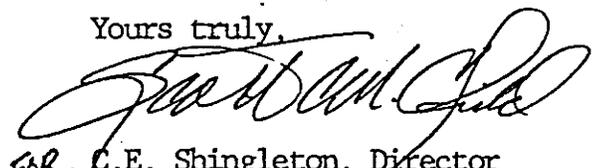
All submitted materials are numbered and marked for easy insertion into the MRP. The following changes should be made:

	<u>REMOVE</u>	<u>INSERT</u>
<u>VOLUME 1</u>	Table of Contents Pages 13, 14, 15	Revised 12/8/86 Table of Contents Pages 13, 14, 15
	Pages 1-1 thru 1-5 1-10, 2-78	Revised 12/8/86 Pages 1-1 thru 1-4, 1-10, 2-78,2-78A,
		Add figure 2-8A

	<u>REMOVE</u>	<u>INSERT</u>
VOLUME 2	Pages 3-21, 3-22, 3-25, thru 3-30B, 3-32, 3-35, 3-43, 3-48, 3-50, 3-54, 3-56, 4-12 thru 4-17, 4-20 and two (2) pages within the reclamation schedule (see replacement pages)	Revised 12/8/86 Pages 3-21, 3-22, 3-25 thru 3-30 A&B, 3-32, 3-35, 3-43, 3-46 A&B, 3-48, 3-48A, 3-50A, 3-54, 3-54A, 3-56, 4-12 thru 4-17, 4-20 and two (2) revised reclamation schedules re: Item #10
VOLUME 3	Map 1-2	Revised 12/19/86 Map 1-2
VOLUME 4	Map 2-12 & 2-13	Revised 12/19/86 Map 2-12 & 2-13
VOLUME 6	From map packet 3-10 South Sediment Pond detail drawing #CM-10354-CP	N/A
	Maps 3-13 thru 3-16	Revised 12/19/86 Maps 3-13 thru 3-16
	Map Packet 3-16A	N/A
	Maps 3-27 & 3-28	Revised 12/19/86 Maps 3-27 & 3-28
	N/A	Map Packet 4-5, Addition Dated 12/19/86

We apologize for the delay in our response. If you have any questions, please call.

Yours truly,



FOR C.E. Shingleton, Director
Permitting, Compliance and Services
Mining Division

CES:SMC:sbw
Enclosures

cc: - Val Payne
Jerry Taylor
R.C. Fry

UTAH POWER & LIGHT COMPANY
COTTONWOOD/WILBERG COAL MINE
MID-TERM REVIEW - RESPONSE

UMC 771.23

(b) Mining area hydrology data map Drawing CE-10496-WB, Map 2-13, has been updated to reflect current water measuring and monitoring stations.

Changes accountable to the fire and the bringing on line of the Cottonwood portal complex are represented by modification to the text and surface facility mapping. Also, changes made to the Cottonwood fan portal because of the new county road have been updated.

(b) (1) A new mine plan, including mining to 1990 will be submitted upon completion.

(2) An underground water monitoring map has been added to the ground water section.

UMC 782.13

(d) (5) Changes which have taken place since the 1981 submittal have been duly noted. This includes owner/operator and all officers and board members.

UMC 783.13 - Ground Water

(a) (2) Recession curves from Burnt Tree Spring and spring 84-56 will be included in the 1987 hydrological monitoring report. Both springs were measured during the past two years. Failure to report was due to a printing error.

Numbering and subsequent changes in the underground monitoring well locations has been finalized and shown on new mapping which will be inserted as part of the mid-term review.

A new composite map showing interrelationship of surface springs, past mining and measured subsidence has been constructed as requested; however, its actual placement belongs with the monitoring reports rather than the MRP because information shown on the map is constantly changing requiring at least annual updating to represent correctness.

UMC 783.14 - Geology

(a) (1) (iii) Although UP&L has analyzed over 130 samples of the rock surrounding the Hiawatha coal seam, the Division has requested that more samples be analyzed. Additional data regarding this matter is not currently available; therefore, UP&L commits to analyzing additional samples of the Hiawatha seam overburden and underburden. This sampling shall include testing for all toxic or toxic forming substances as listed in UMC 817.48. The samples shall be in numbers great enough to identify the range of all toxic forming substances and the variability of these materials.

UMC 783.15 - Ground Water Information

(a) (4) This question was responded to in text. See pages 2-78, 2-78-A.

UMC 780.20 - Subsidence Control Plan

(a) (2) Division request for specific mapping outlining areas of mining affecting aquifer recharge is redundant to previously submitted information. Reference, please, the hydrology section of the MRP, Mining Plan, interrelationship map and the annual Subsidence Report.

UMC 817.71

Disposal of underground development waste and excess spoil at the presently approved waste rock site is nearing an end. Original design incorporated a small 48 acre parcel of federal land which was generally flat and disposal was accomplished using accepted land fill practices.

Since the underground fire at Wilberg, most of the available storage has been lost to disposal of fire-related cleanup material. Permittee is evaluating alternate sites to fulfill future long-term needs for both Cottonwood/Wilberg and Des-Bee-Dove Mines. Submittal and approval for this site will entail a separate action.

Until an alternate site is submitted for Division approval permittee requests the present disposal area remain as is. Completion of the final cell has been constructed.

UMC 817.100

No comment required.

UMC 111-114 - Revegetation

(1) (2) Both interim and final revegetation descriptions have been modified to eliminate Division's concerns as to hand-cultivating and rodent control.

(2) Permittee agrees, final reclamation should state raking before mulching changes are noted.

(3) No comment required.

(4) Seed mix has been finalized as previously approved. All changes are noted.

UMC 817.116 - Revegetation Standard for Success

(1) No comment required.

(2) Monitoring schedule has been changed to include final two years of final reclamation bond period.

Permit Number UT-001, 5/84

Page 1 of 8

UNITED STATES
DEPARTMENT OF THE INTERIOR
OFFICE OF SURFACE MINING

This permit, UT-001, which incorporates Utah Permit ACT/015/019, is issued for the United States of America by the Office of Surface Mining (OSM) to

Utah Power & Light Company
1407 West North Temple Street
P. O. Box 899
Salt Lake City, Utah 84110

for the Wilberg Mine. Utah Power & Light Company is the lessee of Federal coal leases SL-064900, U-1358, SL-070645-U-02292, U-084923, U-084924, U-083066, U-040151, U-044025, U-47978. The permit is not valid until a performance bond is filed with the OSM in the amount of \$1,294,522.00, payable to the United States of America and the State of Utah, and the OSM has received a copy of this permit signed and dated by the permittee.

Sec. 1 STATUTES AND REGULATIONS - This permit is issued pursuant to the Surface Mining Control and Reclamation Act of 1977, 30 U.S.C. 1201 et seq., hereafter referred to as SMCRA, and the Federal coal leases issued pursuant to the Mineral Leasing Act of February 15, 1920, as amended, 30 U.S.C. 181 et seq., the Federal Coal Leasing Amendments Act of 1976, as amended 30 U.S.C. 201 et seq. and in the case of acquired lands, the Mineral Leasing Act for Acquired Lands of September 7, 1947, as amended, 30 U.S.C. 351 et seq. This permit is also subject to all regulations of the Secretary of the Interior including, but not limited to, 30 CFR Chapter VII and 43 CFR Part 3400, and to all regulations of the Secretary of Energy promulgated pursuant to Section 302 of the Department of Energy Organization Act of 1977, 42 U.S.C. 7152, which are now in force or, except as expressly limited herein, hereafter in force, and all such regulations are made a part hereof.

Sec. 2 The permittee is authorized to conduct surface coal mining and reclamation operations on the following described Federal lands (as shown on ownership map) within the permit area at the Wilberg Mine situated in the State of Utah, Emery County, and located:

T. 17 S., R. 6 E., SLM; sec. 1, SE1/4, E1/2SW1/4, S1/2SE1/4NE1/4; sec. 12, E1/2, E1/2W1/2; sec. 13, E1/2, E1/2W1/2; sec. 24, E1/2, E1/2W1/2; sec. 25, NE1/4SE1/4, N1/2NE1/4, SE1/4NE1/4, E1/2SW1/4NE1/4.

- Sec. 6 The permittee shall conduct surface coal mining and reclamation operations only on those lands specifically designated as within the permit area on the maps submitted in the mining plan and permit application and approved for the term of the permit and which are subject to the performance bond.
- Sec. 7 The permittee shall minimize any adverse impact to the environment or public health and safety resulting from noncompliance with any term or condition of this permit, including, but not limited to:
- a. Accelerated monitoring 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. 8 The permittee shall dispose of solids, sludge, filter backwash, or pollutants removed 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. 9 The lessee 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 Utah Division of Oil, Gas, and Mining and OSM in approving alternative methods of compliance with the performance standards of the Act, the approved Utah State Program, and the Federal Lands Program.
- Sec. 10 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. 11 The permittee shall comply with the provisions of the Water Pollution Control Act (33 U.S.C. 1151 et seq.) and the Clean Air Act (42 U.S.C. 7401 et seq.).
- Sec. 12 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. 13 If during the course of mining operations previously unidentified cultural resources are discovered, the applicant shall ensure that the site(s) is not disturbed and shall notify OSM. The operator shall ensure that the resource(s) is properly evaluated in terms of National Register Eligibility Criteria (36 CFR 60.6). Should a resource be found eligible for listing in consultation with the OSM, the land managing agency (if the site is located on Federal Lands), and the State Historic Preservation Officer (SHPO), the operator shall confer with and obtain the approval of these agencies concerning the development and implementation of mitigation measures.
- Sec. 14 APPEALS - The lessee shall have the right to appeal: (a) under 30 CFR 775 from actions or decisions of any official of OSM; (b) under 43 CFR 3000.4 from an action or decision of any official of the Bureau of Land Management; (c) under 30 CFR 290 from an action, order, or decision of any official of the Minerals Management Service; or (d) under applicable regulations from any action or decision of any other official of the Department of the Interior arising in connection with this permit.
- Sec. 15 SPECIAL CONDITIONS - In addition to the general obligations and of performance set out in the leases, Utah State permit ACT/015/019 and this permit, the permittee shall comply with the special conditions of Utah State permit ACT/015/019 and the conditions appended hereto as Attachment A.

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

THE UNITED STATES OF AMERICA

By: _____

Date _____

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

Authorized Representative of
the Permittee

Date

ATTACHMENT A

Special Conditions

Utah Power & Light Company
Wilberg Mine
Emery County, Utah

1. Within 30 days of permit approval, the permittee shall provide, for regulatory authority approval, a statement of criteria that will ensure riprap stability and adequate energy dissipation in accordance with the requirements of UMC 817.44(b). In addition, the following filter gradation must be incorporated into the filter design for the riprap channel lining:

<u>U.S. Standard Sieve Size</u>	<u>Percent Passing By Weight</u>
3"	90-100
3/4"	20-90
#4	0-20
#200	0-3

2. The permittee shall replace any water demonstrated to have been lost or adversely affected by mining operations with water from an alternate source in sufficient quantity and quality to maintain the rights of present users and current and postmining land uses. The permittee shall describe the measures that will be taken to minimize changes to the prevailing hydrologic balance in all perennial streams within the permit area in the event that subsidence effects reduce the baseflow to these streams. This description must be presented to the regulatory authority for approval within 30 days of permit approval.

[Ref:BLM lease conditions 15 and 19, U-47978; condition 14, U-044025; conditions 14 and 18, U-083066; conditions 14 and 18, U-040151; and in accordance with UMC 784.14(a)(2) and (3), UMC 784.20(c), UMC 817.41(a) and (b); and P.L. 95-87 Sec. 508(a)(13)].

3. The permittee shall conduct portal closure activities for the Newberry Canyon breakout during the period from July 1 to January 31.
4. Within 90 days of permit approval, the permittee shall place sufficient clean backfill material on the horizontal portion of each of the benches above Cottonwood portal so as to effectively cover the exposed rider coal seams.

5. Within 30 days of permit approval, the permittee shall provide, for regulatory authority approval, a map and/or plan for the location of the primary grid system for the subsidence monitoring plan over the permit area. This grid system must be adequate to ensure that the foot-vertical accuracy will be maintained and that sufficient points are established for adequately measuring horizontal displacement. A map showing the location of the primary grid system used in the 1980 aerial survey must be provided within 30 days of permit approval along with a copy of the baseline data. Each succeeding year, an updated copy of the map must be provided showing the location of any additional primary grid points established and the baseline survey data. This information must be included in the annual monitoring report which must be submitted within six months of data collection. This monitoring report must also identify appropriate mitigation measures to be taken if significant subsidence impacts occur.

6. Within 30 days of permit approval, the permittee shall provide, for regulatory authority approval, a plan for continuance of subsidence monitoring in the U. S. Bureau of Mines (USBM) study area in the event that the USBM discontinues this study. Using conventional methods, the permittee shall collect data that will be compatible with USBM collected data for future analysis. In addition, the permittee shall evaluate the USBM data within six months of its collection by USBM, analyze this information with respect to subsidence impacts, and evaluate any mitigation measures that may be required. Plans must be provided showing that the permittee will conduct a ground survey of the site this year and will submit results of the survey by September 1984. Plans for comparison of the conventional survey information with the photogrammetry studies must be made. This information is needed to show compliance with UMC 817.121.

7. In accordance with the Manti-LaSal National Forest's May 7, 1984 letter, the permittee is required to comply with the following conditions:
 - a. Several deficiencies have been noted on Map 2-19 which specifies land uses. The map needs to be updated to include livestock grazing, raptor nests, raptor nesting habitat, deer and elk summer/winter ranges, and commercial timber.
 - b. Prior to Utah Power and Light moving construction equipment on the Forest in Cottonwood Canyon, the jurisdiction of the access road must be determined. A Road Use Permit may be needed.
 - c. Burying any waste, toxic or natural, is prohibited on National Forest System lands.
 - d. Section XVII in the appendices deals with structures that could be affected by subsidence. The following items need to be included in the appendices: fences, roads, stockponds and associated earth dams, and water troughs.
8. At such time that OSM, in consultation with the Division of Oil, Gas and Mining and the SHPO, determines that subsidence within the permit area may adversely affect known or unrecorded cultural sites, additional cultural resource studies may be required. This determination will be based on new subsidence or cultural resource information and clear justification will be presented to the permittee.
9. If determined necessary by the Endangered Species Office of the U. S. Fish & Wildlife Service, the permittee shall participate in the USFWS study program "Recovery of Endangered Fishes of the Upper Colorado River Basin".

TECHNICAL ANALYSIS
WILBERG MINE, EMERY COUNTY, UTAH

Submitted to

Office of Surface Mining
Western Technical Center
1020 Fifteenth Street
Denver, Colorado 80202

by

Simons, Li & Associates, Inc.
3555 Stanford Road
P.O. Box 1816
Fort Collins, Colorado 80522

Project Number: UT-OSM-02
RDF163/RDF159/R399

May 16, 1984

TABLE OF CONTENTS

	<u>Page</u>
INTRODUCTION	vi
I. TOPSOIL	1.1
II. HYDROLOGIC BALANCE - SURFACE WATER	2.1
III. HYDROLOGIC BALANCE - GROUNDWATER	3.1
IV. PROBABLE HYDROLOGIC CONSEQUENCES	4.1
V. MISCELLANEOUS COMPLIANCE	5.1
VI. UNDERGROUND DEVELOPMENT WASTE AND COAL PROCESSING WASTE	6.1
VII. PROTECTION OF FISH, WILDLIFE, AND RELATED ENVIRONMENTAL VALUES	7.1
VIII. BACKFILLING AND GRADING	8.1
IX. SUBSIDENCE CONTROL PLAN	9.1
X. REVEGETATION	10.1
XI. ROADS	11.1
XII. ALLUVIAL VALLEY FLOORS	12.1
XIII. POSTMINING LAND USE	13.1
XIV. AIR RESOURCES	14.1
XV. CULTURAL RESOURCES	15.1
XVI. BONDING	16.1
XVII. SUMMARY OF CONDITIONS	17.1

TABLE OF REGULATIONS

	<u>Page</u>
UMC 817.21 <u>Topsoil: General Require</u>	1.3
UMC 817.22 <u>Topsoil: Removal</u>	1.3
UMC 817.23 <u>Topsoil: Storage</u>	1.3
UMC 817.24 <u>Topsoil: Redistribution</u>	1.3
UMC 817.25 <u>Topsoil: Nutrients and Soil Amendments</u>	1.4
UMC 817.41 <u>Hydrologic Balance: General Requirements</u>	2.5
UMC 817.42 <u>Hydrologic Balance: Water Quality Standards and Effluent Limitations</u>	2.5
UMC 817.43 <u>Hydrologic Ballance: Diversion and Conveyance of Overland Flow, Shallow Ground Water Flow, and Ephemeral Streams</u>	2.5
UMC 817.44 <u>Hydrologic Balance: Stream Channel Diversions</u>	2.6
UMC 817.45 <u>Hydrologic Balance: Sediment Control Measures</u>	2.7
UMC 817.46 <u>Hydrologic Balance: Sedimentation Ponds</u>	2.7
UMC 817.52(b) <u>Hydrologic Balance: Surface Water Monitoring.</u>	2.8
UMC 817.54 <u>Hydrologic Balance: Water Rights and Replacement</u>	2.8
UMC 817.55 <u>Hydrologic Balance: Discharge of Water into an Underground Mine</u>	2.8
UMC 817.56 <u>Hydrologic Balance: Postmining Rehabilitation of Sedimentation Ponds, Impoundments, and Treatment Facilities</u>	2.8
UMC 817.57 <u>Hydrologic Balance: Stream Buffer Zones</u>	2.8
UMC 817.48 <u>Hydrologic Balance: Acid-Forming and Toxic-Forming Materials.</u>	3.2
UMC 817.50 <u>Hydrologic Balance: Underground Mine Entry and Access Discharges.</u>	3.2
UMC 817.52(a) <u>Hydrologic Balance: Surface and Groundwater Monitoring.</u>	3.3
UMC 817.53 <u>Hydrologic Balance: Transfer of Wells</u>	3.4
UMC 817.55 <u>Hydrologic Balance: Discharge of Water into an Underground Mine</u>	3.4
UMC 817.13-.15 <u>Casing and Sealing of Underground Openings.</u>	3.4
UMC 817.71 <u>Disposal of Excess Spoil and Underground Development Waste: General Requirements</u>	6.1
UMC 817.99 <u>Slides and Other Damage.</u>	8.5
UMC 817.100 <u>Contemporaneous Reclamation</u>	8.5
UMC 817.101 <u>Backfilling and Grading: General Requirements</u>	8.5
UMC 817.103 <u>Backfilling and Grading: Covering Coal and Acid and Toxic-Forming Materials</u>	8.5
UMC 817.106 <u>Backfilling and Grading: Covering Coal and Acid - and Toxic-Forming Materials</u>	8.6

TABLE OF REGULATIONS (continued)

	<u>Page</u>
UMC 817.121 <u>Subsidence Control: General Requirements</u>	9.2
A. <u>Description of Subsidence Effects Observed To Date</u>	9.2
B. <u>Evaluation of Probable Subsidence Effects</u>	9.5
B.1 <u>Lowering of the Land Surface in Areas Underlain by</u> <u>the Castlegate and Price River Sandstone</u>	9.5
B.2 <u>Lowering of the Land Surface in Areas not Underlain</u> <u>by the Castlegate Sandstone</u>	9.6
Disturbance to Springs, Seeps and Ponds	9.7
B.4 <u>Disturbance to Escarpments</u>	9.8
B.5 <u>Disturbance to Perennial Streams</u>	9.9
C. <u>Evaluation of the Proposed Monitoring Plan</u>	9.10
UMC 817.122 <u>Subsidence Control: Public Notice</u>	9.10
UMC 817.124 <u>Subsidence Control: Surface Owner Protection</u>	9.10
UMC 817.126 <u>Subsidence Control: Buffer Zones</u>	9.11
UMC 784.13(b)(5) <u>Reclamation Plan: General Requirements</u> <u>(Revegetation)</u>	10.4
UMC 817.111(a)(b) <u>Revegetation: General Requirements</u>	10.4
UMC 817.112 <u>Revegetation: Use of Introduced Species</u>	10.4
UMC 817.113 <u>Revegetation: Timing</u>	10.4
UMC 817.114 <u>Revegetation: Mulching and Other Soil Stability</u> <u>Practices</u>	10.4
UMC 815.116 and 817.117 <u>Revegetation: Standards for Success and</u> <u>Tree and Shrub Stocking for Forest Land</u>	10.5
UMC 817.150 <u>Roads: Class I: General</u>	11.2
UMC 817.151 <u>Roads: Class I: Location</u>	11.2
UMC 817.152 <u>Roads: Class I: Design and Construction</u>	11.2
UMC 817.153 <u>Roads: Class I: Drainage</u>	11.2
UMC 817.154 <u>Roads: Class I: Drainage</u>	11.2
UMC 817.155 <u>Roads: Class I: Maintenance</u>	11.2
UMC 817.156 <u>Roads: Class I: Restoration</u>	11.2
UMC 817.160 <u>Roads: Class II: General</u>	11.2
UMC 817.161 <u>Roads: Class II: Location</u>	11.2
UMC 817.162 <u>Roads: Class II: Design and Construction</u>	11.3
UMC 817.163 <u>Roads: Class II: Drainage</u>	11.3
UMC 816.164 <u>Roads: Class II: Surfacing</u>	11.3
UMC 816.165 <u>Roads: Class II: Maintenance</u>	11.3
UMC 817.166 <u>Roads: Class II: Restoration</u>	11.3
UMC 817.170 - 817.176 <u>Roads: Class III</u>	11.3
UMC 785.19 <u>Underground Coal Mining Activities on Areas or</u> <u>Adjacent to Areas Including Alluvial Valley Floors</u> <u>in the Arid or Semi-arid Areas of Utah</u>	12.1

TABLE OF REGULATIONS (continued)

	<u>Page</u>
UMC 817.133 <u>Postmining Land Use</u>	13.1
UMC 817.95 <u>Air Resources Protection</u>	14.1
UMC 800.11 <u>Requirements to File a Bond</u>	16.2
UMC 800.12 <u>Requirements to File a Certificate of Liability</u> <u>Insurance</u>	16.2
UMC 800.13 <u>Regulatory Authority Responsibilities.</u>	16.2

TECHNCIAL ANALYSIS

WILBERG MINE, EMERY COUNTY, UTAH UTAH POWER AND LIGHT COMPANY

INTRODUCTION

Utah Power and Light Company of Salt Lake City, Utah, has submitted a permit application for the Wilberg mine complex in Emery County, Utah, in compliance with the Coal Mining and Reclamation Permanent Program (Chapter I) of the State of Utah. The permit area consists of 11,508 acres and the mining plan area consists of 10,919 acres and will be mined to the year 2022 (life of mine). The term of the permit is five years, with right of successive renewal for the rest of the permit area, which is equivalent to the life of mine. The Wilberg mine is presently operating under an approved mining permit issued by the State of Utah, Division of Oil, Gas & Mining (Act/015/018) issued on May 11, 1978, and with approval under 30 CFR 211 issued by the U.S. Geological Survey on January 23, 1978, (MSHA ID No. 42-00121).

