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United States Department of the Interior
OFFICE OF SURFACE MINING
RECLAMATION AND ENFORCEMENT
219 CENTRAL AVENUE, NW
ALBUQUERQUE, NEW MEXICO 87102

October 26, 1983

OSM-WTC
1983 OCT 28 AM 9:40
WESTERN TECHNICAL CENTER

MEMORANDUM

TO: Allen D. Klein, Administrator
Western Technical Center

FROM: *[Signature]* Robert H. Hager, Director
~~Albuquerque Field Office~~

SUBJECT: Valid Existing Rights--Price River Coal Company
and the Willow Creek Cemetary

Your memo of October 17, 1983 requests a VER determination for subject mine. I concur in your recommendation that the Price River Coal Company should be permitted to conduct the proposed operations within 100 feet of the cemetary because of valid existing rights as described in your memo.



SCOTT M. MATHESON
GOVERNOR



STATE OF UTAH
DEPARTMENT OF COMMUNITY AND
ECONOMIC DEVELOPMENT

COMMUNITY DEVELOPMENT DIVISION

6233 STATE OFFICE BUILDING
SALT LAKE CITY, UTAH 84114
(801) 533-4054

November 15, 1983

Al Klein, Regional Administrator
Office of Surface Mining, Region V
1020 15th Street
Denver, Colorado 80202

Dear Mr. Klein:

I am writing in regard to OSM's renewal of the mine permit for the Price River Coal Company operations in Carbon County, Utah.

I have reviewed the stipulation pertaining to mitigation of socioeconomics to be included in the permit renewal. I believe the stipulation will adequately protect the State's interests and responsibilities mandated by state law (UCA, 63-51-1, et. seq.).

Once again, I would like to express our sincere appreciation for OSM's cooperation in consulting with our office and with Utah local governments.

Sincerely,

Buzz Hunt
Director

BH:nn

OSM-WTC
1983 NOV 21 PM 1:27
WESTERN TECHNICAL CENTER



United States Department of the Interior

FISH AND WILDLIFE SERVICE
AREA OFFICE COLORADO-UTAH
1311 FEDERAL BUILDING
125 SOUTH STATE STREET
SALT LAKE CITY, UTAH 84138-1197

IN REPLY REFER TO:

13 September 1983

MEMORANDUM

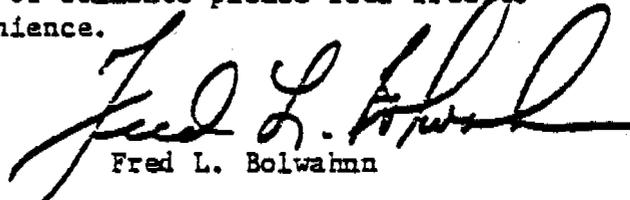
TO: Dave Maxwell, Office of Surface Mining,
Denver, Colorado

FROM: Field Supervisor, Endangered Species Office
U. S. Fish and Wildlife Service, Salt Lake City, Utah

SUBJECT: Price River Coal Complex

This is to provide written confirmation of the 5 May 1983 telephone conversation with Don Henne of your office concerning the subject mine complex. The Fish and Wildlife Service has determined that no threatened or endangered species are known to occur in the project area.

If you have any further questions or comments please feel free to contact this office at your convenience.


Fred L. Bolwahn

OSM-WTC
1983 SEP 16 AM 9:27
WESTERN TECHNICAL CENTER



United States Department of the Interior

BUREAU OF LAND MANAGEMENT
UTAH STATE OFFICE
136 E. SOUTH TEMPLE
SALT LAKE CITY, UTAH 84111

1983 OCT -5 AM 11:21

WESTERN TECHNICAL CENTER

IN REPLY REFER TO

3400
SL-029092
(U-921)

USM-WTC

October 3, 1983

Memorandum

To: Utah Senior Project Manager, CSM, Denver
Attn: Mr. Dave Maxwell

Through: Chief, Branch of Solid Minerals *HL*

From: Deputy State Director, Mineral Resources

Subject: Price River Coal Company, Price River
Complex, Carbon County, Utah, Mining
and Reclamation Plan (MRP)

As stated in our letter dated July 29, 1983, the subject plan, now on file in this office, is adequate for our administration and is in compliance with the 30 CFR 211.10(b) rules, effective August 30, 1982. The plan is designed to achieve maximum economic recovery of the resource within the limits of the equipment and technology presently being used. We recommend approval of the underground mining plan part of the MRP plan permit application package (PAP).