The Wilberg mine is one of three separate mines owned by Utah Power and Light Company (UP&L). They are located in the area of East Mountain (T17S, R7E), and are largely within the Manti La Sal National Forest. The three mines are the Wilberg, Deer Creek, and Des-Bee-Dove, containing three mineable coal seams, the Hiawatha, Cottonwood, and Blind Canyon. Operations of the Deer Creek mine overlay those of the Wilberg mine, with the coal reserves within the (lower) Hiawatha seam being mined predominantly by the Wilberg mine and the (upper) Blind Canyon coal reserves being mined predominantly by the Deer Creek mine. A third seam, the Cottonwood, occurs between the Hiawatha and Blind Canyon seams and is mined only in the south part of the Wilberg mine. The anticipated life-of-mine production from the Wilberg mine is near 87.0 million tons. Approximately 65 percent of the Wilberg coal reserve will be extracted by long wall mining systems; the remaining 35 percent will be extracted by room and pillar methods. Estimated annual production averages 2.4 million tons through the first decade of the next century.

UP&L acquired Wilberg mine in September of 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 operation was redesigned, and (with the exceptions of some underground workings) none of the original facilities are in existence. The main surface facilities for the Wilberg mine are located at the head of Grimes Wash, at the junction of the left and right forks of Grimes Wash. Facilities are coal handling structures including a coal storage silo, breaker station, truck loadout, and conveyors; embankments that support parking areas, material storage areas, roads and the coal handling structures; impoundments for sediment control; and miscellaneous features such as drainage systems. Offices, bathhouse, and a storage facility are located underground.

The Wilberg mine surface facilities are located at three areas: first, the main facilities area is located on a 20-acre site at the head of Grimes Wash; second, a fan portal is located on a five-acre site on Cottonwood Creek, four miles west of the Grimes Wash facilities area; and third, a waste rock disposal area is located on a 16-acre site along Grimes Wash approximately 1.5

miles down valley of the main facilities area. In addition to these disturbances a sewer absorption field is located on a 6.5-acre site one mile down-valley of the main facilities area. This site was approved under a BLM special use permit and has been constructed and reclaimed under the conditions of that permit. No further disturbance is planned at this site. There are some 21 portals associated with the mine, most of which are for ventilation purposes.

Coal Leases

The approximately 11,500 acres contained in the Wilberg mine permit area include all or part of the following federal coal leases:

	<u>Total Lease Area</u>		<u>Within Permit Area</u>
SL-064900	160	acres	160
U-1358	320	"	320
SL-070645, U-02292	2,560	"	1,165
U-084923	2,252.42	"	697
U-084924	1,211.48	"	985
U-083066	2,485	"	2,485
U-040151	1,720	"	1,720
U-044025	40	"	40
U-47978	3,347.31	"	3,347.31
Total acres leased coal in permit area			<u>10,919.31</u>

Other owners of coal to be mined in the Wilberg permit area include:

The Estate of Malcolm McKinnon	440	acres	110
Cooperative Security Corp.	420	"	420

Additional lands affected by mining include:

Sewer Absorption Field (BLM Surface Lease)	4		4
Waste Rock Storage Site (BLM Surface Lease)	49		49
Forest Service Special Use Area	6		<u>6</u>
Total acres in permit area			11,508

Description of Operations

Two longwall systems and three continuous mining units are currently being utilized. The Applicant is intending to mine all areas within the mine limits, constrained only by safety conditions.

The coal seams that will be mined include, from bottom seam to top, the Hiawatha seam, Cottonwood seam, and the Blind Canyon seam. There are approximately 80 feet of interburden separating the Cottonwood and Hiawatha seams. The Cottonwood seam has a mineable thickness only in the southern half of

lease U-47978. At this location, there are approximately 60 feet of interburden separating the Blind Canyon and Cottonwood seams. Over the rest of the lease area, the Blind Canyon and Hiawatha seams are separated by approximately 80 feet of interburden and there is no mineable thickness of the Cottonwood seam. Approximately 9,534 acres of mineable coal in the Hiawatha seam, 583 acres in the Cottonwood seam, and 1,208 acres in the Blind Canyon seam are accessible from the Wilberg mine. The minimum seam thickness which can be economically recovered is five feet. The maximum thickness of coal to be recovered is expected to be about 16 feet.

Geologic Setting

The three UP&L mines, including the Wilberg, are located in the Central Utah coal basin. The coal seams are located in the lower 150 feet of the Blackhawk Formation in the Mesa Verde Group. The Hiawatha seam is located on or near the Starpoint Sandstone which is a marker bed between the Blackhawk and the Mancos Shale. Approximately 800 feet above the Starpoint Sandstone is the Castlegate Sandstone. This massive sandstone is almost 200 feet thick in this area and is a prominent cliff former. Above this is the Price River Formation which is sandstone interbedded shale and conglomerate and is approximately 350 feet thick. Above this is the North Horn Formation which is interbedded shales and sandstones and is approximately 750 feet thick. Finally, capping East Mountain in the Wilberg mine area is the Flagstaff Limestone approximately 100 feet thick. Figure 2-2 (PAP, Vol.1), shows the general stratigraphy of the mine area. Total thickness of all formations combined is approximately 2,200 feet. East Mountain is very dissected and overburden above the coal seams is usually much less than the total thickness of all formations.

Renewable Resources and Structures

Renewable resources and structures occur above the mine. The structures which could be affected by subsidence are buildings, roads, fences, stock-ponds and associated earth dams, and a landing strip. The buildings are only periodically occupied since access to the top of East Mountain is restricted in the winter. One structure is a wood frame cabin of 168 square feet, using water from Burnt Tree Spring. Another wood cabin is near the border between the Wilberg and Deer Creek mines; it has no foundation, no plumbing, and measures 21 feet by 37 feet. A small landing strip is located in the northwest corner of Section 17 overlying the Wilberg mine.

The roads above the mine provide access to the cabins, recreational and grazing areas, and the landing strip. No electrical power lines, oil or gas wells, pipelines or other utility structures which would be affected by surface subsidence exist within the Wilberg mine area, with the exception of a small waterline from Burnt Tree Spring to the nearby cabin.

The renewable resources overlying the underground mine are springs, seeps, grazing land, timber and wildlife. The springs and seeps are shown on Map 2-14 (PAP, Vol.5). The Ground Water section (Chapter III) of this technical analysis provides a detailed description of the hydrologic charac-

teristics of the springs and seeps (also see the following section, Hydrologic Resources).

The wildlife land uses above the mine include deer winter and summer range, elk winter range, and raptor habitat (Map 2-19 PAP, Vol. 5). The range lands are widespread over the surface of the mine. The raptor habitat generally follows the sandstone outcrops in the southeast section of the mine area, primarily in the south lease area (U-47978).

Hydrologic Resources

Grimes Wash is a tributary to Cottonwood Creek. The Right Fork of Grimes Wash flows intermittently through the year primarily in response to snowmelt runoff, and the Left Fork flows perennially, sustained by spring flow and snowmelt. Water quality data have been collected by UP&L since 1979 for pH, conductivity, total dissolved solids (TDS), total suspended solids (TSS), iron and manganese. Mean values of these parameters over the period 1978 - 1982 are as follows:

pH	=	8.1
Conductivity (micromhos/centimeter)	=	900
TDS (mg/l)	=	480
TSS (mg/l)	=	210
Iron total (mg/l)	=	2.4
Manganese (mg/l)	=	0.09

The high suspended sediment (TSS) load in Grimes Wash is due to spring runoff during May and June. Other parameters are within normal limits. Base flow which is derived from a number of springs and seeps on East Mountain has a low suspended sediment concentration.

The majority of springs on East Mountain occur in the North Horn Formation with few exceptions. The North Horn Formation is composed of a sedimentary sequence of variegated shales, sandstone, conglomerates, and fresh water limestone. The overlying Flagstaff limestone is highly fractured, which allows for good vertical transport of water with little lateral movement and hence few springs. Significant recharge occurs in the Flagstaff limestone during the March through June snowmelt period. Springs on East Mountain have been positively associated with faults, fractures and formation contacts.

Within the Wilberg mine the coal seams are in contact with ancient stream channel deposits in the Blackhawk Formation. Mining operations in Wilberg receive significantly increased inflow when the channel deposits are intersected. Faults within the mine are also a source of water, as are joints and fractures. The fault system on East Mountain in general probably enhances local permeabilities in the area of the fault plane, providing lateral and vertical flow channels within and across geologic units.

Water quality for the East Mountain springs is good, with pH ranging from 7.5 to 7.9, total dissolved solids ranging from 270 ppm to 310 ppm, and low concentrations of suspended solids, iron and other minerals. The mine water quality for the Wilberg mine is measured as water is discharged from the main sump to the left fork of Grimes Wash. pH ranges from 7.0 to 8.2, chloride

*What about
Blackhawk -
Spring it says*

from 2.7 to 63.3 ppm with a mean value of 14.4 ppm, total dissolved solids from 424 to 705 ppm with a mean value of 530 ppm, and oil and grease average 3.1 ppm. Concentrations of other minerals in the mine effluent are low.

Vegetative Resources

The permit area includes five major vegetation types including: mixed conifer, pinyon-juniper, sagebrush, grass, and riparian. Mixed conifer primarily occurs at higher elevations and on north facing slopes, and is the most extensive floral community. The next most extensive community is pinyon-juniper which occurs on steep rocky slopes with a southern exposure and on more gentle terrain at lower elevations. The sagebrush and grass communities occur at higher elevations on drier sites. The riparian community occurs only along Cottonwood Creek on the western side of the permit area.

Because this is an active mine and most disturbances have already occurred, baseline vegetation data was not obtained. Therefore, only reference areas were selected (and sampled) from representative locations for each of the three major disturbances.

The Grimes Wash disturbance (main facility area) displaced twenty acres of pinyon-juniper vegetation. The waste rock disposal area will eventually displace a total of sixteen acres (current disturbance is 7.5 acres) of pinyon-juniper vegetation, while the Cottonwood portal disturbance has displaced five acres of pinyon-juniper vegetation. The total acreage expected to be lost for the duration of mining and reclamation is 41 acres. Comparisons of similarity between each of the three reference areas and estimates of the predisturbance characteristics of respective disturbed areas are given on pages 2-110, 2-125, and 2-137 (PAP, Vol. I). The indices of similarity showed values of 70.8, 78.6, and 90.0 percent for reference areas of Grimes Wash, the waste rock disposal area, and the Cottonwood portal area, respectively.

Field investigations revealed no threatened or endangered species present near any area of disturbance. The U. S. Fish and Wildlife Service's Endangered Species Office provided a letter on January 10, 1984, stating that they find no potential conflict with the proposed action.

Soils

Soils occurring within the proposed permit area are composed of three soil map units. These units are Typic Cryochrepts-Lithic Cryorthents-Rock Outcrop, loamy skeletal, shallow association (40-60 percent slopes); Pachic Cryoborolls, loamy and loamy-skeletal (10-25 percent slopes); and Typic Cryoborolls, loamy and loamy-skeletal (25-40 percent slopes).

Due to previous mining operations, little soil material exists on the main portal facilities disturbed areas. The final graded surface to be used as a seedbed will be composed primarily of cut, fill and mine-generated spoil materials with some coal wastes included. The pH of selected spoil samples ranged from 7.5 to 8.8 with coal waste samples having pH values of 6.8 and

6.9. Electrical conductivity (EC) values for coal waste were less than 1.8. EC for spoil ranged from 3.8 to 6.8. Sodium adsorption ratios (SAR) for all materials analyzed were low (<2.3), indicating no potential problems with sodic soils. Nitrogen, phosphorous, and potassium levels were low for all samples analyzed. Percent saturation values for 1983 fill samples ranged from 20 to 30, indicating coarse spoils with relatively low water holding capacities. Textures of 1983 fill samples are primarily sandy loam.

The soil unit overlying the Cottonwood portal fan site described as follows: 30 percent is deep and well drained with rapid permeability, moderately low available water capacity, and high erodibility. The surface layer is a very stony sandy loam or loam about 28 cm thick. It contains more than 35 percent rock fragments. Forty percent of the unit has a very stony sandy loam surface layer about 10 cm thick overlying a very cobby silt loam about 25 cm thick. The soil is less than 51 cm to sandstone bedrock. Permeability is moderately rapid and available water capacity is very low. Erodibility is high and the soil is excessively drained. The remaining 30 percent of the unit consists of rock outcrops.

The soil overlying the proposed waste rock disposal site has developed from alluvial outwash of Cretaceous sandstone and siltstone beds. The surface layer is a gravelly silt loam about eight cm thick over a gravelly loam about 38 cm thick with a cobble bed at 46-51 cm overlying a caliche horizon about five cm thick. Laboratory analyses conducted on two soil samples indicated low sodium and salt concentrations. pH values were 7.90 and 8.25. Laboratory analyses conducted for waste rock to be deposited on site showed low EC values and mean pH values ranging from 5.87 to 8.9. SAR values were generally below 12, though samples for the Blind Canyon interburden and Blind Canyon floor were 14.3 and 17.36 (mean), respectively.

Fish and Wildlife Resources

Wildlife species inhabiting the mine permit area and vicinity are typical for this region of the Wasatch Plateau and no critical habitats for threatened or endangered wildlife species occur in the areas disturbed or to be disturbed, by mining operations. The bald eagle is a winter visitor to the region but will not be affected by mine activities.

Riparian habitat along Cottonwood Creek is considered by the Utah Division of Wildlife Resources (UDWR) to be of critical value to the area's wildlife resources. No fish species occur in Cottonwood Creek or Grimes Wash in the vicinity of the mine facilities; however, both drainages are tributaries to lower Cottonwood Creek, which does support trout and is classified by the UDWR as a Class 3 stream. Water resources given the Class 3 designation are considered by the UDWR to be of high priority to an area's wildlife. Several game and high-interest wildlife species inhabit the general vicinity of the mine permit area. None are likely to be exposed to any significant impact resulting from mine operations (see Chapter VII).

Cliffs in the vicinity of the mine portal and facilities area represent potentially valuable cliff-nesting habitat for several species of raptors (e.g. golden eagle, red-tailed hawk, and prairie falcon). Wooded habitats

within the permit area also provide nest sites for tree nesting species such as northern goshawk, Coopers's hawk, sharp-shinned hawk, red-tailed hawk, American kestrel, and screech owl. A 1981 U.S. Fish and Wildlife raptor survey for cliff-nesting species identified two golden eagle nests and one raven nest within one kilometer of the Wilberg mine portal area. All were inactive in 1982. In addition, three golden eagle nest sites occur near the Newberry Canyon Breakout. Nest No. 63 was active and produced two young in 1981, while Nest No. 62 was active and produced two young in 1982. These nests are likely to alternate. Map 2-19 of the application gives the locations of all nest sites. The USFWS has made recommendations concerning protection for these raptors nesting sites in their letter of August 15, 1983.

Mule deer occur within the mine plan area year round. During the summer they are found predominantly in habitats at the middle to upper elevations in the permit area (e.g., mixed conifer, sagebrush, and grassland). In the winter, habitats (especially pinyon-juniper) at the lower elevations along the benches and slopes of the southern portions of East Mountain in the vicinity of the Wilberg mine are designated by the UDWR as high priority mule deer winter range. Map 2-20 (PAP, Vol. 5) shows the location of mule deer winter range in relation to the mine permit area. The waste rock storage site and portions of the access/haul road and sewer absorption field occur within high priority mule deer winter range. A high priority designation is given by the UDWR to "intensive use areas" for one or more species of wildlife. For mule deer, high priority range is synonymous with mule deer winter range.

Land Use

The portal and facilities area lie within the Manti-La Sal National Forest. The remaining land within the mine permit area is either privately owned or is part of the Manti-La Sal National Forest. Mineral ownership within the permit area consists of federal and fee coal. No oil or gas wells have been drilled within the permit area, and no gas or oil fields are known for the south end of East Mountain.

Pre-mining land uses in the disturbed areas associated with the Wilberg mine were livestock grazing and wildlife habitat. Land use on and adjacent to the permit area consists of recreation, mining, wildlife habitat, and limited livestock grazing. Land use and local land use classifications are shown on Map 2-19 (PAP, Vol. 5). Coal mining in Grimes Wash has occurred since 1944. Early mining (1944-1958) consisted of a small wagon mine with activities confined to Lease SL-064900. An estimated 107,000 tons were removed from the Hiawatha Seam by conventional methods. UP&L has operated the Wilberg mine since 1977.

No farming or commercial forest harvesting has occurred within the permit area. In the vicinity of the mine facilities, steep, rocky terrain, poor soils, and low precipitation preclude any farming. The predominance of rugged terrain and rocky cliffs also limits livestock grazing in the vicinity of the mine portal and facilities. BLM grazing allotments in the vicinity of the mine portal area are judged in fair condition with a downward trend. Range condition for USFS land on East Mountain above the mine portal area is judged as good, with a static to upward trend. Pinyon-juniper is the only vegetation

type that has been disturbed by mining activities. Total forage productivity of this type ranges from 25-100 pounds/acre (dry weight) on the steep rocky slopes to 100-324 pounds/acre (dry weight) on the benches as estimated by the applicant.

I. TOPSOIL

1.1 Description of Applicant's Proposal

The applicant provided a Soil Investigations map and corresponding discussion which generally characterized the soils (to sub-group) occurring over the entire permit area (Vol. 1, pp. 2-149 to 2-150). The mapping corresponded basically to an Order III-IV Soil Conservation Service (SCS) survey. With the exception of possible subsidence effects, these soils will not be disturbed by mining operations.

Since the main portal facilities area (20 acres) has been disturbed by previous mining activities, no soil remains on the area. The soil survey was not conducted on previously disturbed areas where topsoil had been buried. In 1980, a sampling program was initiated to characterize fill materials which would serve as the planting medium following final grading (Vol. 1, pp. 2-143 to 2-148). Additional sampling was conducted in 1983 to further evaluate the physical and chemical characteristics of fill material and waste rock.

A soil survey (Vol. 1, pp. 2-154 to 2-158) was conducted at the Cottonwood fan portal site (five acres) in 1979. The survey corresponded generally to an Order II-III level SCS survey and provided descriptions of soil complexes to be affected by operations along with a soil survey map. Soils associated with this disturbance were removed and stockpiled during initial exploration. Four soil samples were taken for laboratory analysis. The soil overlaying the waste rock disposal site (16 acres) was characterized to series level (Vol. 1, pp. 2-152 to 2-154). Two samples were taken for laboratory analysis. A sample pedon description was provided for the series.

Soil Suitability and Handling - Wilberg main portal area

Because the Wilberg main portal area is located on a pre-SMCRA disturbed area where no topsoil was salvaged, existing cut-and-fill material will constitute the majority of the seedbed material following grading. This medium, based on chemical and physical analyses, is considered suitable for reclamation, given the absence of soil materials. Electrical conductivity, pH, and sodium adsorption ratios are all within acceptable limits. Textures are primarily loamy sand. Water-holding capacities are low (Vol. 2, Table 1, p. 4-9).

Because soil material is lacking for reclamation, the applicant proposes to attempt to develop a substitute soil by temporarily reclaiming various existing fill slopes which will not be disturbed during mining operations (see Chapter X, Revegetation). It is assumed that the surface material of the slopes, through temporary reclamation, will increase in organic matter content and microbial populations thereby providing a planting medium superior to existing fill materials. At the onset of final reclamation grading, this "topsoil" would be stripped from the temporarily reclaimed slopes and stockpiled. As grading is completed, these cut-and-fill seedbed materials ("topsoil") will be distributed on newly graded surfaces to a depth of 6 to 12

inches at random locations throughout the site to enhance reclamation potential. The quantity of "topsoil" is expected to be sufficient to cover approximately two acres of the 20 disturbed acres.

Following grading, all seedbed material will be sampled for fertilizer requirements and to detect the presence of localized high EC and SAR concentrations. Fertilizer will be broadcast prior to planting according to soil test results.

Soil Suitability and Handling - Cottonwood Fan Portal

The applicant has stated that all soils to be affected at this site were previously removed under a prior exploration permit (Vol. 2, p. 3-24). The soils have been placed near the portal in two stockpiles representing subsoil and topsoil materials. Stockpiles are in positions which will preclude disturbance by construction or operational activities. Stockpiles were revegetated during exploration permit work. Stockpiles will remain through the life of the portal.

The four soil samples taken at this site were analyzed for pH and electrical conductivity (Vol. 2, Table 2, p. 4-28). The pH values are within acceptable limits. Electrical conductivity values for three samples, two of which were subsoil, ranged from 6.0 to 8.4. These soils will be considered suitable for reclamation given existing conditions. Textures range from very stony sandy loam to cobbly silt loam. Plant species proposed for revegetation (Vol. 2, p. 4-28) are appropriate for these soil materials.

Following abandonment, the fan pad and access road will be backfilled with subsoil material. Topsoil will then be redistributed over the backfill. Fertilizer will be broadcast into prepared planting furrows.

Soil Suitability and Handling - Waste Rock Disposal Site

The soil overlying the proposed 16 acres of disturbance (7.5 acres of which have already been disturbed) is considered by the applicant to be suitable for reclamation based on the results of two samples taken at each end of the proposed disturbed site (Vol. 3, Appendix VII, p.3). The soil texture is a silt loam. Electrical conductivity, pH, and sodium adsorption ratio values are within acceptable limits for both samples. *where?*

The applicant proposes a method of topsoil removal, storage, and replacement which will minimize impacts to the soil resource (Vol. 3, Appendix VII, pp. 4-7). Seven individual waste rock storage cells will be built, two of which are already constructed. Cells will be constructed individually to accommodate waste rock material from the mine as the need arises. To construct each cell, the applicant proposes to strip approximately 18 inches of soil from the 150 x 400-foot cell site yielding approximately 3,300 cubic yards of soil material. Approximately 1,200 cubic yards of soil will be used to form a berm at the toe of the fill (see Figure 2, Appendix VII) to border

the cell. The remaining 2,100 cubic yards will be applied as a soil material to the cell previously filled and graded. To complete soil reapplication on the previously filled and graded cell, the applicant states that interior soil berms between old and new cells (containing approximately 1,200 cubic yards of soil) will be graded on to the cell surface to approximately equal to the 3,300 cubic yards of soil removed from the site during construction (PAP pp. 4-5, Appendix VII). Soil will be redistributed evenly to approximately a 18-inch depth over all cells. The last cell to be revegetated will be covered using soil from the adjacent interior berms and the exterior berms bordering the older cells.

No long-term soil stockpiling is planned for the majority of the soil material. Soil will remain in berms only until waste rock deposition is completed in each cell. Soil in interior berms will then be spread over the completed cell. Some exterior soil berms will remain in place until waste deposition in the final cell is completed. The applicant has committed to stabilize the temporary berms by planting an appropriate seed mixture (Vol. 3, Appendix VII, p. 14).

During final revegetation, fertilizer materials will be spread over the resoled surface at rates based on soil test results. A plan for sampling soils for fertilizer analysis or to evaluate the results of grading was presented.

1.2 Evaluation of Compliance of Proposal

UMC 817.21 Topsoil: General Requirements

The applicant has complied with the requirements of this section for all proposed disturbed areas.

UMC 817.22 Topsoil: Removal

The applicant has complied with the requirements of this section with respect to the Wilberg main portal area and the Cottonwood portal disturbed areas. The applicant has proposed to remove and stockpile 18 inches of soil overlying the waste rock disposal site.

UMC 817.23 Topsoil: Storage

The applicant has complied with the requirements of this section with regard to plans submitted for the Wilberg main portal area, the Cottonwood fan portal site, and for the waste rock disposal site.

UMC 817.24 Topsoil: Redistribution

Plans submitted are in compliance with this section. Scarification of road surfaces is provided.

UMC 817.25 Topsoil: Nutrients and Soil Amendments

The applicant proposes to take two surface samples per acre to determine fertilizer requirements at all locations. The applicant has committed to applying fertilizers according to soil test recommendations at all locations.

1.3 Conditions

None

II. HYDROLOGIC BALANCE - SURFACE WATER

2.1 Description of Applicant's Proposal

The twenty-acre main Wilberg mine facility and portal area is located at the junction of the left and right forks of Grimes Wash. The site is characterized by sparse vegetation and rugged, dry, steep terrain. A second five-acre area has been disturbed in conjunction with the construction and future operation of the Cottonwood fan portal located four miles west of the main portals. This area lies on the steep west-facing slopes of East Mountain just above Cottonwood Creek. The third area consists of approximately sixteen acres of land to be utilized as a waste rock disposal site, located 1.5 miles southeast of Wilberg mine proper. This area consists of gently sloping terrain to the southwest of Grimes Wash.

Diversion ditches and sedimentation ponds are used at the main facilities site to protect the surface water hydrologic balance. The applicant proposes to continue the use of the existing drainage facilities during the remainder of mining operations. These drainage facilities consist of two separate systems which are classified by the applicant as "undisturbed" and "disturbed" collection systems. The undisturbed systems collect water draining the left and right forks of Grimes Wash above the disturbed area. The water is passed downstream of the disturbed area through underground culverts which empty into the main stem of Grimes Wash. The disturbed area collection systems consist of a network of open ditches and culverts which drain into two sediment ponds.

Undisturbed runoff is collected by concrete inlet boxes in both the right and left forks of Grimes Wash and conveyed by 72-inch pipes to a junction in the plant yard area. From the junction box, a 90-inch culvert carries the runoff back into the natural channel. The system was designed by the applicant to adequately pass the 50-year, 24-hour precipitation event. Map 3-27 (PAP Vol. 6) shows the layout of the system.

The "disturbed" collection system collects runoff from the roads, parking lots, storage areas, and portal area and conveys it to two sedimentation ponds located within the truck turn-around loop. This system consists of concrete catch basins, small-diameter culverts, and open asphalt ditches designed to adequately collect and pass peak flow from a 10-year, 24-hour precipitation event. The system is shown in the applicant's proposal on Map 3-28 (PAP Vol. 6).

The two sediment ponds, located in series with each other, have a combined capacity of four acre-feet. Each pond is fitted with a three-foot diameter corrugated steel stand pipe with a three-inch siphon pipe as the principal outlet works and for dewatering purposes. Several key issues regarding the sediment ponds are addressed in this technical analysis: (1) the capacity of the ponds; (2) the operation of the ponds to ensure adequate sediment removal; (3) emergency spillway performance; and (4) stability of the pond embankments.

The volume of the sediment ponds was based on a hydrologic analysis for the disturbed area taking into account the increased volume of runoff from paved areas and the sediment volume over a three-year period. The volume of runoff reaching the sediment pond was estimated by the applicant as 2.55 acre-feet for the 10-year, 24-hour precipitation event. The sediment volume is based on an average sediment accumulation for the past five years which averaged 0.4 acre-feet as measured and reported quarterly by the applicant. Of the 20 acres of disturbed area, some six acres are paved and will not contribute sediment to the pond. Due to the sparse cover and steep slopes at the site, the erosion potential is high. Gully erosion potential has been greatly reduced since the applicant has provided a stable drainage system. Using the applicant's estimate gives a sediment storage requirement of 1.2 acre-feet (over three years) that is in agreement with the 1.4 acre-feet estimate using 0.1 acre-foot per acre-foot of disturbed area (14 acres).

The operational characteristics of the sediment ponds were analyzed by the applicant using the combined hydraulic performance of the principal and emergency spillways of upper pond and the hydraulic performance of the principal spillway for the lower pond. The 10-year, 24-hour inflow hydrograph was routed through the upper pond, then the lower pond using the level pool routing technique. The upper pond has a volume of 2.15 acre-feet to the spillway crest, of which it is estimated by the applicant that 0.90 acre-foot is required for sediment storage (this is 75 percent of the total sediment storage required). The lower pond has similar outlet works to that of the upper pond.

The analysis results indicated that during a 10-year, 24-hour storm, the upper pond would fill to an elevation 0.27 feet, above the emergency spillway crest. The lower pond would fill to an elevation of 2.8 feet below that spillway crest. The starting conditions for the routing assumed that the pond would be filled to the level of the principal outlet in both ponds. This constitutes 1.0 acre-foot of the 4.0 acre-foot pond capacity. The lower pond discharges at about 0.50 cfs through much of a storm and requires over 2.5 days to completely discharge. Settling time in the pond is more than one day.

The applicant provided a brief discussion of the manner in which the emergency spillway on the sediment pond would operate to discharge the 25-year, 24-hour storm inflow. The triangular hydrograph procedure is applied to determine the peak inflow to the sediment pond using the curve number procedure to determine the volume of runoff. The choice of parameters for the procedure is acceptable; however, the applicant states that the drainage area is only 15 acres above the pond. Previous hydrologic analysis in Appendix XIII of the PAP showed the drainage area to be 30 acres and review of maps of the facilities area confirms this. The applicant's peak flow and runoff volume are subsequently in error by a factor of two. The conclusion that the applicant drew, based on original hydrologic calculations, was that the discharge could be safely conveyed through the upper ponds spillway and that the entire storm would be contained in both ponds. Due to the error in drainage area, this conclusion cannot be drawn without further analysis. Since the sediment ponds are in place, this analysis was conducted as part of this technical analysis and is discussed in further detail in the next section of this chapter.

The two pond embankments are twelve feet wide at the crest, having interior slopes of 2H:1V and exterior slopes of 3H:1V. The upper pond is 22 feet high from the bottom of the pond to the crest of the embankment, and the lower pond is 20 feet high. Both ponds have two feet of freeboard from the crest of the emergency spillway to the embankment crest.

Reclamation at the main Wilberg site will consist of removing all sediment ponds, temporary drainage systems, and other structural facilities. The reclaimed channel drainage system consists of the two forks and main stem of Grimes Fork regraded to approximate original contour. Extensive grading of steep terrain of material placed during mining will be required to achieve this channel configuration. Riprapped channels with 10 to 15 foot base widths and two to one side slopes are proposed for the two forks and main stem. This channel system will have very steep gradients, up to 40 percent, in the upper reaches of the two forks. Below the confluence, the applicant proposes to construct the channel on the canyon floor at the present location of the two sediment ponds. Two permanent 90-inch diameter culverts will be used to carry flows under the access road just below the sediment pond location. The access road will be left in place up to a road turn around on the east side of the canyon above the confluence of the two channel forks. Just below the culverts the riprapped channel will transition to the undisturbed Grimes Wash channel.

Map 4-1 (PAP, Vol. 6) shows Stage 1 of the final reclamation procedures. For this stage, the final reclamation channel will be completed up to the sediment ponds and land regrading completed above the sediment ponds; both sediment ponds will be left in place. The bypass culvert for Grimes Wash will be left in place under the sediment ponds during this stage of reclamation. To aid in erosion control on the large fill slopes, small ridges or contour furrows will be made at 10-foot intervals, sloped at two percent toward the riprap channel. Drainageways are provided to link the contour furrows together and allow runoff to reach the sediment ponds. A small riprap channel and culvert will be used to divert runoff (from above the "V" formed by the confluence at the two forks) into the sediment ponds. During the second stage of reclamation (Map 4-2, PAP, Volume 6), the sediment ponds and bypass culvert will be removed, and the remaining segment of the Grimes Wash channel reclaimed.

The proposed surface drainage system at the Cottonwood fan portal site consists of diversions of flow from undisturbed areas and a system of ditches and sediment ponds for collecting runoff from disturbed areas. The proposed system will utilize three existing sediment ponds and an existing diversion ditch. Map 3-9 (PAP, Vol. 6) shows the layout of the system.

Runoff waters above the planned disturbance will be intercepted by two ditches. One ditch will divert runoff onto undisturbed land. The second ditch will intercept and convey the undisturbed runoff waters through the project area to a culvert which diverts the water under Cottonwood Canyon road and into Cottonwood Creek.

Disturbed runoff from the fan portal is diverted to a constructed channel which empties into a sediment pond. Runoff from subsoil and topsoil storage

piles are channeled by a ditch to another small sediment pond. Discharges from the two sedimentation ponds are then carried by a road-side ditch to a final pond before entering Cottonwood Creek via a nearby culvert.

Reclamation of the Cottonwood fan portal site will consist of removing all sedimentation ponds, diversion ditches, and culverts. The applicant proposes to regrade the site to approximately the original contours. The access road will be removed.

The waste rock disposal site will consist of interconnected storage cells to be utilized sequentially as waste rock is generated from within the mine. The total area used for storage will equal 16 acres when all the cells are built. A temporary diversion ditch is shown on the applicant's drawings for diverting water from undisturbed areas above the site to a small undisturbed drainage that drains into Grimes Wash. The waste rock containment structures are designed to capture storm runoff and snowmelt without discharge.

Reclamation of the waste rock disposal site will consist of removal of all berms and final grading to a smooth even sloping embankment. The top of the embankment will be approximately 4.6 feet above the existing ground surface and have a similar longitudinal slope of seven percent. A permanent diversion above the site, near the location of the temporary diversion, will be used to direct surface runoff around the structure.

The applicant currently monitors runoff at three permanent locations on Grimes Wash. These include locations above the Wilberg mine of the left fork and right fork of Grimes Wash and one site below the Wilberg mine. Water quantity and quality samples are collected on a monthly basis for the duration of the snowmelt runoff season. A Parshall flume was installed in the left fork in 1983. Prior to flume installation, flow was estimated. Water quality samples are collected in a grab-type manner and analyzed for pH, conductivity, TDS, TSS, iron, and manganese.

Cottonwood Creek was monitored for quality and quantity by the applicant at four locations adjacent to the Cottonwood fan portal for water quality parameters from 1979 through 1982. This has provided baseline water quality data for the Cottonwood fan portal that is scheduled for operation in the future. The sampling program has produced a total of 23 data sets since the study was initiated. The water quality sampling program was ended as of January 1, 1983. The applicant proposes to continue to monitor water quantity for the life of the mine at one location.

Discharge from the sediment ponds at the Wilberg mine are monitored on an event by event basis and reports are filed quarterly as required by the NPDES permit. When the Cottonwood fan portal becomes operational, effluent measurements from the Cottonwood fan portal sediment ponds would be required.

Wilberg mine has been issued an NPDES permit (UT-0022896) with four outfall locations identified. These locations include the sediment pond outfalls at the Wilberg mine and Cottonwood fan portal sites; the Wilberg mine dewatering discharge; and the Miller Canyon ventilation breakout (dry, no reported discharge).

2.2 Evaluation of Compliance of Proposal

UMC 817.41 Hydrologic Balance: General Requirements

The applicant's compliance with this regulation is discussed in Chapter IV.

UMC 817.42 Hydrologic Balance: Water Quality Standards and Effluent Limitations

All surface drainage from the disturbed area passes through a series of sediment ponds. Discharge from the Wilberg mine has been shown to meet effluent standards. The applicant's sediment control plan during reclamation will prevent degradation of Grimes Wash.

UMC 817.43 Hydrologic Balance: Diversions and Conveyance of Overland Flow, Shallow Groundwater Flow, and Ephemeral Streams

The "disturbed" area runoff collection system at the main Wilberg mine site has been designed by the applicant to pass the 10-year, 24-hour runoff event adequately. The peak flows for the 10-year, 24-hour event were determined using the Rational Method and are adequate. Hydraulic design of the collection system was accomplished by the applicant using standard open-channel design methods and reasonable results were obtained. Adequate channel stability is provided throughout the design, with flow down steep slopes conveyed in corrugated steel pipe.

The undisturbed area runoff collection system at the Cottonwood fan portal site has been designed for the 10-year, 24-hour precipitation event. Peak discharges for runoff from undisturbed areas above the site were determined using the SCS Curve Number Method and results were reasonable. Discharges from the disturbed areas at the portal site were determined using the Rational Method, with reasonable results. Channel designs were based on standard open-channel design methods with all channels having adequate capacity to pass the design flows. All designed culverts have adequate capacity for the discharges. The diversion ditches have been provided with adequate riprap protection. Energy dissipation structures have been provided at locations where the ditches discharge to undisturbed land.

The temporary diversion ditch above the waste rock disposal site is shown on Drawing CM-10361-WB (PAP Appendix VII); hydraulic design calculations and typical cross sections are given. This ditch parallels the site and discharges into a gully which drains into Grimes Wash. The channel is riprap-lined with an energy dissipator provided at the confluence.

The applicant provides hydrologic calculations and related design information for the proposed permanent diversion above the waste rock disposal site for the 100-year, 24-hour runoff event. Adequate channel capacity and riprap protection are provided for in the design. The mild channel slope (two percent) is maintained with an energy dissipator at the confluence.

817.44 Hydrologic Balance: Stream Channel Diversions

The "undisturbed" runoff collection system of the main Wilberg mine site has been designed by the applicant to pass the 50-year, 24-hour runoff event adequately. This event is larger than that required by the regulations, and was used based on recommendations by the U.S. Forest Service. The peak flows for the event were determined by the Forest Service using the SCS Curve Number Method, with a summary of the results given in the appendix of the mine application. Technical reviews of the system as designed and constructed shows the diversion to be adequate for the 50-year event.

The permanent reclaimed drainage system at the main Wilberg site has been designed for the 100-year, 24-hour runoff event. Peak flows were determined using the SCS Curve Number Method; choice of curve numbers and calculations are adequate. Flow capacities of the diversion channels were determined by computing normal depth using the Manning Equation. A freeboard of two feet was added to the flow depth for wave and surface fluctuations. The two 90-inch diameter culverts at the road crossing are adequate to pass the design flows.

The reconstructed channels in both the right and left forks at Grimes Wash will be located on bedrock over most of their lengths. This will help provide channel stability on the steep slopes of the channels (approaching 40 percent). Regrading will result in earth channel banks, however, requiring riprap protection.

The applicant proposes two-foot diameter riprap. Using a safety factor method (Simons and Senturk, 1977, page 418) to evaluate riprap stability indicated that only the mild sloping reaches would have safety factors greater than one, the steep sloping channel segments all had safety factors of less than one.

It is concluded that no riprap design will be stable at the gradients proposed. Additional energy dissipation is required along the channel profile if a stable channel is to be provided for final reclamation. This can be done by adding drops and plunges along the channel profile. Since the profile is already on or near the Starpoint Sandstone formation, the applicant proposes to search (during construction of the restored channel) for natural drops between strata to form channel drops. The objective is to lower the average channel gradient, such that the two-foot riprap size will be stable. The applicant does not state any criteria that would ensure riprap stability and adequate energy dissipation (see Condition *1*).

The applicant provides a riprap gradation that limits variation in riprap size for the larger riprap sizes. This will prevent larger riprap sizes from encroaching significantly on the channel.

The applicant has addressed the need for a filter behind the riprap to prevent leaching of base material during flow. The applicant's presentation of the filter material design is unclear (page 4-2-A, Volume 2, PAP). The design procedure used is the Terzaghi-Vicksburg method but is only partially given. The gradation resulting from application of the method is not stated. The proposed filter thickness is nine inches. Since the riprap will be exca-

vated in course material, the following filter material gradation was determined as part of the technical analysis and is stipulated (see Condition *1*).

UMC 817.45 Hydrologic Balance: Sediment Control Measures

Erosion-control measures during reclamation are adequate to ensure that the quality of Grimes Wash is not degraded.

The applicant has shown a method of controlling erosion using contour ditching on the fill slopes. Contour ditches are channeled to a stable drainageway and then to the sediment ponds.

UMC 817.46 Hydrologic Balance: Sedimentation Ponds

The ponds are located as near as possible to the disturbed area and out of any perennial streams. They were constructed before any construction of mine facilities.

The applicant has proposed a sediment storage volume of 1.2 acre-feet which gives an adequate sediment storage volume.

The volume of the as-built sediment ponds (four acre-feet) is sufficient to contain the 10-year, 24-hour storm (2.6 acre-feet) and the maximum sediment storage volume (1.4 acre-feet) without discharging from the emergency spillway of the lower pond. The detention time is in excess of 24 hours for the sediment ponds operating in series and the applicant is in compliance with Part (c).

The dewater device for the upper pond is adequate and in compliance with Section (d).

The application complies with the requirement of Section (e) for short circuiting.

The application complies with effluent limitation (Section (f)).

No outflow will occur over the emergency spillway for the 10-year, 24-hour storm event. The application complies with Section (g).

The orifice and dewatering device are adequately located to meet the requirements of Section (h).

A flood-routing analysis was conducted by the regulatory authority to evaluate the sediment pond spillway performance for the 25-year, 24-hour storm event. A hydrograph was developed using a drainage area of 30 acres above the sediment pond inlets (versus the 15 acres used by the applicant) and the Curve Number and triangular hydrograph methods used by the applicant. The analysis confirmed that the sediment ponds' emergency spillways (standpipes three feet in diameter) will discharge safely with at least one foot of freeboard at all times. The applicant, therefore, has been shown to be in

compliance with Section (i) and (j).

The application complies with the requirements of these subsections (k) through (p).

Both sediment pond embankments have heights of less than 20 feet as measured from the upstream toe of the embankment to the crest of the emergency spillway. The applicant is in compliance with Section (q).

The application complies with subsections (r) through (t).

UMC 817.52(b) Hydrologic Balance: Surface Water Monitoring

The applicant accurately measures surface flows and water quality within the permit boundary. Five hydrologic monitoring reports have been completed since 1979 and submitted to the Utah Division of Oil, Gas and Mining on an annual basis. Raw data is submitted on a quarterly basis to the regulatory authority.

The applicant has discontinued water quality monitoring on Cottonwood Creek adjacent to Cottonwood fan portal. The initial objective of this monitoring was to provide baseline data on the effects of Cottonwood fan portal construction and this has been accomplished. The applicant intends in the future to mine under Cottonwood Creek, leaving the pillars in place. Monitoring of the flow quantity in Cottonwood Creek will continue for the life of the mine.

UMC 817.55 Hydrologic Balance: Discharge of Water into an Underground Mine

No discharge of surface water into underground mines is proposed at the Wilberg mine.

UMC 817.56 Hydrologic Balance: Postmining Rehabilitation of Sedimentation Ponds, Impoundments, and Treatment Facilities

Rehabilitation of all temporary diversions and sedimentation ponds at the Wilberg mine have been addressed adequately in the application.

UMC 817.57 Hydrologic Balance: Stream Buffer Zones

The Left Fork of Grimes Wash flows throughout the year from snowmelt runoff and baseflow derived from a number of springs in the watershed. The applicant's hydrologic monitoring data indicates that measurable flows have

occured in all but the driest years of record. A biological community as defined under Paragraph (c) of this section also exists.

Longwall mining operations are proposed in both the Hiawatha and Blind Canyon coal seams underlying the Left Fork of Grimes Wash. The overburden depth varies from 1,000 to 1,300 feet under the stream channel. The resulting subsidence (see technical analysis, Chapter IX) will result in a uniform lowering of the land surface of approximately 10 to 12 feet. Effects of subsidence may cause surface cracking but no change in channel shape or profile is anticipated. The applicant has committed to repair any damage to stream channels from surface cracking (page 4-54, PAP, Volume 2).