Recently, Debby Richardson, consultant to CSM, Denver, contacted us and said she was concerned about the first mining of five seams of coal under the Price River corridor. If she had to approve the plan at this time she would only approve the issuance of a mining permit for the bottom seam (Sub-3).

In our review of the mine plan, we have determined that a corridor or safety zone has been designed to protect and minimize surface impacts along the Price River within which only limited mining will be approved. Parts of five minable seams will be first mined with pillars oriented to be superimposed in the vertical direction. Mining in the corridor will conform with typical entry and room and pillar systems that have been approved by the Mine Health and Safety Administration (MSHA) for the Price River Coal Company MRP plan. In all of these mining methods, more than 50 percent of the coal by area will be left as supporting pillars following first mining.

The BLM, Division of Mineral Resources are recommending, as stated in the first paragraph of this letter, that the Price River Coal Company be allowed to begin mining under the Price River safety corridor as shown on the maps included in the subject MRP plan. The operations will be field inspected by BLM, Division of Mineral Resources' mining personnel at least once on a quarterly basis. The inspections will involve discussions relative to the geologic and mining conditions being encountered and to the basic principals

of multiple seam mining, with particular emphasis in the Price River safety corridor. Should modifications be required, the BLM will be actively involved in all modifications or necessary changes that follow. All modifications or changes to the underground mining plan must be submitted to the BLM for approval. Approvals of any modifications will be based on sound basic engineering concepts and experienced expertise which will assure the integrity of the corridor. In our opinion, mining as described above will not have an impact on the surface or surface values in the Price River safety corridor.

Doyle D. Helman



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

File ACT/007/004

File #2

January 19, 1983

MEMORANDUM

TO: Sharon Kilwinski - OSM (Washington, D. C.)
Bob Hagen - OSM (Albuquerque, New Mexico)
Susan Linner - UDOGM (Salt Lake City, Utah)

FROM: Dave Maxwell, Project Leader, *JRM*

SUBJECT: Price River Mine Complex Final Findings and Supporting Documents (FFSD) and Final Technical and Environmental Assessment (TEA)

Enclosed please find your copy of the Price River Mine Complex FFSD and TEA that was delivered by the consultant, Fred C. Hart & Associates on January 16, 1984. A few sections in the TEA will require some revision based upon analyses that are currently being performed by our staff. These sections include Vegetation, Wildlife, and the Hydrology sections. The Cultural Resources section is under preparation. Two additional concurrence letters (from the Utah S.H.P.O. and U. S. Fish and Wildlife Service) are required and should be completed and sent to the Western Technical Center by the end of January.

The anticipated Decision Document submittal date to OSM Headquarters is February 17, 1984. Please provide any comments by February 2, 1984 so we may proceed with in-house Solicitor review. Should you choose to call me, I can be reached at FTS 327-3806 or (303) 837-3806. Your prompt review of this document and subsequent comments are very much appreciated.

Enclosure

cc: Ben Young - OSM
Walt Swain - OSM
Glenn Tiedt - OSM

PERMIT APPROVAL DOCUMENT

Price River Coal Company
Price River Mine Complex
Carbon County, Utah

UT-0007

JANUARY 1984

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

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1. Memorandum from the Administrator, Technical Center, to the Director, Office of Surface Mining Reclamation and Enforcement (OSM).

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2. Maps
3. Chronology of Events
4. Findings
5. National Environmental Policy Act Compliance Documents
6. Letters of Concurrence and Consultation
 - a. U.S. Fish and Wildlife Service
 - b. Bureau of Land Management
 - c. State Historic Preservation Officer
7. Federal Permit with Stipulations
8. Technical Analysis
9. Notification

Memorandum

To: Director
Office of Surface Mining

Through: Assistant Director
Technical Services and Research

From: Administrator
Western Technical Center

Subject: Recommendation for Approval of Price River Coal
Company's Price River Mine Complex Mining and
Reclamation Permit, Carbon County, Utah, Federal Leases:
U-25484, U-25485, U-058184, U-019524,
SL-029093-046653, SL-046652, U-0148779, SL-071737,
SL-048442-050115, U-0146345 and U-25683