The baseflow for this stream is derived from the flow of several springs in Sections 16, 20, and 21 of Township 17S, Range 7E. Loss of flow from these springs from subsidence impact to their aquifer source would diminish flow to the Left Fork of Grimes Wash. Springs occurring in the Price River Formation, with an overburden above mining operations of less than 1,500 feet, are at risk from the effects of subsidence (see Chapter IX). However, the major portion of baseflow for the Left Fork is derived from Burnt Tree Spring and other small springs that flow from the North Horn Formation. These springs are separated from mining operations by at least 1,700 feet of overburden and are less likely to be affected by subsidence.

A monitoring program is being conducted by the applicant to identify discharge recession characteristics of eleven springs on East Mountain. Of these eleven sites, three are included in the Left Fork of Grimes Wash watershed including Burnt Tree Spring. Information collected to date indicates no subsidence impacts on the springs in this area with mining operations taking place in the Blind Canyon coal seam.

2.3 Conditions

Within 30 days of permit approval, the applicant must provide for regulatory authority approval, a statement of criteria that will ensure riprap stability and adequate energy dissipation in accordance with the requirements of UMC 817.44(b). In addition, the following filter gradation must be incorporated into the filter design for the riprap channel lining:

<u>U.S. Standard Sieve Size</u>	<u>Percent Passing by Weight</u>
3"	90-100
3/4"	20- 90
#4	0- 20
#200	0- 3

III. HYDROLOGIC BALANCE - GROUNDWATER

3.1 Description of Applicant's Proposal

The applicant proposes to monitor the quantity and quality of groundwater at locations of spring flow on East Mountain, at in-mine locations and the discharge point into Grimes Wash. For the past five years, UP&L has been collecting hydrologic data from the area above and adjacent to the mine and within the mine. This approach is made in lieu of establishing the exact nature of the groundwater system. The applicant has also compiled stratigraphic data on the lateral extent of possible aquifers on East Mountain. Data has been collected from 79 coal exploration drill holes (Map #2-1 PAP, Vol. 3) at 59 springs (Map 32-14 PAP, Vol. 4), and at seven in-mine locations.

The hydrogeologic system of East Mountain is described by the applicant as consisting of perched aquifers concentrated in the North Horn formation and the Blackhawk formation. The aquifers in the North Horn formation intersect the surface along the rim of East Mountain. Most of the springs identified by the applicant (39 of 59) occur in the North Horn formation with eight occurring in the Flagstaff limestone above the North Horn and the remaining twelve springs distributed in strata occurring below the North Horn. One spring surfaces in the Blackhawk formation, and mining in the Hiawatha and Blind Canyon coal seams in the Blackhawk has encountered significant groundwater.

*What about
Blackhawk - Spring*

In order to describe the source of groundwater inflows to the Wilberg mine, the applicant has prepared maps of the perched aquifers. The maps were prepared from exploration drill holes completed both in-mine and from the surface. The applicant has hypothesized that the perched aquifers are located in ancient fluvial channels that formed as a part of the deltaic deposition active during and after the coal forming peat accumulation. These fluvial channels are shown overlying the Hiawatha coal seam and trending in a northeast to southwest direction. Experience to date with water encountered during mining, indicates that the largest influx of water occurs when fluvial channels are contacted. Anomalies in the fluvial channels, such as a vertical sag (referred to as a channel roll) or faulting lead to locally larger inflows.

The primary recharge area on East Mountain is the low relief slopes on the Flagstaff limestone which caps much of the mountain. Significant recharge occurs during the March-June snowmelt period through numerous depressions and secondary permeability features associated with this unit. Recharge from other formations is minor due to the steep relief.

The movement of groundwater from recharge zones does not appear to be controlled by a single mechanism, but rather is influenced by local features that include faults, fractures, low-permeability beds, and high-permeability fluvial deposits. No igneous controls are present. The applicant distinguishes between recharge to North Horn aquifers and the Blackhawk aquifers with the latter depicted as being relatively isolated from the upper strata. This is based on the argument that the Blackhawk aquifers are isolated by impervious shales and that faults and fractures have been sealed by clays. Experience with mine dewatering indicates that as workings progress,

wet areas show significant decrease in flow. Data gathered by the applicant to date, however, shows a possible seasonal variation with dewatering volumes higher during the snow melt period of the year. This indicates that the Blackhawk aquifers may not be completely isolated and that some of the numerous faults and fractures supply recharge to these aquifers. } ✓

The Starpoint Sandstone immediately underlies the Hiawatha Coal seam and has moderate permeability but receives little recharge. Mine dewatering has not contributed to the recharge in this aquifer. Post-mining conditions may provide improved potential for increased recharge to the Starpoint Sandstone due to subsidence effects in the Blackhawk formation. The magnitude of such a change in recharge cannot be determined. ?

3.2 Evaluation of Compliance of Proposal

UMC 817.48 Hydrologic Balance: Acid-Forming and Toxic-Forming Materials

The applicant proposes to dispose of underground development waste from the mining operation at a 16.0 acre waste disposal site, 1.5 miles from the Wilberg mine. The site is located on the Mancos Shale Formation that has its first water bearing formation (the Ferron Sandstone) several thousand feet below the site. No water has been encountered in wells drilled for gas and oil in the vicinity. Chemical and physical analysis has been made by the applicant of over 130 samples of rock above and below the mined seams in Wilberg. This analysis indicated that the majority of the samples would be non-toxic and non-acid forming. One sample from the Blind Canyon floor showed a high SAR value and one sample from the Blind Canyon roof showed a high pyrite/marcasite content. The applicant states that the occurrence of these types of potentially toxic materials will be infrequent and that removal and handling of the waste rock will dilute the concentration of this material without the need for any special mixing.

Several factors greatly reduce the probability of water leaching from the waste disposal area after contact with any toxic material. The annual precipitation at the site is low (8 to 10 inches), the runoff potential of the topsoil (CN value of 0) is high, and the evaporation rates are high. Storm runoff will be retained on a cell until all cells are constructed. The residual water from a storm would percolate through the waste rock and drain to underlying colluvial material. Surface discharge of this residual water is unlikely since all underlying material is permeable. Deep percolation to the aquifer will require a substantial period of time.

UMC 817.50 Hydrologic Balance: Underground Mine Entry and Access Discharges

Although the Cottonwood fan portal is the lowest elevation portal in the Wilberg mine complex, a large area will be mined below the elevation of the portal. For drainage to occur from the portal, the abandoned mine workings would have to fill with water. This would take many years or may possibly never occur if recharge to Starpoint Sandstone takes place. A four-inch diameter drain pipe at the Cottonwood portal will discharge at 300 gpm with a } ✓

water depth of 2.5 feet in the mine workings. This is a sufficient discharge and head that none of the other portals would be likely to discharge. Therefore, the remaining portals have no drainage pipes.

UMC 817.52 (a) Hydrologic Balance: Surface and Groundwater Monitoring

Water is produced at several locations in the mine and then flows to low areas that act as temporary sumps. These sumps are dewatered and pumped to a main sump located near the mine entrance portal. Water volume is measured as it leaves the mine. Sources of outflow include water discharges to Grimes Wash and water transferred to the Des-Bee-Dove mines. Water produced in the mine is used for dust control and there is an internal loss of water due to evaporation. A complete mass balance of water use in the Wilberg mine can be computed based on measured outflows and estimated evaporation. The mass balance equation is:

$$V_t = V_{GW} + V_{DBD} + V_D + E + S$$

where V_t is the total volume of water produced in the mine, V_{GW} is the volume of water discharged to Grimes Wash, V_{DBD} is the volume of water transferred to the Des-Bee-Dove mine, V_D is the volume of water consumed for domestic purposes, E is the evaporation volume and S is the change in sump capacity between reporting intervals. The sump volume is unknown and is assumed to vary little. All other outflow volumes are measured continuously and recorded on a monthly basis, except the outflow to the Des-Bee-Dove mine.

The total yearly domestic use of water by the Wilberg mine is 15 acre-feet, mine ventilation evaporation is 58 acre-feet, and the discharge of Grimes Wash has varied from 220 acre-feet in 1979 to 480 acre-feet in 1982. The discharge to the Des-Bee-Dove mines is reported monthly by the applicant. The principal use of water in the Des-Bee-Dove mines is for domestic needs and dust suppression and is approximately 25 acre-feet per year. This gives an annual in-mine water production of about 400 acre-feet for the Wilberg mine, equivalent to an average daily inflow of 250 gpm. There has been substantial variation from this mean over the period of record (1979 to 1982). The operational aspects of the Wilberg mine, and the seasonal variation in precipitation both contribute to this variation. There is an upward trend in the mean in-mine water production due to the expansion of mining operations.

The applicant presently monitors some 59 springs on East Mountain for quantity and quality on a yearly basis. Monitoring also includes measurements of quantity and quality of areas within the mine on a quarterly basis. Direct measurements of water quality are made and water quantity is estimated based on limited information from dewatering operations. This is sufficient to make a relative comparison between water producing areas in the mine with total inflows based on a mass balance at the main sump. Discharge and quality are measured at the sump at monthly intervals.

The applicant's spring monitoring program provides data on the flow of some 59 springs on East Mountain. The monitoring program also includes measurement of the discharge recession behavior of eleven of these springs. The purpose of these measurements is to monitor the condition of the aquifers

that are the source of the spring flow. The eleven sites provide monitoring of aquifer conditions over a large area of East Mountain and in all strata overlying mining operations. Such monitoring will be extremely useful in identifying subsidence effects on existing aquifers.

UMC 817.53 Hydrologic Balance: Transfer of Wells

No transfer of wells is planned.

UMC 817.55 Hydrologic Balance: Discharge of Water into an Underground Mine

Water is currently diverted into the Des-Bee-Dove mines from the main sump of the Wilberg mine. The discharge is metered and is used for domestic uses and dust control in the mines. A hazard analysis is provided describing the system operation showing that no part of the system poses a safety or health hazard either through inundation or other disruption to mine systems.

UMC 817.13 - .15: Casing and Sealing of Underground Openings

All surface drilled exploration holes have been reclaimed according to the Geological Survey's published Drill Hole Plugging Procedure and meets these regulatory requirements.

3.3 Conditions

None

IV. PROBABLE HYDROLOGIC CONSEQUENCES

4.1 Description of Applicant's Proposal

The applicant has acknowledged that mining operations at the Wilberg mine may change the existing hydrologic balance (page 2-96, PAP, Volume 1). Possible impacts include: (1) alteration of groundwater movement in the Blackhawk Formation due to the presence of mine workings, and (2) loss of springs on East Mountain as a result of subsidence. The applicant states that the majority of springs will be unaffected because of the use of controlled subsidence techniques and that the presence of swelling clays in strata above the mine will assist in limiting the movement of groundwater through fractures created by subsidence.

The mitigation plan for subsidence damage to springs (page 4-48, PAP, Volume 2) is as follows: "In the event that surface waters above the Wilberg mine are diminished as a result of the operations of the applicant, including any subsidence therefrom, to the extent that appropriated surface water is measurably diminished, applicant will, at its sole option, either (1) replace the surface water so diminished or (2) compensate the affected surface owner by purchasing such owner's land and water rights for the pre-subsidence fair market value."

The water monitoring program has shown to date that the quality of water discharged to Grimes Wash from Wilberg dewatering activity has been good. The applicant does not anticipate that surface waters will be degraded by mining activities. The applicant plans to continue hydrologic monitoring of surface and groundwater flows for the duration of mining operations.

4.2 Evaluation of Compliance

4.2.1 Surface Water Impacts

The primary impact on surface waters by Wilberg mining operations is the discharge of groundwater intercepted during mining. The volume of groundwater intercepted is expected to gradually increase over the next 20 years as underground operations at the Wilberg mine advance further underneath East Mountain. This discharge of water associated with mine dewatering will augment the flow in Grimes Wash until retreat mining becomes the dominant mining operation. Mining-related increases in dissolved solids concentrations in Grimes Wash are not expected to degrade or preclude anticipated uses downstream of the Wilberg mine.

4.2.2 Groundwater Impacts

To date, based on data gathered by the applicant, no loss of water or damage to aquifers on East Mountain has occurred as a result of mining operations in the Blackhawk Formation. The spring flow is highly variable and much of this variation is attributable to changes in annual precipitation, particularly snowfall. The best explanation for decreased flow in springs to date is the occurrence of dry years. It is anticipated that this climatic variability will tend to be a dominant factor in the hydrologic monitoring

no loss?

data. The discharge-recession studies will allow the condition of the aquifer to be monitored independently of variable climatic conditions.

The response to subsidence of various strata overlying Wilberg mining operations is the critical concern for impacts on groundwater quantity. Subsidence studies to date (see Chapter IX) have indicated that subsidence is occurring at a faster rate and with a greater magnitude of surface changes than was originally anticipated. The predominant impact of subsidence will be on springs in the Price River and lower North Horn Formations. Overburden for the North Horn Formation is relatively thick (1,200 to 1,700 feet) between the springs and the coal seams, and should serve to dampen the effects of subsidence on the aquifers. However, the overburden in the Price River Formation is less than 1,200 feet and will be at a much higher risk from subsidence. The aquifers in this area may be distorted and this may alter their character. This may disrupt aquifer water yield, and as a consequence may result in damage to the spring flow.

The perennial streams and the springs on East Mountain are an important component of the post-mining land use. The probable hydrologic consequences due to subsidence are uncertain at the present time, but it can be concluded that the aquifer system in certain areas of East Mountain is at some risk. The nature of the aquifer system at the present time indicates that vertical connections are present and that mine dewatering activities may correlate with recharge areas on East Mountain. This vertical leakage between perched aquifer systems may be enhanced by subsidence.

The argument that clay layers in the North Horn and Price River Formations will seal any such cracking does not address the issue fully. Subsidence under existing recharge zones and spring outlets could occur in a variety of ways, and the occurrence of sealing clays in an overlying formation may do little to mitigate the impact. For example, springs that occur in the Price River Formation are associated with small faults and fractures that provide a vertical connection to the recharge zone overlying the Flagstaff Formation. This connection occurs even though the intermediate North Horn Formation has a high clay content. On the other hand, if subsidence increases faulting, there could be a loss of flow into a lower formation (basically into the mine workings). Or subsidence might disturb the connection by allowing clays to migrate into the conduit and seal the connection. Finally, subsidence may alter the piezometric gradient of the source aquifer, and in that manner increase the flow of one spring and decrease the flow of another. The aquifer and springs are not primarily at risk from the cracking that would result from subsidence but from alteration of the existing groundwater system due to stresses placed on that system by subsidence.

The advantage of controlled subsidence is that these stresses should be distributed evenly and gradually. This is reflected in a uniform lowering of the ground surface. What is not known in the case of the aquifers, is the fragility of the system. If the system is robust, the stresses produced by subsidence should not affect the system. However, if the system is fragile, springs and aquifers are likely to be altered and water lost to present uses. Sufficient data is not available to assess the fragility of the system. To provide a cautious assessment of the potential impacts, it should be assumed that the stresses placed on the system will be large and not always completely

uniform. It should also be assumed that the system is fairly fragile. The assessment presented by the applicant assumes a robust system undergoing uniform subsidence.

The applicant argues that the risk is low and does not present detailed measures that would assure existing quantities of spring flow or base flow in perennial streams. Given the lack of detailed knowledge about the aquifer system on East Mountain and the necessity of monitoring this system very closely for subsidence effects, the applicant's conclusion has been judged to be too optimistic. The BLM has placed specific requirements on coal mining leases U-47978, U-044025, U-040151, and U-083066 that require the lease holder to prevent surface subsidence that would damage or alter the flow of perennial streams, and to replace any water lost or adversely affected by mining operations in sufficient quantity and quality to maintain current levels of livestock grazing and wildlife use. The applicant has not presented a plan focusing on these requirements.

4.2.3 Conclusions

A trend in water production from the Wilberg mine is expected to increase the flows in Grimes Wash over the next 20 years. The springs and aquifer are at some risk from subsidence, especially those in the Price River and lower North Horn Formations. Continued monitoring of water yield and aquifer properties will be conducted by the applicant to determine the effect of mining operations on other East Mountain aquifers.

The mitigation measure proposed by the applicant does not adequately address the requirements of the BLM leases, or fully address the potential risk that mining operations present to the hydrologic balance on East Mountain. The applicant must provide assurance that post-mining land uses would have continued availability of water supply and that no material damage would result from subsidence.

4.3 Conditions

The applicant must replace any water lost or adversely affected by mining operations with water from an alternate source in sufficient quantity and quality to maintain the rights of present users and current and post-mining land uses. The applicant must describe the measures that will be taken to minimize changes to the prevailing hydrologic balance in all perennial streams within the permit area in the event that subsidence effects reduce the base flow to these streams. This description must be presented to the regulatory authority for approval within 30 days of permit approval. [Reference: BLM Lease Conditions 15 and 19, U-47978; Condition 14, U-044025; Conditions 14 and 18, U-083066; Conditions 14 and 18, U-040151; and in accordance with UMC 784.14(a)(2) and (3), UMC 784.20(c), UMC 817.124(b)(1); and P.L. 95-87 Section 508(a)(13).]

V. MISCELLANEOUS COMPLIANCE

The miscellaneous compliance sections of the permit application (UMC 817.11 Signs and Markers, UMC 817.131 - .132 Cessation of Operations: Temporary and Permanent, UMC 817.180 Other Transportation Facilities, and UMC 817.181 Support Facilities and Utility Installations) have been reviewed. Operations at the Wilberg mine are conducted in compliance with the performance standards of these regulations.

The applicant is conducting mining operations so as to maximize the utilization and conservation of coal at the Wilberg mine as stated by the Bureau of Land Management. The applicant is therefore in compliance with UMC 817.59.

No surface blasting is being conducted at the Wilberg mine. Therefore, performance standards UMC 817.61 through UMC 817.68 do not apply.

VI. UNDERGROUND DEVELOPMENT WASTE AND COAL PROCESSING WASTE

6.1 Description of Applicant's Proposal

Development waste, coal refuse, and sediment from sediment ponds at the Wilberg and Des-Bee-Dove mines will be disposed of in a waste disposal site located in a flat area below the Wilberg mine portal facilities. The facility currently consists of two cells covering approximately 7.5 acres, and will eventually cover 16 acres. The applicant has estimated that approximately 63,000 cubic yards of additional material will require disposal at the site over the remaining life of the two mines. Waste from the Wilberg mine will include material from the construction of ramps in the mine and waste rock from the trommel reject which consists of 25 percent coal and 75 percent rock. The final coal/rock ratio in the pile will not exceed 50/50 percent.

The waste disposal pile will be constructed in six additional "cells" which will be reclaimed as each cell is completed. The basic disposal plan is to remove approximately 18 inches of soil material from the disposal site, placement of the soil material in berms around the perimeter of the cell, placement of waste in a single horizontal lift four feet high, then placement of all soil material in the berms over top of the waste, and finally reclamation of the cell. The approach of construction of the pile in cells has the advantage of disturbing only a small area of the total disposal site while the area is being utilized. The final slope of the disposal pile along the outside edge will be 1v:2h and the final elevation above the existing ground level will be approximately four feet.

After construction, some of the soil material will also be used to construct berms around the top edge of the pile to contain runoff. Storm runoff on a cell would be retained until all cells are constructed. The residual water from the storm would percolate through the waste rock and drain to the underlying colluvium material. When construction of the pile is finally completed, the water containment berms will be removed and used to cover the final cell.

The proposed fill is not a valley fill or a head-of-hollow fill, nor a durable rock fill in either of these two categories. Therefore UMC 817.72, 817.73 and 817.74 do not apply.

6.2 Evaluation of Compliance of Proposal

UMC 817.71 Disposal of Excess Spoil and Underground Development Waste: General Requirements

The waste material is not required to achieve approximate original contour and will be placed to ensure stability of the pile, and prevent degradation of surface or ground waters. The disposal site is suitable for reclamation and revegetation, and will be compatible with the natural surroundings. The application complies with UMC 817.71(a).

The fill has been designed by a registered professional engineer, and has been designed using recognized professional standards. The application complies with UMC 817.71(b).

All vegetative and organic material will be removed from the disposal site prior to disposal in the individual cell areas and the soil material will be removed, segregated and stored in accordance with UMC 817.21 to 817.25 (see the Chapter I. Topsoil). The application complies with UMC 817.71(c).

The small fill height, the fill slope of 1v:2h, and revegetation of the slope are sufficient to minimize surface erosion at the site. In addition, berms on the top of each cell will prevent runoff down the slopes until revegetation is established. The temporary diversion channel is riprap lined. The application complies with UMC 817.71(d).

The waste disposal site is located on the flat lands below the Wilberg mine facilities area. These lands are the most moderately sloping and naturally stable areas available. The waste disposal site slopes gradually to the southeast at a maximum of seven percent, therefore keyway cuts or rock toe buttresses are not required. The application complies with UMC 817.71(e).

The fill material is being placed in a single four foot lift. The outside slopes of the fill will be graded to 1v:2h and the top of the fill is to be graded to the southeast at a maximum seven percent slope. Therefore the long-term mass stability of the waste pile is ensured, and a long-term safety factor of 1.5 will be achieved. The application complies with 817.71(f).

The final configuration of the fill will be accessible to grazing and wildlife. The application complies with UMC 817.71(g).

There are no terraces proposed in the construction of the fill therefore UMC 817.71(h) does not apply.

The applicant has proposed to inspect the fill quarterly and during critical construction periods. Inspection reports will be submitted to the Division within two weeks of inspection and a copy will be retained at the mine. The application complies with UMC 817.71(i).

The applicant proposes to dispose of coal processing wastes in the development waste disposal site. Therefore, according to 817.71(j), the requirements of 817.85 apply to this structure.

UMC 817.85(c) states that the material must be spread in layers no more than 24 inches thick and compacted to attain 90 percent of the maximum dry density. The applicant has not proposed this method of construction. However due to the moderate height of the pile, only four feet, the fact that the disposal site is level and that compliance with the 1.5 safety factor is ensured, stability of the pile is not an issue. Therefore, the design and construction of the pile is acceptable.

UMC 817.85(d) states that the pile must be covered with four feet of cover material unless physical and chemical analyses show that less

material can be used and the requirements of UMC 817.111-817.117 can still be met. The applicant is planning to cover the pile with 1.5 feet of topsoil material (see Chapter I, Section 1.2, 817.22). Samples of the material collected to date show that the waste material is not toxic. In addition, the applicant has proposed a sampling program to help detect the presence of toxic material at the site (see Chapter VIII, Backfilling and Grading, UMC 817.103).

The disposal area does not contain any springs or water-courses. The water table is several thousand feet beneath the surface. Rainfall excess will be contained on the cells during revegetation. The excess will percolate through the fill during this interim period. This volume of percolation does not warrant an underdrain system. The application complies with UMC 817.71(k).

The fill is located on an essentially flat area. The height of the fill is only four feet. Therefore, foundation testing is not needed since the fill will not pose any mass stability problems. The application complies with UMC 817.71(l).

There are no plans to transport waste material underground for disposal. Therefore the requirements of UMC 817.71(m) do not apply.

6.3 Conditions

None

VII. PROTECTION OF FISH, WILDLIFE, AND RELATED ENVIRONMENTAL VALUES

7.1 Description of Applicant's Proposal

Surface disturbances associated with the Wilberg mine will eventually total 41 acres. A portion of this total, the waste rock disposal site will include 16 acres of high-priority mule deer winter range. This and the other disturbances will last for the life of the mine. Because of the limited areal extent of surface disturbance, wildlife impacts resulting from loss of habitat will remain relatively minor.

None of the areas affected by the mine represent any critical habitats for threatened or endangered wildlife species (USFWS Endangered Species Office letter of January 10, 1984). The bald eagle is a winter visitor to the region but will not be affected by mining activities. Also, since the Wilberg mine is located in the Upper Colorado River Basin, mining operations may indirectly affect populations of the Colorado squawfish and the humpback chub in the Colorado River.

Other mine associated wildlife impacts that may be more significant than direct loss of habitat include (1) human harassment of all wildlife, (2) mule deer road-kills, and (3) the potential effects of subsidence on surface-water flow springs, and raptor cliff nesting habitat.

The effects of human harassment on wildlife, either inadvertent or purposeful, should be considered from a cumulative standpoint since at least three other mines are currently operating along the southern end of East Mountain. However, since premining baseline data for wildlife populations in the area is lacking, these effects are extremely difficult to quantify. At a minimum mining activities will likely preclude golden eagle nesting use of the two inactive nest sites within one kilometer of the Wilberg mine facilities (Map 2-19, PAP, Vol 5).

The potential for mule deer road-kills is more serious during the winter months when mule deer congregate in high-priority winter range traversed by the Wilberg mine access/haul road. Unless a particularly hazardous area is identified by UDWR monitoring, this impact is not expected to be significant.

Mine-related subsidence could impact flow in Cottonwood Creek, the left fork of Grimes Wash (perennial streams), springs on East Mountain, and raptor cliff nesting habitat in areas where surface fracturing is possible. The greatest potential for surface fracturing occurs along the southern edge of the south lease portion of the permit area. The effect of subsidence on Cottonwood Creek, the left fork of Grimes Wash, springs, and raptor cliff nesting habitat cannot be fully determined at this time. Monitoring will provide information regarding the extent of subsidence-related effects to the above areas.

The applicant's plan for protection of fish and wildlife is presented on pages 4-50 to 4-55 (PAP, Vol. 2). The applicant has committed to; 1) reporting any golden eagle nesting activity in the vicinity of the mine disturbance areas to the USFWS; 2) consulting with the USFWS if any additional

mine related developments are planned in the raptor nesting zone (Map 2-19 PAP, Vol. 6); 3) placing deer crossing signs along the haul/access road within the permit area; 4) reporting the occurrence of deer road-kills and snake dens to the UDWR; and 5) providing a wildlife educational instruction to employees to reduce the potential for harassment of wildlife. The UDWR is currently conducting a deer road-kill monitoring program that includes the Wilberg mine access road. If any hazardous areas are identified along the road within the permit area, the applicant will consult with the UDWR for appropriate mitigation measures.

The applicant has incorporated USFWS recommendations for raptor mitigation (letter of August 15, 1983). The applicant has supplied a map showing the location of golden eagle nests in relation to the mine facilities and has committed to consulting with the USFWS if any additional activities are planned in the raptor nesting zone.

To limit sedimentation in Grimes Wash and in Cottonwood Creek, downstream from Grimes Wash, surface water from undisturbed areas is diverted past the mine disturbance area in buried culverts. In addition, storm runoff waters from the portal facilities area is diverted into two sedimentation ponds prior to release into Grimes Wash.

The 69 KV line that serves as the power source for the Wilberg mine has been determined to be raptor-safe by the USFWS (letter dated Nov. 10, 1982, to UDOGM). Sufficient phase to phase and phase to ground clearances are provided at this time to preclude electrocution of large raptors.

Following cessation of mining, the applicant will restore stream channels and revegetate disturbed sites. Plant species selection and planting patterns were designed to restore wildlife habitat as a principal post-mining land use. Details of the revegetation plan are provided on pages 4-17 through 4-29 of PAP, Volume 2 and in Section IX of the technical analysis.

Because of the importance of springs as a water source for the area's wildlife, as a final commitment, the applicant has stated (page 4-54, PAP, Vol. 2), that any surface water disturbance resulting from subsidence associated with the Wilberg Mine will be replaced or repaired as follows:

1. "Streams will be bridged across bedrock fractures by culverts until sediments fill the cracks."
2. "Springs and seeps proven to be lost to subsidence action will be replaced by guzzlers which will be located and designed with prior regulatory authority approval."

7.2 Evaluation of Compliance of Proposal

Comments made by the USFWS to OSM in their letter dated April 5, 1984, have been determined to have been adequately addressed by the applicant (see Item 1 in Section 7.2). The applicant does not plan any additional surface disturbance (except at the rock waste disposal site) and has committed to notifying the USFWS if these plans change. Reclamation activities in the

vicinity of the facilities area should not produce additional disturbance beyond that already associated with ongoing mining activities. Any future nesting by eagles in the vicinity of the mine facilities would indicate an acceptance of existing noise levels. The Newberry Canyon breakout is approximately 750 feet from eagle nest No. 63; however, the nest is shielding from view of the breakout by terrain. The location of the breakout has changed based on comments received from the USFWS (8/11/83 letter to OSM). The breakout should not be a significant source of noise since an exhaust fan will not be used at this breakout. However, portal closure activities associated with mine decommissioning may be a significant source of noise that could temporarily preclude or disturb golden eagle nesting activity in nests (No. 61, 62, and 63) near the breakout (Map 2-19). The applicant's current reclamation schedule calls for portal closures to occur from January through March (PAP Volume 2, reclamation schedule) which could overlap with golden eagle nesting activity (February through June). Therefore, a condition for raptor protection is needed.

The Wilberg mine might cause depletions from the Colorado River system, thereby possibly affecting two endangered fish species. OSM found that the Wilberg mine would not cause surface water depletions from either Cottonwood Creek or Grimes Wash. However, it has been determined that there will be a depletion of 68.6 acre-feet/year due to water evaporation off the wet coal and due to mine ventilation losses. Accordingly, OSM will accept the USFWS "reasonable and prudent alternative," which is a contribution by the permittee to the Endangered Fishes Conservation Fund.

7.3 Conditions

1. The applicant must conduct portal closure activities for the Newberry Canyon breakout during the period from July 1 to January 31.
2. Within 60 days of permit issuance, the applicant shall provide a commitment to participate, as determined necessary by the U.S. Fish and Wildlife Service, in the USFWS study program "Recovery of Endangered Fishes of the Upper Colorado River Basin."

VIII. BACKFILLING AND GRADING

8.1 Description of Applicant's Proposal

The Wilberg mine main portal and facilities area is located on East Mountain in Grimes Wash, a steep-sided drainage which flows intermittantly. The mine facilities are built on benches which have been constructed using cut and fill techniques.

A ventilation portal associated with the Wilberg mine will be constructed approximately three miles to the west in the Cottonwood Creek drainage. This facility will be on an existing bench area which will require further cuts and fills to provide sufficient working area.

Other surface disturbances associated directly with the mine are ventilation breakouts which provide intake air. These breakouts have been or will be constructed from within the mine and there are no facilities located at these sites (see PAP pages 3-18 to 3-20). Three breakouts are located in Miller Canyon which is located in Section 30, in one of the right branches of Cottonwood Creek (see PAP, Volume 5, Drawing CM-10479-WB). The other breakout is proposed to be located in Newberry Canyon in section 28 in the canyon southwest of Grimes Wash (see PAP, Volume 5, Drawing CM-10480-WB). The entrances for all breakouts are fenced to prevent access. A total of 15 portals exist in the Wilberg main facilities area, and 1 is proposed for the south lease area within the disturbed main facilities area. One portal is located in the Cottonwood fan pad area, and there are four additional ventilation breakouts totaling the 21 portal areas described by the applicant.

A development waste and coal waste disposal site is located approximately 1.5 miles below the facilities area in Grimes Wash. Backfilling and grading of this site is discussed under Waste Disposal in the Miscellaneous Section of this technical analysis.

The Wilberg main facilities area encompasses a disturbance of approximately 20 acres. The topographic relief is extreme and the elevation ranges from 7,675 feet at the highest point of disturbance to 7,300 feet at the lowest point, over a distance of 4,200 feet. As a result, the applicant has had to construct several major cut and fill areas to provide sufficient working area for the mine. These areas are discussed in the permit application beginning on page 3-64, under Earthen Structures. The structures which are discussed are the haul road, sediment ponds, lower service area, lower parking lot, upper parking lot, upper storage area, and the service road. These areas are shown on Map 3-16, Surface Facilities Location Map "B". The sediment ponds are discussed in the Surface Water Section of this technical analysis.

The upper storage yard is approximately 200 feet wide by 300 feet long. The fill used for construction was obtained from the lower parking lot area and from the service road below the elevation of the coal seam. The maximum depth of fill is 80 feet and the outside slope on the fill is 1v:1.5h. The methods used to construct the fill are described in an attachment after page 3-73 of the PAP. This fill is constructed on Class C material which consists of three foot maximum particle size placed in four

foot lifts and compacted by heavy equipment rolling over the fill a minimum of three times. The applicant used the Simplified Bishop Method of Slices to determine slope stability. The material parameters used were cohesion = 0, unit weight = 120 pcf, and the angle of internal friction = 38 degrees. A safety factor of 1.5 was determined for this fill.

The upper parking lot is located just below the upper storage yard. The surface area is approximately 200 feet wide by 300 feet long. The outer edge of the fill slopes at 1v:1.5h down to the lower service area. The maximum depth of the fill is approximately 100 feet. Since this is a paved parking lot, the fill was constructed of Class B fill which consists of a maximum particle size of 18 inches and maximum lift of 24 inches. The material was compacted by at least three passes with heavy equipment on each lift. The same method and parameters used to determine the stability of the upper storage yard were used to assess this fill. A safety factor of 1.5 was determined for this fill.

The lower parking lot is located in the right fork of Grimes Wash. The surface area is approximately 300 feet wide by 200 feet long. The fill is constructed of Class C material, is approximately 40 feet high and has an outside slope of 1v:1.5h. The stability analysis used to evaluate the stability of this fill was the same as mentioned above, and the safety factor determined was 1.5.

The lower service area consists of three terraced areas where a coal silo is located, the loadout area, and the crusher-breaker area along with small storage areas. The fills under the silo, loadout, and the crusher-breaker are built on Class A95 material which is six inch well graded material compacted to 95 percent maximum dry density in eight inch lifts. The maximum depth of the fills is approximately 25 feet based upon evaluation of pre-mining and post-mining topographic maps.

The service road begins at the lower parking lot and continues to the upper levels of the facilities area. It is located in part on cut slopes and on the fills described above providing a stable roadway foundation.

The haul road is located along the eastern side of the canyon. Construction of the road entailed excavation and filling. According to construction specifications, the fill for road beds conformed to Class A90. This requires the same specifications as described above for A95 material except the compaction requirements are 90 percent maximum dry density.

Recently a storage area for the south lease portal area has been constructed along with a fan pad within the existing disturbance of the Wilberg main portal area. The storage area is located on a fill which has been retained by a "binwall", which is essentially steel cribbing used to contain the fill. The fan pad was constructed from within the mine and is located on a small cut approximately 90 feet long by 100 feet wide. A tunnel connects the fan pad to the south lease storage area and then to the upper storage area in the Wilberg main portal area. The fan pad is located on a rock cut and the storage area is being retained by a binwall.

Another small cut and fill area exists in the right fork of Grimes Wash within the Wilberg main portal area where a ventilation fan is located

along with a diesel fuel storage tank with a 1,000 gallon capacity. Information on the fill in the fan area has not been addressed. However, it has been stated that these fills are very small (see PAP, page 3-48).

On the west side of East Mountain, the Cottonwood portal area Fill #1 is located just below the fan bench and is approximately 90 feet high with an outside slope of 1v:1.4h as shown in Appendix IV of the PAP. Two other fills exist in this area and are located north of Fill #1. A study was done on the characteristics of the material in Fill #1 using in-place density testing and evaluation of the natural moisture content. A safety factor of 1.52 was determined for this fill. Drainage on the top of the fills has been controlled to prevent seepage into the fill and excessive runoff down the face of the fill.

The applicant is proposing to increase the size of the bench area at the Cottonwood portal to provide an area where a ventilation fan and deisel storage tank can be installed. In addition, an access road will be constructed. The fan pad will be approximately 150 long and 80 feet wide and will be a combination cut and fill bench. The fill will be spread and compacted in layers approximately one foot thick. Maximum side slopes will be 1h:1.5v. The access road will be constructed on fill and all outslopes will be less than 1h:1.5v. The material cut from the fan pad will be used to construct the access road. The cuts and fills have been shown to balance, and approximately 3000 cubic yards of material will be excavated and filled (see Map 3-11 PAP, Volume 6). Since the material to be handled is essentially the same material which was evaluated for the fill described above as Fill #1, and since compaction of the proposed fill will occur to ensure that the required density will be achieved, it is reasonable to project the strength characteristics of the existing fill to the proposed fill. The stability analysis done for the proposed fill showed a safety factor of two, using a cohesion of 500 psf which is conservative, an angle of internal friction of 26 degrees and a fill height of 30 feet.

The applicant is planning to leave a previously constructed "rock catch basin" above the Cottonwood portal. This "basin" is actually a series of three shallow horizontal cuts in the hillside, in rock, approximately 400 feet long and 30 feet high. These cuts were originally constructed for exploration purposes at the coal outcrop. Several narrow rider coal seams were exposed. Reclamation of these benches would cause considerable surface disturbance since heavy equipment access to this area is not possible. The road originally used for access no longer exists. Since the cuts are in rock and are therefore stable, and the rock slopes blend in with the surrounding topography, the applicant is proposing to retain these cuts, as is, in the final reclamation plan.

The applicant is proposing to regrade the Wilberg main facilities area and the Cottonwood portal area to essentially premining topography. In general, this will entail removal of the fill areas and backfilling of the cut areas. 196,656 cubic yards of material will be graded to achieve the proposed postmining topography. The grading plan for Wilberg main portal area and other disturbances is described in the permit application starting on page 4-1 to 4-5, Volume 2. All structures will be removed and all road surfacing material except for the haul road which is a county road. This material will

be buried against the east wall of the lower parking lot. The depth of fill in this area ranges from 60 to 35 feet, so that covering of the debris with sufficient depth of backfill material will be ensured. The portals will be backfilled with at least 25 feet of material. A concrete block seal will be placed within the mine behind the fill material. Figure 1, after page 4-1, Volume 2 the permit application shows the method of portal closure.

The drainage pattern which will be re-established will be the main branch of Grimes Fork (left branch) and the right branch. Construction of these riprapped channels is discussed in the Chapter II of this Technical Analysis.

Construction drawings have been provided in the PAP showing the amount of material which will have to be handled to reclaim the upper storage area, the upper parking lot and the lower parking lot (postmining topographic maps, 4-1, Volume 6). These are the major fills in the facilities area. In addition a cross-section was provided for the Cottonwood portal area. The volumes of material to be handled were evaluated using these cross-sections. For other areas, cross sections were not provided, but it is possible to estimate the volume of material to be handled from the pre- and post-mining contour maps.

The reclaimed slopes will not exceed 1v:2h and material will be placed according to the methods used by Roberts and Schaefer during construction at the site. These methods are described in an attachment to the application following page 3-73. The backfill will be handled as a Class C material which is three foot maximum particle size and four foot maximum lifts which will be compacted by rolling with heavy equipment three times. Drainage over the fills will be controlled as described in the Surface Water section of this technical analysis. A stability analysis was done on the final reclaimed slopes and the safety factors determined were 1.8 for a 60 foot high slope, cohesion equal to zero, angle of internal friction of 38 degrees, and density of 120 pcf. For a 50 foot slope with the same parameters (except cohesion equal to 26 degrees), a safety factor of 2.4 was determined for the Cottonwood portal area.

The majority of the 25 acres of the proposed Wilberg mine and Cottonwood fan portal occurs on existing disturbances associated with previous mining and exploration activities. At the Wilberg mine site, all of the disturbed acreage will be required for mining activities with the exception of fill slopes at the upper equipment yard, upper parking lot, silo area, sedimentation ponds, and roadways. These slopes will be temporarily reclaimed to prevent unnecessary erosion and to test the viability of revegetation techniques proposed to be used during final reclamation (see PAP Interim Plan discussion, UMC 817.111-.117). Surface disturbances which occurred as a result of exploration activities at the Cottonwood fan portal site which will not be redisturbed are currently being reclaimed.

The 16 acres associated with the waste rock disposal site will be contemporaneously reclaimed throughout the mining process. As each of the 8 cells are filled to capacity with waste rock, each cell will be graded, resoiled, and revegetated as the next cell is being prepared for waste rock disposal.

8.2 Evaluation of Compliance of Proposal

UMC 817.99 Slides and Other Damage

Specific plans have been provided for reporting slides to the Division of Oil, Gas and Mining should they occur.

UMC 817.100 Contemporaneous Reclamation

The applicant has stated that reclamation will commence upon completion of mining. A schedule for reclamation has been provided on a table following page 4-31 of the permit application. This plan shows that reclamation will take approximately one year and that maintenance and monitoring will continue for an additional ten years. The mine life is estimated to be 38 years (PAP, Volume 1, page 7) and as such the estimated year for commencement of reclamation is 2022. The applicant has complied with this section.

UMC 817.101 Backfilling and Grading: General Requirements

The applicant is planning to return the surface disturbances associated with the Wilberg mine to approximate original contours. All roads will be backfilled except for the haul road, which is a county road. Except for those small rock benches resulting from exploration activities above Cottonwood portal, all benches will be graded to essentially their premining condition. Although the narrow rock benches above Cottonwood portal need not be regraded, the applicant must place sufficient rock material on the horizontal portion of each bench to effectively cover the exposed thin secondary coal seams (see Condition). The slope stability of the fills as they exist and after reclamation has been evaluated and meets the requirements of the regulations.

The postmining drainage has been evaluated in Chapter II of this Technical Analysis and been found to be adequate.

The applicant has provided plans for grading along the contour. The applicant has complied with this regulation.

UMC 817.103: Backfilling and Grading: Covering Coal and Acid - and Toxic-Forming Materials

The applicant has proposed a sampling program to help detect the presence of toxic materials at the waste rock disposal site after waste rock is disposed. When disposal is complete on each cell and the fill loaded and compacted, waste rock (including coal waste) will be sampled. A transect will be established diagonally across the cell. Five separate samples at 4 to 20-inch depths will be taken. The samples will be analyzed for the normal set of parameters.

The proposed fill sampling plan for the Wilberg main portal area can detect the presence of toxic materials. Sampling is conducted at 12-inch increments to a depth of three feet for fill.

UMC 817.106 Regrading or Stabilizing Rills and Gullies

Plans have been submitted for the repair of rills and gullies adequate to meet the requirements of this regulation. Threerfore, the applicant has complied with this section.

8.3 Conditions

1. Within 90 days of permit approval, the permittee shall place sufficient clean backfill material on the horizontal portion of the benches above Cottonwood portal so as to effectively cover the exposed narrow rider coal seams.

IX. SUBSIDENCE CONTROL PLAN

9.1 Description of Applicant's Proposal

The applicant's subsidence control plan (UMC 784.20) is to utilize complete extraction methods, i.e., primarily longwall mining, to achieve an even lowering of the surface as much as possible. The applicant intends to mine areas as wide and long as feasible in order to minimize the area which would be on the sloping edge of the subsidence trough. Pillars which are located between extraction panels are designed to yield and eventually crush as mining progresses past them. This will have the effect of maintaining an even subsidence trough.

All mining, except for planned breakouts is planned to be discontinued at a minimum distance of 200 feet from any outcrop line or cliff line in the mine area.

The applicant has stated that full extraction panels have been oriented parallel to the major faults and joints. This alignment with respect to jointing is proposed to prevent the formation of irregular sawtooth subsidence cracks in the overlying surface lands.

On the operation maps, one area of partial extraction has been identified. In this area, the applicant is planning to leave coal pillars to maintain the integrity of the surface. This partial extraction area is located under Cottonwood Creek in Sections 24 and 25 where the depth of cover overlying the Hiawatha seam is only 100 to 400 feet. The Cottonwood Creek is perennial through this area. The pillars to be retained in this area are 80 feet by 80 feet and will be stable over the long-term.

*Why?
Safety
factor?*

The applicant has proposed a subsidence monitoring plan which is described in Appendix XVI of the permit application. In general, the plan consists of a combination of photogrammetry methods tied in with conventional survey methods. The photogrammetry survey will be conducted once a year in mid-summer when it can be run in conjunction with the U.S. Forest Service vegetational studies. A ground control survey will be established to provide not only a scale for the photography but also by expanding and monumenting the control survey, a primary grid will be established for measuring both horizontal and vertical displacement. Monuments will be established in the south lease area over three panels to be mined during this permit term. These monuments will be conventionally monitored and data compared with the aerial surveys. The applicant has not provided maps locating the proposed grid system for the photogrammetry surveys (see Condition *1*).

The applicant has stated that subsidence impacts to structures will be mitigated. Structures will either be repaired or the owner will be compensated for damage to the structure. In addition, any roads materially damaged by subsidence will be repaired and regraded to restore them to their pre-subsidence usefulness.

There have been no specific mitigation plans submitted for subsidence impacts such as dewatering of springs, seeps or ponds, surface cracking,

replacement of stock watering ponds, fences, slope failures, or impacts to the landing strip. (See Chapter IV, Probable Hydrologic Consequences Section.)

The applicant has stated that public notices have been submitted to the affected surface owners which detail the areas in which mining is to take place and the planned date of the mining activity.

9.2 Evaluation of Compliance

UMC 817.121 Subsidence Control: General Requirements

A. Description of Subsidence Effects Observed To Date

Monitoring of subsidence to date has included studies by the U.S. Bureau of Mines (USBM) using standard ground survey methods and by the applicant using photogrammetric and conventional survey methods and helicopter fly-overs. This data has been compiled in the applicant's annual subsidence reports and in the permit application package.

The USBM has been studying subsidence at the Deer Creek and Wilberg mines since 1978. The initial study monitored subsidence over two longwall panels developed in the Blind Canyon upper seam between 1979 and 1980. The depth of cover over these panels ranged from 1,600 feet to 1,450 feet. A baseline survey was conducted in October 1978 over the Panels 5 East through 8 East (Deer Creek PAP, Volume 6 Drawing No. CM-10473-DR, Sheet 2, Five Year Mining Plan). These panels run in a east-west direction with Panel 5 East being the northern most (see Figure 8, Deer Creek Longwall Subsidence Study, USBM, included in this section). Just north of Panel 5 East is a room and pillar section where the pillars have not been pulled. The first indication of subsidence occurred over Panel 5 East, which was mined first, in September 1979. At a minimum, the face had advanced 460 feet before subsidence occurred. Three inches (.25 feet) of subsidence was measured at this time. In July 1980 when the next measurements occurred, subsidence had increased to a maximum of 1.6 feet over Panel 5 East. Mining in Panel 6 East immediately adjacent to 5 East had progressed 1,200 feet. Subsidence continued to be recorded, but by November 1980, no additional subsidence occurred over the first 700 feet mined in Panel 5 East, indicating that subsidence from mining occurs fairly soon after mining. The maximum amount of subsidence measured was 2.7 feet in December 1980 when the analysis in the USBM report ends. This maximum amount of subsidence occurred near the midpoint of the panel lengths and just north of the chain pillars separating Panels 5 East and 6 East but within Panel 5 East. This shows that the chain pillars crushed out and did not significantly affect the subsidence trough. The barrier pillars and the pillar sections to the north of Panel 5 East did not crush and effectively stopped subsidence except for angle-of-draw effects. The maximum slope of the subsidence trough at this time was 0.06 inches/foot in this area. No surface cracking was evident over the mine with this slope.

Additional data collected as part of the USBM study have been supplied by the applicant showing monitoring information through September 1983. Between 1980 and 1983, mining has continued in Panels 7 East and 8 East in the Blind Canyon seam (upper seam), and Panel 9 Right has been mined in the

Hiawatha seam (lower seam, see Drawing CM-10479-WB) almost directly below Panel 5 East (upper seam) and slightly under the room and pillar section to the north of Panel 5. (See Figure 19, Deer Creek Longwall Subsidence Study, USBM, included in this section.) The maximum amount of subsidence measured to date is almost six feet over Panel 6 East (upper seam). Panels have been completely extracted to the north and south of 6 East. Therefore, it is probable that the maximum amount of subsidence which will occur due to mining in a single seam under the conditions in this area has been observed (over Panel 6 East). However no mining has yet occurred under Panel 6 East and as such the maximum amount of subsidence that might occur due to multiple seam mining in this area has not been observed. The closest longwall mining (to Panel 6 East) which has occurred in the lower (Hiawatha) seam is Panel 9 Right located approximately 300 feet to the north. In addition, a barrier pillar is located in the Hiawatha seam in the area separating mining between Panels 6 East and 9 Right; and the subsidence troughs over these panels do not overlap at the maximum point of subsidence.

Subsidence has continued to occur over Panel 5 East which was the first panel to be extracted in this area, in 1979. A maximum of almost five feet of subsidence has been measured as of September 1983 over 5 East. Through subsidence over Panel 5 East has continued since 1979 (for over four years), this is due to the initial extraction in Panel 5 East and later mining in Panel 9 Right. Since mining subsequently occurred in the Hiawatha seam (Panel 9 Right) almost directly below Panel 5 East, subsidence has continued due to multiple seam mining with a possible minor residual affect from single seam mining. It is expected that subsidence over mined areas within the permit area will not continue more than a few years once all mining in an area is complete.

The subsidence profile continues to show that the chain pillars are crushing out and not creating any significant variation in the profile. The barrier pillars which are located at the ends of the panels to protect the mains from mining in the panels and the pillar section to the north of Panel 5 East do not appear to be crushing at all, and effectively stop subsidence except for angle-of-draw effects. The maximum slope measured at the edge of the subsidence trough as of June 1983 was over Panel 6 East and was 0.09 inches/foot (.43 degrees or .75 percent). Information on the condition of the surface with this slope has not been supplied by the applicant with respect to possible surface cracking for 1983.

Recently data has been obtained over the panel 3 West in the Wilberg mine in the Hiawatha seam as part of the USBM study (PAP, Volume 5, Drawing No. CM-10479-WB). This panel is under approximately 2,100 to 1,775 feet of cover and undermined a steep hill side with a gradient of 20 degrees. Mining in the panel was not completed due to unknown circumstances in a small portion of the east end of the panel which is under the shallower cover. Retreat mining in the Panel 2nd West just to the north of the 3rd West panel is currently occurring. There has not been any multiple seam mining in this area. The Panel 3 West was probably mined in early 1981 as the first subsidence measurements are recorded in August 1981 and the monuments were installed and initially measured in September 1980. The maximum subsidence which has occurred to date over this panel is 2.5 feet

as of September 1983. The subsidence over Panel 3 West has undoubtedly been enhanced by mining in 2nd West since the maximum amount of subsidence occurred slightly off center of panel 3rd West towards the north. This amount of subsidence is similar to that observed over Panel 5 East, indicating that the depth of cover does not seem to be significantly decreasing the amount of subsidence observed in the areas of thick overburden cover where the Castlegate and Price River Formations exist.

Several other subsidence occurrences over the UP&L mines have been noticed by aerial inspections conducted by the applicant in a helicopter and then mapped in the field. These disturbances were recorded by the applicant in the annual Subsidence Reports and in an August 3, 1982, letter to Division of Oil, Gas, and Mining, State of Utah. One area is located in the right fork of Grimes Wash over an area which has been retreat mined in both the Blind Canyon (1980) and Hiawatha seams (1981). The area encompasses about 40 acres of land, 35 of which are located on a steep slope and cliff area formed by the Castlegate and Blackhawk Formations. Subsidence offsets of up to 12 feet have been measured and toppling failure of the cliff has occurred. The area is currently fenced to protect livestock and the public. The depth of cover in this area is approximately 900 feet to the Blind Canyon seam and 1,050 to the Hiawatha seam. The slope which slid is essentially vertical and 250 feet high. Surface cracking has also been observed in the Blackhawk Formation in this area. A second area is located over a section of the Deer Creek mine where retreat mining occurred in the Blind Canyon seam under approximately 850 feet of cover. The fractures are located in the Price River formation which outcrops along a steep hillside in this area forming a cliff face. The area disturbed is approximately ten acres, and the size of the fractures was not noted by the applicant. The mining in this area occurred in 1977 and the fractures are old as evidenced by the growth of vegetation in the the cracks. Another area is located over the Des-Bee-Dove mine in the Castlegate Sandstone near a steep slope and cliff area. The area of disturbance encompasses approximately ten acres and contains several northeast trending fractures. The area overlies retreat mining which took place in October 1981.

Additional monitoring information has been provided by the applicant on subsidence observed over the Des-Bee-Dove mine in the annual Subsidence Reports for mining over the 4th West section of the Beehive mine. Monitoring in this area is difficult to interpret due to the extensive mining that occurred prior to beginning of the subsidence surveys. However, 2.5 feet of subsidence has been measured over the area for single seam mining. The surface over this section of the mine does not have any cliff areas and the depth of cover is between 1300 and 1600 feet. As of 1982, though both seams in this area had been mined, no surface cracking was evident. However, it is not possible to extrapolate this lack of surface cracking to the longwall operations in the Deer Creek and Wilberg mines. The operations at Des-Bee-Dove are room and pillar operations and large barrier pillars exist between the extraction panels which are most likely not crushing out, and would tend to decrease the effects of subsidence. This may also be the case with respect to the cliff areas which have been undermined in the Des-Bee-Dove operation but have not failed. The barrier pillars would effectively decrease the width of the

opening in the mine, and the critical width (i.e., the width at which surface subsidence is greatest) is probably not achieved.

B. Evaluation of Probable Subsidence Effects

B.1. Lowering of the Land Surface in Areas Underlain by the Castlegate and Price River Sandstone

The effects of subsidence on the surface will be modified by the occurrence of the thick layers of the Castlegate Sandstone and the Price River Formation. These effects would tend to mitigate the possibility of surface cracking where the sandstone layers were continuous through the area; i.e., the sandstone had not been eroded forming cliff escarpments and where portions of the North Horn Formation existed. However, it can still be expected that the land surface will be significantly lowered. The maximum extent of this lowering is not known since the effects of multiple seam mining by longwall operations have not been monitored as of this time.

The maximum amount of subsidence which would be expected over a single seam maximum extraction area under 1,500 feet of cover has probably been identified in Panel 6 East in the Blind Canyon seam and is almost six feet as shown by data collected for September, 1983. Between June 1983 and September 1983, the surface only dropped an additional 0.08 feet indicating that subsidence has probably stabilized in this area over a period of approximately 3 years. Depth of cover over this panel is approximately 1,500 feet. As such, the Castlegate Sandstone and the Price River Formation occur over this panel with approximately 100 feet of the North Horn Formation. It would be expected that the sandstone layers would provide a certain amount of bending action over the cave above the underground workings which would tend to reduce the amount of subsidence from what might be expected if only weaker strata existed above the mine. As of the last reported ground survey in 1982, no surface cracking was evident in this area.

If the information from Panel 6 East were doubled to reflect mining in two seams, then a lowering of the surface of almost 12 feet might be expected where the cover was approximately 1500 feet and maximum extraction occurred. The applicant has estimated a maximum of ten feet of subsidence where cumulative extraction from the two mineable seams will not exceed 20 feet. The applicant's estimate may be reasonable for areas of the mine where the depth of cover is greater than 1,500 feet given the thickness of the interburden between the Blind Canyon seam and the Hiawatha seam. In areas where the depth of cover is less than 1,500 feet and in particular in areas where the sandstone layers do not exist, the amount of subsidence may be greater than the projected ten feet.

Even settling of the land surface by complete extraction methods is not the primary concern associated with subsidence at the Wilberg mine. The major problem will most likely be associated with areas of uneven subsidence caused by restriction of subsidence by barrier pillars, or as longwall mining or retreat mining progresses, an advancing subsidence trough will occur on the surface. In these areas, the ground surface will tilt causing areas of tension and compression on the surface. In the case

of the advancing mine face, these effects are transient and not as pronounced. However, where a barrier pillar remains, the surface tension and compression effects will remain, causing horizontal strains. The maximum slope measured to date is in the vicinity of Panel 6 East (Blind Canyon seam), and slopes at 0.09 inches/foot over 1,400 feet of cover. This is a severe slope for structures and would cause severe damage if a structure existed in this region. The slope would be expected to steepen as mining in the Hiawatha seam (lower seam) progressed, increasing the amount of subsidence within the trough. This effect has been observed in the area being monitored where subsidence has increased from 2.7 to almost six feet and the slope has increased from 0.06 inches/foot to 0.09 inches/foot.

The effect of this steepening on the land surface is unknown at this time. Depending upon the thickness of the overlying North Horn Formation which consists of interbedded shales and sandstones, plastic deformation of this strata could occur resulting in no visible effects on the surface. In areas where the depth of cover of the North Horn decreased, and the sandstone layers were close to the surface or exposed at the surface, surface cracking may become evident. During the proposed permit term, mining will continue in the Hiawatha seam in the proposed Wilberg operations where the USBM study has evaluated subsidence to date, primarily as a result of mining in the Blind Canyon seam. Continued monitoring in this area during the permit term and possibly for a few years after, should identify the effects of multiple seam mining on the surface, both with respect to lowering of the surface and slope effects at the edge of the subsidence trough (see Condition *2*).

In the areas of high strain, steep slopes in the North Horn Formation may be susceptible to failure. The North Horn Formation consists of a high percentage of clay layers, and given the right moisture conditions, could slump. This has apparently occurred in the past in areas in the North Horn Formation where in 1979, a slump 150 feet long was recorded (Memo to Coal File, Utah Division of Oil, Gas and Mining, September 6, 1979). This slump was located in an area where no mining had yet occurred in the UP&L operations. To date, no other slumps in the North Horn Formation have been recorded, even though retreat mining has occurred under steep slopes in this formation and extremely wet conditions existed in the spring of 1983. However, given certain conditions, subsidence could potentially trigger slope failures in this formation. It would be difficult to determine if the failure were due to subsidence or if the slope would have failed naturally, as was the situation with the 1979 failure.

B.2. Lowering of the Land Surface in Areas not Underlain by the Castlegate Sandstone

Significant portions of the land in the South Lease area of the operation will be undermined where the strata overlying the operation consists only of the Blackhawk Formation. As such, the surface protection provided by the thick sandstone layers of the Castlegate and the Price River Formations will not exist. In the south lease area and over smaller portions of the other sections of the mine, mining will occur under

shallow cover, in up to three seams in areas where the Castlegate Sandstone does not exist.

As mining progresses in these areas of shallow cover (i.e., 150 to 750 feet of cover) surface cracking may occur along barrier pillars or between extraction panels until both panels are mined. The applicant has stated that the caving height can range from 35 to 50 times the thickness of the coal seam, therefore, surface fracturing could be expected where the depth of cover ranges from 100 to 350 or 500 feet of cover. As mentioned before, mining under this depth of cover occurs in portions of the mine area. In addition, surface cracking in the Blackhawk Formation has been observed near the Wilberg facilities area.

In these areas of shallow cover, subsidence can be expected to be greater than measured to date. Since 60 percent of the seam thickness has been reflected in subsidence at the surface over Panel 6 East, it would not be unreasonable to assume that a greater percentage of the seam thickness might be reflected in subsidence at the surface in areas where the Castlegate Sandstone does not exist. Therefore, mining in these areas with shallow cover will cause greater subsidence impacts. In addition, the effects of uneven settling of the land surface will probably be more pronounced. Continued monitoring in these areas will identify the effects of subsidence and the need for mitigation of impacts if necessary (see Condition *1 and 2*).

B.3. Disturbance to Springs, Seeps and Ponds

Potential disturbance to springs, seeps and ponds in the permit area is not well understood at this time. (See Chapter IV, Probable Hydrologic Consequences.) Depending upon the location of the water source, the effects of mining will be quite different. A few springs are located in areas either just above the Price River Formation, where the thickness of the North Horn Formation is minimal, or in the Price River Formation. In these areas, a stronger potential exists for disruption of the springs since cracking in the Price River may extend through to the source of the springs. In most areas, the North Horn Formation is thick enough to potentially minimize this effect as evidenced by the lack of surface cracking (as of 1982) over the areas which have been monitored as part of the USBM study.

Springs, seeps, and ponds exist over the mine which are located in the areas at the edge of the subsidence trough where horizontal strains can be expected to be high. In these areas, cracking in the formations would be expected to be at a maximum. For instance, Surging Spring, Burnt Tree Spring, and Cove Reservoir are all located at or near the edge of a barrier pillar in a location where both seams will be extracted. The depth of cover in this area ranges from 1,600 to 1,750 feet. Therefore, the Castlegate and Price River Sandstone exist in their entirety along with almost 500 feet of the North Horn Formation. The effects of subsidence on Burnt Tree Spring will be quantified as mining progresses using the results of discharge-recession studies. Mining will occur in a single seam under these springs and the reservoir during this permit term in the Blind Canyon seam as part of the proposed Deer Creek operations. Mining in the Hiawatha seam will occur under these springs between the years 2003 to 2007 as part of the proposed Wilberg operation. As a result, the effects of multiple seam mining

will be better understood prior to this type of operation occurring in this area. In addition, the applicant has been required by the attached condition to conduct a field survey that will include the sloping edge of the subsidence trough over the USBM study area (see Condition *2*) to determine if surface cracking may have recently become evident. Any cracking could potentially disrupt the source of springs and seeps.

B.4. Disturbance to Escarpments

The applicant will be mining under several areas where the Castlegate Sandstone and the Price River Formation form major escarpments in this area. Mining under these types of escarpments may have a significant impact on their stability. In a study conducted by Dunrud (U.S.G.S., 1976), this type of subsidence effect was recorded from mining in a coal seam in Utah in the Mesaverde Group. Dunrud reported that mining had occurred from near the coal outcrop to a barrier pillar approximately 1600 feet in from the outcrop. The sandstone layer located above the mined out coal formed a cantilever from over the barrier pillar to the outcrop which finally failed above the barrier pillar. Vertical jointing in the sandstone essentially paralleled the length of the barrier pillar. Cracks to the surface were 900 feet deep, hundreds of feet long and as much as three feet in width. Some of the cracks actually emitted air from the underground workings.

The above described surface cracking subsidence effect can be extrapolated to the proposed operations in the Wilberg mine along the perimeter of much of the south lease area. As mining progresses from the outcrop barrier to the end of the panel, mining will occur first under areas where the Castlegate Sandstone does not occur. Eventually, depending upon the location of the particular panel, mining will progress under the Castlegate Sandstone and then progress to a barrier pillar located adjacent to the mains. The distance between the coal outcrop barriers back to the surface outcrop of the Castlegate ranges from approximately 500 to 1,800 feet in the proposed mining in the Hiawatha seam. The distance from the Castlegate outcrop to barrier pillars located adjacent to the mains is even more variable, and ranges from 400 to 6,000 feet. Given these distances, it is probable that the outcrop barrier will not provide any support to the Castlegate outcrop. The overlying Blackhawk Formation will probably cave between the outcrop barrier and the Castlegate outcrop. This situation could possibly create cantilevering in the Castlegate Sandstone since the stronger Castlegate would tend to resist caving for a period of time beyond caving on the Blackhawk Formation. A cantilever would then form and cracking at the surface would be expected.

This type of situation may be what caused the 12 foot subsidence offsets in the right branch of Grimes Wash. From evaluating the map shown in the applicant's August 1982 letter recording subsidence occurrences, it is difficult to determine exactly where the surface cracks occurred, but it appears that mining in this area would have created an unsupported section of the Castlegate approximately 200 to 500 feet long. Fracturing occurred within two years of retreat mining in this area. The orientation of the fractures is north-south. A recent toppling failure in this cliff area brought down sufficient material to make a pile 7 feet high and

approximately 200 by 100 feet (see the 1982 annual Subsidence Report). The subsidence fractures which occurred over the Deer Creek mine were also similar to the above Grimes Wash scenario. Mining began retreating from a section of the mine where the cover was only the Blackhawk Formation. Mining progressed under the Castlegate and fracturing occurred in a northeast direction approximately 100 feet back from the outcrop of the Castlegate. The size of these fractures was not identified by the applicant. The fractures identified above the Des-Bee-Dove mine repeat this same type of occurrence.

Within the Wilberg mine, almost eight miles of cliff formed by the Castlegate Sandstone and the Price River Formation are exposed primarily in the south lease area and will be undermined using longwall mining or retreat mining of room and pillar sections. In addition, the mining will advance in an east-west direction, creating a face advance oriented in a north-south direction along with barrier pillars in a north-south direction. From the cracking observed in the right fork of Grimes Wash and other areas, the Castlegate has shown tendency to fracture in a north-south to northeast direction. It is reasonable to assume that there will be surface fracturing in the Castlegate Sandstone and/or the Price River Formation along this cliff length. Of the eight miles of cliff length, approximately four miles are located in the raptor nesting zone. Continued monitoring in these areas will provide information on possible impacts to the escarpments and associated raptor nesting zone (see Condition *1*).

B.5. Disturbance to Perennial Streams

The applicant will be mining under Cottonwood Creek and the Left Fork of Grimes Wash. A buffer zone under which an area of partial extraction has been identified is shown on the mine maps for the protection of Cottonwood Creek. See the evaluation of compliance with UMC 817.126 for a discussion on the applicant's plans in this area.

The applicant has not provided any protection plans for the Left Fork of Grimes Wash. This drainage is located over existing longwall operations of the Deer Creek mine over approximately 2500 feet of its length, and in the upper reaches, 3000 feet of the drainage has already been undermined. The remaining stretches of the stream are located over the mine mains and will be protected as long as the mains remain in use, or over areas which will be mined beyond this permit term. Mining in the Hiawatha seam as part of the Wilberg operation will not occur during this permit term.

On the proposed mine maps, two longwall sections are shown in the existing operations area. One longwall panel was to have been mined out in 1983, and the second was to be mined in 1984. Assuming this schedule was maintained, the stream channel has for the most part already been undermined by the Deer Creek operation. In this 2500 foot section of the stream, the channel is located in the Price River and Castlegate formations. As such, there could be some concern relating to cracking to the surface in this area, and diversion of the stream. To date, no impacts to the channel have been identified. The area where the sandstone outcrops in the channel section being undermined is located in a relatively flat area. The areas where surface cracking has occurred to date have been very steep to vertical. Therefore, surface cracking may not be a severe problem

if it does occur. In addition, since mining has already occurred in this area, impacts may have already occurred or at least have already been set in motion.

Continued monitoring of multiple seam mining will provide the additional data required to determine the possible impacts to the Left Fork of Grimes Wash prior multiple seam mining in this area (See Condition *2*). The applicant's proposed monitoring plan will also identify impacts to the stream channel that may occur due to the existing and/or past mining. The proposed monitoring plan includes the identification of subsidence impacts and requires that the applicant identify measures to mitigate subsidence impacts if necessary.

C. Evaluation of the Proposed Monitoring Plan

As mining progresses and additional information is collected, the impacts associated with subsidence will be more clearly identified. As such, the applicant's monitoring program is critical, along with interpretation of monitoring results. The proposed program does not provide any information on the location of the primary grid system to be used as the basis for the monitoring. The applicant has stated that the monitoring will achieve relative vertical accuracy of one foot. The applicant has proposed a conventional survey over three panels in the south lease area to verify areal survey in the steep terrain in this area. This survey will be established where mining under the Castlegate Sandstone outcrop areas will occur and where multiple and single seam mining will occur.

The applicant must commit to providing the regulatory authority with annual survey information, interpretation of subsidence occurrences, and development of mitigation plans if appropriate. This information should be extrapolated to conditions in other areas of the UP&L mines to prevent or mitigate subsidence impacts if necessary. This survey data should be correlated with the photogrammetry studies to determine the suitability of this program. The applicant is not in compliance with UMC 817.121 (see Conditions *1* and *2*).

UMC 817.122 Subsidence Control: Public Notice

The applicant has provided for public notice to all affected landowners and residents within the area above the underground workings. The notification will identify the areas in which mining will take place and the planned date for mining. The applicant is in compliance with UMC 817.122.

UMC 817.124 Subsidence Control: Surface Owner Protection

The applicant has proposed to mitigate impacts to structures and roads. As mining progresses and additional information is obtained on subsidence impacts, additional mitigation measures may be necessary. At this time, it is not possible to determine the effects to springs in the area, the extent of disruption of the surface nor to escarpments. As indicated in the above discussion, there is potential for mining operations to create conditions conducive to escarpment failure. However, the possibility of such a failure resulting in environmental damage is extremely low.

Therefore it is concluded that mining operations do not place the environment at the escarpment zone at risk, and specific corrective measures addressing such a failure are not expected to be necessary. The applicant will be required to monitor these features and evaluate the effect of subsidence on them. If significant impacts to these features occurs, mitigation plans will be developed by the applicant, submitted to the regulatory authority for evaluation and approval, and a final mitigation plan implemented by the applicant. These plans will be developed by the applicant on an annual basis and submitted to the regulatory authority within three months of data collection and analysis. With the proposed monitoring conditions (*1* and *2*) the applicant will be in compliance with UMC 817.124.

UMC 817.126 Subsidence Control: Buffer Zones

A buffer zone has been identified in the Cottonwood Creek area. In this areas, pillars will be left to prevent surface subsidence. These pillars have been designed to be stable for the long-term. The applicant is in compliance with UMC 817.126.

*What about
Garrison
Wash
Cape fork*

9.3 Conditions

1. Within 30 days of permit approval, the applicant must provide a map and/or plan for the location of the primary grid system for the subsidence monitoring plan over the permit area. This grid system must be adequate to ensure that the foot-vertical accuracy will be maintained and that sufficient points are established for adequately measuring horizontal displacement. A map showing the location of the primary grid system used in the 1980 aerial survey must be provided within 30 days of permit approval along with a copy of the baseline data. Each succeeding year, an updated copy of the map must be provided showing the location of any additional primary grid points established and the baseline survey data. This information must be included in the annual monitoring report which must be submitted within six months of data collection. This monitoring report must also identify appropriate mitigation measures to be taken if significant subsidence impacts occur.
2. Within 30 days of permit approval, the applicant must provide a plan for continuance of subsidence monitoring in the USBM study area in the event that the USBM discontinues this study. Using conventional methods, the applicant must collect data that will be compatible with USBM collected data for future analysis. In addition, the applicant must commit to both evaluation of the USBM data within six months of its collection by USBM, analysis of this information with respect to subsidence impacts, and evaluation of any mitigation measures that may be required. Plans must be provided showing that the applicant will conduct a ground survey of the site this year and will submit results of the survey by September 1984. Plans for comparison of the conventional survey information with the photogrammetry studies must be made. This information is needed to show compliance with UMC 817.121.

X. REVEGETATION

10.1 Description of Applicant's ProposalInterim Stabilization and Vegetation Plan - Main Portal Area (Vol. 2, revised pp. 4-8 to 4-16)

The objectives of this plan are to 1) control erosion on five major existing fill slopes; 2) evaluate revegetation methodologies, plant species adaptability, and potential success; and 3) develop an alternate "soil" material to be reapplied during final revegetation. The applicant proposes to establish vegetation on these fill-slopes. The upper 18-24 inches of fill layer would then become the "topsoil" by nature of its established plant community with micro-organisms, organic deposition, nutrient soil cycles, root zones, etc. The amount of "soil" developed by this method will be randomly placed over the final graded surface to a depth of 6 to 12 inches. Sufficient material will be available to cover approximately two acres in this manner. The plan will be initiated the first appropriate season following the granting of this permit.

To revegetate each slope, the surface will be cleared of debris and the proposed seed mixture and fertilizer (at rates based on soil test results) will be broadcast. Seeding will take place in the fall months. Two tons of hay mulch per acre will be spread over the slope surface and the surface will then be raked up-slope to cover the seed and fertilizer. This activity will also partially incorporate the mulch into the seedbed. The slopes will be covered with "Vexar" netting and the netting will be anchored. The following spring, containerized shrub and tree stock will be planted in test strips with species randomly located in rows. Basins will be formed around each seedling and a fertilizer tablet placed in the backfill for each plant. A "Vexar" tube will be placed over the seedling as protection from browsing. Each seedling will be watered after planting.

Irrigation will be practiced only if a planting failure occurs after the first year. Slopes will be cultivated for two years to eliminate weeds. Rodenticides will be placed by a licensed applicator to reduce rodent populations on these slopes. Revegetated fill slopes will be evaluated every August. Permanent line intercept transects will be used to record species composition and ground cover. Shrub and tree plantings will be evaluated for species survival rate and vigor. Copies of evaluation reports will be forwarded to UDOGM. Samples will be taken of seedbed material at five year intervals to record productivity changes. Standard parameters will be evaluated.

A wide variety of grass, forb, shrub, and tree species will be evaluated. Most species proposed are considered drought-tolerant. Four introduced species (Artemisia arbotanum, Kochia prostrata, Melilotus officinalis, Medicago sativa) are included for planting. The majority of species to be evaluated are scheduled for use during final revegetation.

Final Revegetation Plan - Wilberg Main Portal Area (Vol. 2, pp. 4-1 to 4-7, 4-17 to 4-21)

Final revegetation will be initiated the first appropriate season following mine closure. Techniques described below may be revised given the results of the "Interim" plan.

Following general grading, "soil" developed as a result of "Interim" plantings will be spread to a depth of from 6 to 12 inches over approximately two acres. No seedbed preparation techniques will be employed on graded areas. It is stated that the sandy loam (loamy sand) texture of the seedbed material, freshly graded, will not require such techniques. The seed mixture and fertilizer (at rates based on soil test results) will be broadcast onto the seedbed in the fall. On level to gently sloping sites, a horizontal drag will be pulled over the seedbed to cover seed and fertilizer. Steeper slopes will be hand-raked to accomplish this objective. Following seeding, alfalfa hay will be spread at two tons/acre as a mulch. Mulch on steeper slopes will be covered with "Vexar" netting. The netting will be anchored by crimping. In the following spring, containerized shrub and tree stock will be planted. Species will be planted in "clumps" to enhance wildlife habitat potential. Clumps will be randomly spaced over the mine site. During planting, a fertilizer tablet will be placed with the backfill for each clump. Seedlings will be protected by "Vexar" tubes. Basins to collect water will be formed around seedlings. Each clump will be hand-watered at the time of planting.

No irrigation is planned unless a planting failure occurs. If a failure does occur, the applicant has committed to a sprinkle irrigation program. Slopes will be cultivated for two years to eliminate weeds. Licensed applicators will place rodenticides on revegetated areas for three years or as required to control rodent populations. Grazing will be prohibited on revegetated areas until bond release. Fencing will be employed, if necessary, to prevent grazing.

Plant species selected for revegetation are either native to the area or are considered to be appropriate additions added to increase species diversity. Melilotus officinalis is the only introduced species scheduled for planting.

Final Revegetation Plan - Waste Rock Disposal Site (Vol. 2, revised pp. 4-21A to 4-26; Vol. 3, Appendix VII, no pagination)

Following soil application on individual cells, the seed mixture and fertilizer (at rates based on soil tests) will be broadcast over the soil surface in the fall. Straw will be applied following seeding at the rate of two tons/acre. The straw will be anchored by crimping. Basin slopes will be revegetated using the same techniques outlined for slopes of the Wilberg mine. Grazing will be excluded from the site for two years by fencing.

Grass species are absent from the reference area for this site. Plant cover on the reference site (3.3 percent) consists mainly of a wide variety of forbs and shrubs with no clear dominance of species. The applicant proposed

to plant a seed mixture composed of five grasses, two forbs, and four shrubs. One introduced forb species (Melilotus officinalis) is included in the mixture. Agropyron desertorum is included at the request of the BLM.

Final Revegetation Plan - Cottonwood Fan Portal Site (Vol. 2, pp. 4-27 to 4-29)

In the revegetation plan the applicant has made few distinctions between techniques applicable to varying slope gradients. Therefore, it is assumed that the techniques specified will be applied to all disturbances including roads and sediment ponds.

Following topsoil application and grading, trenches six inches deep will be formed during the fall planting season in the seedbed on one-foot centers. The seed mixture and fertilizer (at rates based on soil tests) will then be broadcast into the trenches. The soil will be raked to cover the seed and fertilizer. Alfalfa hay will be spread over the seedbed at the rate of two tons/acre and anchored. In the following spring, containerized shrub stock will be planted in random clumps over the site. Planting techniques to be used are as for the Wilberg mine proper.

Maintenance techniques will follow those cited for the Wilberg mine. The applicant proposes to irrigate revegetated areas on page 4-27. On page 4-29 it is stated that irrigation will be used only if initial plantings fail. It is assumed that the latter statement holds.

The seed mixture and planting scheme for this site generally conforms to vegetation at the proposed reference site. The grass and forb species proposed are appropriate for planting.

The applicant has identified the means by which parameters for measuring revegetation success will be obtained. These measures are briefly described on page 4-2 (PAP, Volume 2) and include methods and statistical limits similar to those used when the reference areas were established.

The applicant has also committed to using a "students t test" of the sample means to compare sampled parameters for eventual ground cover and woody plant density to within acceptable statistical confidence limits as defined by UMC 817.116 (b)(3)(iv) and UMC 817.117.

10.2 Evaluation of Compliance

The vegetation data collected from reference areas shows that these sites are acceptable areas and representative of the floral community which existed prior to mining. These reference areas contain both pinyon and juniper trees whereas the post-mining revegetated areas will be enhanced by replacing trees with shrubs and herbaceous vegetation. Replanting pinyon and juniper trees, especially on small areas, is not desirable from the standpoint of wildlife habitat. In many areas of Utah, pinyon-juniper communities are cleared of their overstories (usually by "chaining") to release the desirable understory for wildlife forage. The applicant is attempting to enhance conditions by leaving trees out of their seed mixtures and only including grasses, forbs,

and shrubs. However, a certain amount of natural reinvasion of these trees will occur due to the small areas of disturbance (20, 16, and 5 acres) and the proximity to undisturbed pinyon and juniper seed sources in the adjacent communities.

The following discussion encompasses the revegetation plans for all three disturbed sites.

784.13(b)(5) Reclamation Plan: General Requirements (Revegetation)

The applicant has shown compliance with the requirements of this section. The proposed schedule for revegetation conforms to accepted standards. Revegetation activities will be accomplished during recognized planting seasons. Seeding and planting rates are appropriate. Species to be seeded and planted are acceptable. The mulching techniques proposed are in accordance with standard, accepted practices. Irrigation will be used only if a planting failure occurs after the first year at the Wilberg main facilities site and the Cottonwood fan portal. No irrigation is planned for the waste rock disposal site.

The evaluation of compliance with regard to a soil testing plan is treated under UMC 817.21 - 817.25 (see Chapter I, Topsoil).

UMC 817.111(a)(b) Revegetation: General Requirements

The applicant has complied with the requirements of this section.

UMC 817.112 Revegetation: Use of Introduced Species

Both Melilotus officinalis and Medicago sativa are proposed for use and are acceptable. Acceptance is based on the UDOGM position that because seed sources of native forbs are commercially limited, and these species have a potential for successful establishment, both species are appropriate. Agropyron desertorum is proposed for use at the waste rock disposal site. This species was included at the request of the Bureau of Land Management. In addition, due to the average annual precipitation and species characteristics, these species are not expected to persist on the site after the first growing season (Christenson, D. R. and S. B. Monsen, 1968, Restoring Big Game Range in Utah, Utah Division of Fish and Game, Ephrem, Utah, 183 pp, and Long S. G., 1980, Characteristics of Plant Used in Western Reclamation, Environmental Research and Technology, Inc., Fort Collins, Colorado, 146 pp). The applicant will monitor the planting with respect to the dominance of this species as directed by UDOGM.

UMC 817.113 Revegetation: Timing

The applicant has complied with the requirements of this section.

UMC 817.114 Revegetation: Mulching and Other Soil Stabilizing Practices

The applicant has complied with the requirements of this section.

UMC 817.116 and 817.117 Revegetation: Standards for Success and Tree and Shrub Stocking for Forest Land

The applicant has complied with the requirements of this section.

Reclamation Feasibility

Though difficult at best on steeper slopes, revegetation is considered feasible for the entire permit area. The applicant has proposed to utilize plant species and employ revegetation techniques which are appropriate, given existing conditions, for attaining revegetation goals. The commitment to irrigate, if necessary, significantly increases the feasibility of revegetation. A diverse effective and permanent vegetative cover should be attained considering post-mining topography and the revegetation techniques to be employed.

The results of the applicant's efforts will aid in success of revegetation and, through appropriate modifications where necessary in the final revegetation plan, increase the feasibility of revegetation.

10.3 Conditions

None

XI. ROADS

11.1 Description of Applicant's Proposal

Access roads will be used in conjunction with the operation of facilities at the main Wilberg portal area in Grimes Wash, the Cottonwood fan portal site, and the waste rock disposal site. The roads at the main Wilberg portal area already exist and are in use; roads at the Cottonwood fan portal site and waste rock disposal site are proposed.

There are five facility roads at the main Wilberg portal area, identified as follows:

- a. Haul road
- b. Truck turn-around
- c. Service road
- d. Portal road
- e. Fan access road

All of the roads, except the fan access road are asphalt surfaced. Adequate drainage is provided using roadside ditches and culverts.

The haul road is a continuation of the plant access highway, State Road No. 57. It is 28 feet wide with a grade of 8 to 12 percent. The haul road ends at the truck turn-around loop, also 28 feet wide. The truck turn-around loop has a gradient ranging from level to a 12 percent transition with the haul road. The haul road and truck turn-around are used for transportation of coal and hence are defined as Class I roads.

The service road starts at the junction of the haul road and truck turn-around and terminates at the upper storage area. The service road is 20 feet wide with a grade of 12 percent. Turn-outs are provided from the service road to the plant silo area and the lower and upper parking lot in addition to the upper storage area. The service road is planned for greater than six months use and hence is defined as a Class II road.

The portal road starts at the upper storage area and follows the mine track extension at a six percent grade to the elevation of the mine portals. The fan access road is a dirt road at variable width providing access from the mine portal road to the mine ventilation fan. The road was constructed along an existing alignment and is essentially level. The portal road and fan access road are defined as Class II roads.

The proposed access road at the Cottonwood fan portal site will utilize an existing road that originally served the Old Johnson Mine. This road will be cleared of rubble and extended approximately 600 feet to provide access to the fan portal and equipment. The existing road has an 85-foot section with a grade of 17 percent; this will be regraded to provide a maximum grade for the new road of eight percent. The proposed access road is defined as a Class II road. The applicant does not state how this road will be surfaced. Adequate drainage is provided through roadside ditches and culverts.

Small roads will be constructed from the main haul road to provide access to the waste rock disposal site. These roads will have a maximum length of approximately 500 feet and will be essentially level.

11.2 Evaluation of Compliance of Proposal

UMC 817.150 Roads: Class I: General

The applicant has complied with the requirements of this section.

UMC 817.151 Roads: Class I: Location

The applicant has complied with the requirements of this section.

UMC 817.152 Roads: Class I: Design and Construction

Large sections of the haul roads of the main Wilberg portal area have grades that exceed ten percent. These grades have been approved by DOGM in a construction variance granted to the applicant. The applicant is, thus, in compliance with part (a).

The applicant meets all other requirements of this section.

UMC 817.153 Roads: Class I: Drainage

The applicant is in compliance with this section.

UMC 817.154 Roads: Class I: Drainage

The asphalt surfacing of the haul road and truck turn-around meet all requirements of this section.

UMC 817.155 Roads: Class I: Maintenance

The applicant has complied with the requirements of this section.

UMC 817.156 Roads: Class I: Restoration

The applicant meets the requirements of this section.

UMC 817.160 Roads: Class II: General

The applicant has complied with the requirements of this section.

UMC 817.161 Roads: Class II: Location

The applicant has complied with the requirements of this section.

UMC 817.162 Roads: Class II: Design and Construction

Large sections of Class II access roads above the truck turn-around at the main Wilberg portal area have grades that exceed ten percent. These grades have been approved by DOGM in a construction variance granted to the applicant. Grades of all other Class II roads at the Wilberg mine are in compliance. The applicant is, thus, in compliance with part (a).

The applicant meets all other requirements of this section.

UMC 817.163 Roads: Class II: Drainage

Drainage is addressed in Chapter 2.

The applicant is in compliance with this section.

UMC 817.164 Roads: Class II: Surfacing

The applicant is in compliance with this section.

UMC 817.165 Roads: Class II: Maintenance

The applicant has complied with the requirements of this section.

UMC 817.166 Roads: Class II: Restoration

The applicant meets the requirements of this section.

UMC 817.170 - 817.176 Roads: Class III

These are no existing or proposed Class III roads at the Wilberg main portal area.

11.3 Conditions

None

XII. ALLUVIAL VALLEY FLOORS

12.1 Description of Applicant's Proposal

The facilities of the Wilberg mine are situated in narrow canyons with steep side slopes and valley slope. The canyons lack top soil and do not contain irrigable land that could be used for agricultural purposes. The canyons in which the surface facilities are located contain deposits of mass movements, slope wash, debris erosion, and sheet runoff. The area is classified as an upland and non-irrigation area and, therefore, cannot be considered as an alluvial valley floor. Furthermore, disturbance or interruption of aquifers within the underground mine complex will have no effect on downstream alluvial valley floors.

12.2 Evaluation of Compliance of Proposal

785.19 Underground Coal Mining Activities on Areas or Adjacent to Areas Including Alluvial Valley Floors in the Arid or Semi-arid Areas of Utah

As there are no alluvial valley floors in or adjacent to the permit area and underground disturbance of aquifers will not affect downstream alluvial valley floors, the applicant is in compliance with this section.

9.3 Conditions

None

XIII. POSTMINING LAND USE

13.1 Description of Applicant's Proposal

Premining use of the permit area was for livestock grazing and wildlife habitat. At the present time, cattle graze the lower portions of the permit area in the spring and the upper portions (East Mountain) during the summer months. In addition, there are several cabins and a landing strip on East Mountain over the underground mine. The permit area provides habitat for elk, deer, and raptors during various seasons throughout the year.

The applicant intends to return the disturbed Cottonwood fan portal, waste rock disposal site, and Wilberg main portal area to their premining land uses of livestock grazing and wildlife habitat. Following cessation of mining, the disturbance areas will be recontoured to blend into the existing topography and be revegetated as described in the Reclamation Plan section (pp. 4-1 through 4-31 Vol. 2). Vegetation will be reestablished to be comparable to species diversity, cover, density and productivity of the established reference areas.

13.2 Evaluation of Compliance of ProposalUMC 817.133 Postmining Land Use

The applicant has complied with the requirements of this section for the publicly owned surface. Since a land use on private property consisting of recreational development does exist, if the applicant accepts Special Condition No. 2 (the replacement of water where such supply is adversely affected by mining), the postmining land use on private surface will be assured.

13.3 Conditions

See Condition No. 2.

XIV. AIR RESOURCES

14.1 Description of Applicant's Proposal

The applicant is currently using several fugitive dust-control practices at the Wilberg mine. The applicant proposes to continue these practices throughout the life and subsequent reclamation of the mine site.

All service and haul roads at the Wilberg mine are asphalt surfaced with the exception of the mine fan service road. Travel on this road is limited to once a day at low speed. Vehicular traffic in the Wilberg main portal area is controlled to minimize contribution of fugitive dust. Vehicle speeds are restricted to 20 mph; speed limits signs are posted. The steep natural terrain prevents unauthorized travel on other than on established roads.

Revegetation procedures have been implemented on all non-use areas in the portal yard. Where erosion or incomplete germination occur, the applicant proposed to fill rills and reseed until adequate vegetation is established.

Fugitive dust controls are implemented throughout the coal handling process and are operated under an approved PSD permit from the EPA. All belt conveyors and interprocess conveyors are covered and equipped with belt scrapers to prevent coal dust generation. Transfer points are enclosed and chute inlets and outlets are rubber curtained to minimize open areas. Dust collection systems with baghouses have been provided for the storage silo, crushing and cleaning facility, and the truck load-out. Collection points at the storage site include the silo inlet and reclaim feeders. The crushing and cleaning facility collection points include the breaker feed chute, reject discharge chute, breaker screen enclosure, and conveyor shirtboards. Collection points at the truck load-out include the conveyor head chute and the hopper.

The high moisture content of the coal at Wilberg mine provides fugitive dust control throughout the handling and hauling process. Analysis of samples taken during processing shows an average 10.5 percent inherent and surface moisture content in 616 samples. Coal dust generation is reduced throughout the handling process by the dampening effect of this moisture.

Conditions do not exist at Wilberg mine that promote spontaneous combustion. No facilities are available or planned by the applicant for long-term stockpiling of coal. No coal products are stored, excepting active run of mincoal storage (silo) at the Wilberg mine.

14.2 Evaluation of Compliance of Proposal

UMC 817.95 Air Resources Protection

The applicant has addressed adequately all major topics of this section, and is in compliance with the regulation.

XV. CULTURAL RESOURCES

SEE ENVIRONMENTAL ASSESSMENT, ADDENDUM A

XVI. BONDING

16.1 Description of Applicant's Proposal

Estimated costs are in 1983 dollars and include lands having been disturbed for the purpose of handling, crushing, storing, and transporting coal extracted through the Wilberg mine. The applicant has identified one bonding increment. Cost estimates are based on engineering analyses and standard references such as the Caterpillar Performance Handbook and Rental Rate Bluebook for Construction Equipment. A summary of the applicant's estimated costs is shown below:

Category	Amount (\$)
1 Surface Facilities Removal	194,106.00
2 Portal Sealing	77,736.00
3 Hauling, Backfilling, Compaction and Grading	288,015.00
4 (Not used in applicant's estimate)	0.00
5 Install Riprap Drainage Channels	70,974.00
6 Temporary Sedimentation Control Facilities	3,169.00
7 Soil Sampling and Seed Bed Preparation	17,608.00
8 Fertilizing and Mulching	38,504.00
9 Seeding and Planting	115,697.00
10 Plant Monitoring and Disease and Pest Control	10,620.00
11 Soil Stabilization - Rills and Gullies	3,453.74
12 Contingent Seeding and Planting	8,847.00
13 Revegetation Inventory for Bond Release	5,417.00
14 Sediment Control Structure Removal	3,603.50
Mobilization	10,000.00
SUBTOTAL	<u>847,749.00</u>
10% Contingency	84,775.00
TOTAL	932,524.00
Escalate 6.78%	1,294,522.00

16.2 Evaluation of Compliance of Proposal

UMC 800.11 - Requirments to File a Bond

- 1.a. The applicant has requested a permit term of five years.
- b. The revegetation liability period pursuant to UMC 817.116(b) shall be ten years as permit area precipitation is substantially less than 26 inches.

UMC 800.12 Requirements to File a Certificate of Liability Insurance

The applicant has complied with this section.

UMC 800.13 Regulatory Authority Responsibilities

The regulatory authority has analyzed the bond estimate and supporting calculations provided by the applicant. The estimates have been found to be adequate. The applicant is in compliance with this section.

XVII. SUMMARY OF CONDITIONS

Condition #1

Within 30 days of permit approval, the applicant must provide, for regulatory authority approval, a statement of criteria that will ensure riprap stability and adequate energy dissipation in accordance with the requirements of UMC 817.44(b). In addition, the following filter gradation must be incorporated into the filter design for the riprap channel lining:

<u>U.S. Standard Sieve Size</u>	<u>Percent Passing by Weight</u>
3"	90-100
3/4"	20- 90
#4	0- 20
#200	0- 3

Condition #2

The applicant must replace any water lost or adversely affected by mining operations with water from an alternate source in sufficient quantity and quality to maintain the rights of present users and current and post-mining land uses. The applicant must describe the measures that will be taken to minimize changes to the prevailing hydrologic balance in all perennial streams within the permit area in the event that subsidence effects reduce the base flow to these streams. This description must be presented to the regulatory authority for approval within 30 days of permit approval. [Reference: BLM Lease Conditions 15 and 19, U-47978; Condition 14, U-044025; Conditions 14 and 18, U-083066; Conditions 14 and 18, U-040151; and in accordance with UMC 784.14(a)(2) and (3); UMC 784.20(c); UMC 817.124(b)(1); and P.L. 95-87 Section 508(a)(13).]

Condition #3

The applicant must conduct portal closure activities for the Newberry Canyon breakout during the period from July 1 to January 31.

Condition #4

Within 90 days of permit approval, the permittee shall place sufficient clean rock material on the horizontal portion of the benches above Cottonwood portal so as to effectively cover the exposed narrow rider coal seams.

Condition #5

Within 30 days of permit approval, the applicant must provide a map and/or plan for the location of the primary grid system for the subsidence monitoring plan over the permit area. This grid system must be adequate to ensure that the foot-vertical accuracy will be maintained and that sufficient points are established for adequately measuring horizontal displacement. A map showing the location of the primary grid system used in the 1980 aerial survey must be provided within 30 days of permit approval along with a copy of the baseline data. Each succeeding year, an updated copy of the map must be provided showing the location of any additional primary grid points established and the baseline survey data. This information must be included in the annual monitoring report which must be submitted within six months of data collection. This monitoring report must also identify appropriate mitigation measures to be taken if significant subsidence impacts occur.

Condition #6

Within 30 days of permit approval, the applicant must provide a plan for continuance of subsidence monitoring in the USBM study area in the event that the USBM discontinues this study. Using conventional methods, the applicant must collect data that will be compatible with USBM collected data for future analysis. In addition, the applicant must commit to both evaluation of the USBM data within six months of its collection by USBM, analysis of this information with respect to subsidence impacts, and evaluation of any mitigation measures that may be required. Plans must be provided showing that the applicant will conduct a ground survey of the site this year and will submit results of the survey by September 1984. Plans for comparison of the conventional survey information with the photogrammetry studies must be made. This information is needed to show compliance with UMC 817.121.

Condition #7

In accordance with the Manti-La Sal National Forest's May 7, 1984, letter the permittee is required to comply with the following conditions:

- Several deficiencies have been noted on Map 2-19, which specifies land uses. The map needs to be updated to include livestock grazing, raptor nests, raptor nesting habitat, deer and elk summer/winter ranges, and commercial timber.
- Prior to Utah Power and Light Company moving construction equipment on the forest in Cottonwood Canyon, the jurisdiction of the access road must be determined. A Road Use Permit may be needed.
- Burying any waste, toxic or natural, is prohibited on National Forest System lands.

- Section XVII in the appendices deals with structures that could be affected by subsidence. The following items need to be included in the appendices: fences; roads; stockponds; and associated earth dams and water troughs.

Condition #8

At such time that OSM, in consultation with the Division of Oil, Gas and Mining and the SHPO, determines that subsidence within the permit area may adversely affect known or unrecorded cultural sights, additional cultural resources studies may be required. This determination will be based on new subsidence or cultural resource information and clear justification will be presented to the permittee.

Condition #9

Within 60 days of permit issuance, the applicant shall provide a commitment to participate, as determined necessary by the U.S. Fish and Wildlife Service, in the USFWS study program "Recovery of Endangered Fishes of the Upper Colorado River Basin."

U.S. DEPARTMENT OF THE INTERIOR
OFFICE OF SURFACE MINING
RECLAMATION AND ENFORCEMENT
NOTICE OF A DECISION AND AVAILABILITY
OF BOTH A TECHNICAL ANALYSIS AND AN
ENVIRONMENTAL ASSESSMENT FOR
UTAH POWER & LIGHT COMPANY
PERMANENT PROGRAM PERMIT
WILBERG MINE
EMERY COUNTY, UTAH

The United States Department of the Interior, Office of Surface Mining Reclamation and Enforcement (OSM), has approved, with conditions, a 5-year permit for Utah Power & Light Company to mine coal at its Wilberg Mine.

The Wilberg Mine underground coal mine is located in Emery County, Utah, nine miles west of Huntington. The mine has been in operation since 1945. The proposed permit area will cover approximately 11,500 acres. Approximately 42 surface acres have been disturbed to date and nine additional acres are to be disturbed by a rock waste disposal site. Average annual mine production is at a rate of 2.4 million tons of coal over 38 years.

Any person with an interest which is or may be adversely affected by this Federal permit approval action may request an adjudicatory hearing on the final decision within 30 days after publication of this notice, in accordance with Section 514(c) of the Surface Mining Control and Reclamation Act (SMCRA). Any hearing will be governed by provisions of 5 U.S.C. Section 554. A petition for review of the OSM decision should be submitted to:

Hearings Division
Office of Hearings and Appeals
U.S. Department of the Interior
4015 Wilson Boulevard
Arlington, Virginia 22203

Pursuant to 40 C.F.R. Sections 1501.4(c) and 1506.6, notice is hereby given that the Office of Surface Mining has completed a technical analysis (TA) for the mining and reclamation plan (mining plan) for the Wilberg Mine, Emery County, Utah. OSM has supplemented this TA with an environmental assessment (EA). OSM's recommendation to approve Utah Power & Light Company mining plan and the permit application with conditions is in accordance with Sections 510 and 523 of SMCRA. OSM's analysis is that no significant environmental impacts would result from such approval. For information or clarification concerning the approval of the Wilberg Mine Plan, please contact Shirley Lindsay or Walter Swain at (303) 844-3806, Office of Surface Mining, Denver, Colorado.

Both the TA and the EA are available for public review at the following locations:

Office of Surface Mining

Reclamation and Enforcement
Western Technical Center
1020 15th Street
Denver, Colorado 80202

Office of Surface Mining Reclamation and Enforcement
Albuquerque Field Office
219 Central Avenue NW
Albuquerque, NM 87102

Utah Division of Oil, Gas, and Mining
4241 State Office Building
Salt Lake City, UT 84114

UTAH POWER & LIGHT COMPANY

1107 WEST NORTH TEMPLE STREET

P. O. BOX 899

SALT LAKE CITY, UTAH 84110

1984 JAN 32 11:11:34

January 27, 1984

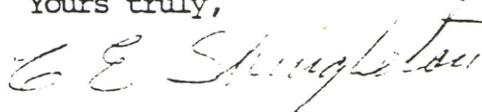
Ms. Shirley Lindsey
U. S. Department of the Interior
Office of Surface Mining
Reclamation and Enforcement
Brooks Towers
1020 15th Street
Denver, Colorado 80202

Re: Wilberg Coal Mine Permit Application

Dear Ms. Lindsey:

As required by UMC 782.21, enclosed is a copy of the newspaper advertisement for the Wilberg Mine application and the Affidavit of Publication.

Yours truly,



C. E. Shingleton
Director of Permitting,
Compliance & Services
Mining and Exploration

CES:EMCQ:bb:4244

Enclosure

cc: James W. Smith, Jr., DOGM w/attachment
Ralph Jerman w/attachment

PUBLIC NOTICES

Public Notice Advertising Protects
Your Right to Know

NOTICE

Utah Power & Light Company, 1407 West North Temple, Salt Lake City, Utah 84116, hereby announces it has filed a complete application for an underground coal mining permit for the Wilberg Coal Mine, Emery County, Utah, with the Division of Oil, Gas and Mining and the Office of Surface Mining under the laws of the State of Utah and the United States.

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, objections or requests for informal conferences should be submitted to Mr. Allen D. Klein, Office of Surface Mining, 1020 Fifteenth Street, Denver, Colorado 80202. Said comments, objections or requests must be submitted within thirty (30) days from January 18, 1984, the date of last publication of this notice.

The area to be mined is contained on the U.S.G.S. 7.5-minute "Red Point" and "Mahogany Point" quadrangle maps. A map depicting the general area of the Wilberg Mine is published herewith.

The approximately 10,600 acres contained in the permit area involve all or part of the following federal and fee coal leases:

Lease No. SL-064900

Issued to Cyrus Wilberg 2/3/45

Section 22 SE $\frac{1}{4}$ SW $\frac{1}{4}$, SW $\frac{1}{4}$ SE $\frac{1}{4}$, NE $\frac{1}{4}$ SW $\frac{1}{4}$, NW $\frac{1}{4}$ SE $\frac{1}{4}$

Township 17 South, Range 7 East, S.L.M. Utah, containing 160 acres.

Lease No. U-1558

Issued to Castle Valley Mining Co. 8/1/67

Section 22 S $\frac{1}{2}$ NW $\frac{1}{4}$, W $\frac{1}{2}$ SW $\frac{1}{4}$, E $\frac{1}{2}$ SE $\frac{1}{4}$

Section 27 E $\frac{1}{2}$ NE $\frac{1}{4}$

Township 17 South, Range 7 East, S.L.M. Utah, containing 320 acres

Lease No. SL-070645, U-02292

Issued to Clara Howard Miller 4/1/52

Section 4 SW $\frac{1}{4}$ SE $\frac{1}{4}$, S $\frac{1}{2}$ SW $\frac{1}{4}$

Section 5 SE $\frac{1}{4}$ SW $\frac{1}{4}$, S $\frac{1}{2}$ SE $\frac{1}{4}$

Section 8 E $\frac{1}{2}$, E $\frac{1}{2}$ W $\frac{1}{2}$

Section 9 All

Section 10 W $\frac{1}{2}$

Section 15 N $\frac{1}{2}$

Section 16 N $\frac{1}{2}$

Section 17 NE $\frac{1}{4}$, E $\frac{1}{2}$ NW $\frac{1}{4}$

Township 17 South, Range 7 East, S.L.M. Utah, containing 2560 acres

Lease No. U-084923

Issued to Malcolm N. McKinnon 8/1/64

Section 4 Lots 2, 3, 4, 5, 6, 7, 10, 11, 12,

NW $\frac{1}{4}$ SE $\frac{1}{4}$, N $\frac{1}{2}$ SW $\frac{1}{4}$

Section 5 Lots 1 thru 12, N $\frac{1}{2}$ S $\frac{1}{2}$, SW $\frac{1}{4}$ SW $\frac{1}{4}$

Section 6 Lots 1 thru 11, SE $\frac{1}{4}$

Section 7 Lots 1 thru 4, E $\frac{1}{2}$

Section 8 W $\frac{1}{2}$ W $\frac{1}{2}$

Section 18 Lot 1 and 2, N $\frac{1}{2}$

Section 17 W $\frac{1}{2}$ NW $\frac{1}{4}$

Township 17 South, Range 7 East, S.L.M. Utah, containing 2252.42 acres

Lease No. U-084924

Issued to Malcolm N. McKinnon 8/1/64

Section 1 Lots 1, 2, 3, S $\frac{1}{2}$ NE $\frac{1}{4}$ SE $\frac{1}{4}$ NW $\frac{1}{4}$, E $\frac{1}{2}$ SW $\frac{1}{4}$, SE $\frac{1}{4}$

Section 12 E $\frac{1}{2}$, E $\frac{1}{2}$ W $\frac{1}{2}$

Section 13 NE $\frac{1}{4}$, E $\frac{1}{2}$ NW $\frac{1}{4}$

Township 17 South, Range 8 East, S.L.M. Utah, containing 1211.48 acres

Lease No. U-083066

Issued to Cooperative Security Corp. 3/1/62

Section 13 E $\frac{1}{2}$ SW $\frac{1}{4}$, SE $\frac{1}{4}$

Section 24 E $\frac{1}{2}$ SW $\frac{1}{4}$, E $\frac{1}{2}$

AFFIDAVIT OF PUBLICATION

STATE OF UTAH }
County of Emery, } ss.

I, Dan Stockburger, on oath, say that I am

the General Manager of The Emery County Progress,

weekly newspaper of general circulation, published at Castle Dale,

Emery 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 Four (4)

consecutive issues, and that the first publication was on the

28th day of December, 1983 and that the

last publication of such notice was in the issue of such newspaper

dated the 18th day of January, 1984

Dan Stockburger

Subscribed and sworn to before me this

18th day of January, 1984

Holly J. Baker
Notary Public.

My Commission expires My Commission Expires October 22, 1986, 1986

Residing at Price, Utah

on fee, \$ 460.80

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Duct

Township 17 South, Range 6 East, S.L.M.

Utah

- Section 17 SW 1/4, W 1/2 SE 1/4
- Section 18 Lots 3 and 4, SE 1/4
- Section 19 Lots 1, 2, 3, 4, E 1/2
- Section 20 W 1/2, W 1/2 E 1/2
- Section 29 NW 1/4 NE 1/4, N 1/2 NW 1/4
- Section 30 Lots 1, 2, 3, N 1/2 NE 1/4, SW 1/4 NE 1/4, NW 1/4 SE 1/4

Township 17 South, Range 7 East, S.L.M. Utah, containing 2485 acres

Lease No. U-040151

Issued to Cooperative Security Corp. 3/1/62

- Section 15 SW 1/4
- Section 16 S 1/2
- Section 17 E 1/2 SE 1/4
- Section 20 E 1/2 E 1/2
- Section 21 All
- Section 22 N 1/2 NW 1/4
- Section 27 N 1/2 NW 1/4
- Section 28 N 1/2 N 1/2
- Section 29 NE 1/4 NE 1/4

Township 17 South, Range 7 East, S.L.M. Utah, containing 1720 acres

Lease No. U-044025

Issued to Cooperative Security Corp. 8/1/60

Section 27 NW 1/4 NE 1/4

Township 17 South, Range 7 East, S.L.M. Utah, containing 40 acres

In addition, Federal Coal Lease U-47978 issued to Utah Power & Light Company October 1, 1981.

Township 17 South, Range 7 East, S.L.M. Utah

- Section 27 S 1/2 NW 1/4, N 1/2 SW 1/4
- Section 28 S 1/2 N 1/2, S 1/2
- Section 29 S 1/2 N 1/2, S 1/2
- Section 30 Lot 4, SE 1/4 NE 1/4 NE 1/4 SE 1/4, S 1/2 SE 1/4

Section 31 Lot 1, E 1/2

Section 32 All

Section 33 N 1/2, SW 1/4, W 1/2 SE 1/4

Section 34 NW 1/4 NW 1/4, S 1/2 NW 1/4

Township 18 South, Range 7 East, S.L.M.

Section 4 Lots 2 thru 4

Section 5 Lots 1 thru 4, S 1/2 NW 1/4

Containing 3347.31 acres

Owners of Coal to be Mine Other than the United States

Description of Land

Description of Land	Section	Owner
SE 1/4	Section 10	The Estate of Malcolm McKinnon
W 1/2 NW 1/4	Section 14	c/o Frank Armstrong 1200 Walker Bank Bldg. Salt Lake City, Utah 84111

All T17S, R7E, S.L.M.

Surface rights and coal leased to Utah Power & Light Company

SE 1/4	Section 15	Cooperative Security Corp.
NE 1/4	Section 22	115 East South Temple Salt Lake City, Utah 84111

All T17S, R7E, S.L.M.

Also:

Beginning at the SE corner of NE 1/4 SE 1/4 Section 25, T17S, R6E, SLM, thence N 160 rods, W 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.

Surface rights and coal leased to Utah Power & Light Company

SW 1/4 (west of the Deer	Section 14	Utah Power & Light Company
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NOTICE OF TRUSTEE'S SALE

The following described property will be sold at public auction to the highest bidder, payable in lawful money of the United States at the time of sale, at the front door (South entrance) of the Emery County Courthouse at 95 East Main Street in Castle Dale, Utah, on February 15, 1984, at 12:00 noon of said day, for the purpose of foreclosing a Trust Deed executed by James Blalack and Judy Blalack, husband and wife, as Trustor, in favor of Suzanne Jenkins, Hallie Jo Thivierge, Cheryl Nell Manzanares and Ted Shawn Swasey as Beneficiaries, recorded March 3, 1982, in Book 127 at page 339, covering real property located at 70 East Mill Road, Ferron, Utah 84523, and more particularly described as follows:

Beginning at a point West 80 feet from the SE corner of Lot 1, Block 14, FERRON TOWNSITE SURVEY, and running thence West 175.75 feet to the SW corner of said Lot 1; thence North 255.75 feet to the NW corner of said Lot 1; thence East 255.75 feet to the NE corner of said Lot 1; thence South 105.75 feet; thence West 80.0 feet; thence South 150.0 feet to the point of beginning, containing 1.226 acres, more or less.

Notice of Default was recorded September 26, 1983, in Book 140 at page 798 of official records. Trustee will sell said property at said public auction for the purpose of paying obligations secured by said Trust Deed, which sale shall be without warranty as to title, possession or encumbrance.

DATED this 11th day of January, 1984.

South Eastern Utah Title Company,

Trustee

-s-Dan C. Keller

Its Attorney

Professional Building

90 West 100 North

Price, Utah 84501

Telephone: 637-1245

Published in the Emery County Progress

NOTICE OF TRUSTEE'S SALE

The following described property will be sold at public auction to the highest bidder, payable in lawful money of the United States at the time of sale at the front entrance of the Emery County Courthouse, Castle Dale, Utah, on the 31st day of January 1984, at the hour of 2:00 p.m. of said day; for the purpose of foreclosing a trust deed recorded December 31, 1980, executed by Lansing L. Smith and Caroline H. Smith, husband and wife, as Trustors, in favor of First Security Bank of Utah, N.A., as beneficiary, covering real property located at 720 Valley View Drive, Castle Dale, Utah and more particularly described as follows:

Lot 40, VALLEY VIEW SUBDIVISION PLAT 4, according to the official plat thereof.

Dated this 29th day of December, 1983.

Backman Title

Company,

Successor Trustee

By: David B. Boyce

Vice-President

Published in the Emery County Progress

January 4, 11 and 18, 1984.

NOTICE TO CREDITORS

ESTATE OF ELIZABETH BISHOP, Deceased

Probate No. 1856, District Court, Emery County, Utah.

All persons having claims against the above estate are required to present to the undersigned or to the Clerk of the Court within three months from the date of first publication of this Notice or said claims shall be forever barred.

-s-Faye Johansen

Personal

Representative

136 South 100 East

Price, Utah 84501

Frandsen, Keller &

Jensen

-s-Dan C. Keller

Attorneys for Estate

90 West 100 North

Price, Utah 84501

Telephone No. 637-1245

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