I. Recommendation

I recommend approval with conditions of the Price River Coal Company's Price River Mine permit for an underground mining complex of five surface facility areas. One of the portal areas, Crandall Canyon, is not specifically addressed in this permit approval document as it was previously approved under a separate action. My recommendation is based on the Technical Analysis and Environmental Assessment of the complete application. The applicant has proposed to continue mining on Federal coal leases U-25484, U-25485, U-058184, U-019524, SL-029093-046653, SL-046652, U-0148779, SL-071737, SL-048442-050115, U-0146345 and U-25683. This permit is for a term of 5 years with the right of successive renewal for the permit area (8510 acres). The life-of-mine area is approximately 27,393 acres and it is anticipated that mining will continue at the site for 35 to 100 years, depending on market conditions and development of extraction technology. The permit with conditions included with this memorandum will be in conformance with the applicable Federal regulations, the Utah State Program, and the Mineral Leasing Act, as amended. I also recommend that you advise the Assistant Secretary for Energy and Minerals, under 30 CFR 746.14, that the Price River Coal Company's Price River Mine Complex mining and reclamation plan is ready for approval. I concur that a performance bond in the amount of \$2,532,857 is adequate for the reclamation of those portions of the mine included in this approval.

The Utah Division of Oil, Gas and Mining (UDOGM) and the Office of Surface Mining (OSM), identified elements of the applicant's proposal which require conditions to comply with State and Federal law. The state permit (ACT/007/004) with conditions is incorporated into the proposed Federal permit UT-0007.

My recommendation for approval is based on the complete MRP and permit application submitted on March 20, 1981 and updated through November 17, 1983. I have determined that this action will not have a significant impact on the human environment.

II. Background

The existing Price River Mine Complex is located in Carbon County, Utah. The total lease boundary area encompasses 27,393 acres of Federal, state, county, fee and private land and the permit area is 8510 acres. Surface ownership of the permit area is broken down as follows: 2720 acres of Federal land, 1280 acres of State land, 3652 acres of fee land and 858 acres of private land. Of this amount, 767 acres have been disturbed by mining-related activities, although only 144 acres is directly associated with the proposed mine plan. Ultimately, 121.5 acres will be reclaimed. The acreage that will not be reclaimed includes roads that will be left as permanent structures. The various surface facility areas included in the mine plan were operating prior to the Surface Mining Control and Reclamation Act of 1977 (SMCRA), consequently, no topsoil was salvaged on most of the disturbed areas. The exception to this is the Crandall Canyon facilities area which was constructed according to SMCRA standards and which was approved under authority separate from this permit action. The pre-law status of this mine complex has resulted in the necessity to issue several variances. Additionally, several of the surface facilities currently existing are scheduled to be reclaimed within 1 to 3 years. Therefore, the performance history of the structure has been reviewed to determine adequacy while a variance from meeting design standards has been granted on the basis of relatively short-term usage.

- 1) Company has been granted a variance from reclaiming the surface facilities areas to approximate original contour. These areas were constructed prior to 1977 and will be reclaimed to a stable land form, but rock slopes will exist, as will fill areas. Roads will be left to access areas above the mines.
- 2) Surface facility areas are constructed within 100 feet of perennial streams. An exemption from maintaining stream buffer zones has been granted since these facilities were constructed prior to the enactment of SMCRA.
- 3) The following small area exemptions have been granted to the applicant for omitting sediment ponds in areas where effluent is meeting water quality standards and where alternative sediment controls will be adequate to protect the hydrologic regime.

<u>Location</u>	<u>Acreage</u>	<u>Control</u>
Sowbelly Gulch guard shack, road	0.5	straw dikes
Sowbelly Gulch substation	0.068	none
Sowbelly Gulch chlorination facility	0.05	none
Hardscrabble Canyon bathhouse, office #3 portal	5.7	straw dikes

Willow Creek expansion area	3.6	sump
Willow Creek access road	1.1	sump
Castle Gate raw water pond	0.9	sump
Castle Gate scale, guard shack	0.85	sump
Castle Gate topsoil storage (Gravel Canyon)	1.8	berm

The mine is located in central Carbon County, Utah, approximately 10 miles north of Price. Price, in turn, is 110 miles southeast of Salt Lake City via Highways 91 and 6. The mine includes Federal and State leases and fee coal. Underground mining will encompass 8336 acres within the permit area. Coal ownership includes 5484 acres of Federal leases, 703 acres of State leases, and 2149 acres of fee coal owned by Blackhawk Coal Company, for which Price River Coal Company serves as operator. The maximum production rate is ultimately expected to reach 6.5 million tons per year. The post-mining land use will be light undeveloped grazing and wildlife habitat. The Bureau of Land Management, both the Moab District and the Branch of Solid Minerals, has approved the plan as regards coal recovery and surface facilities. The Moab District Manager, however, has specified that future mining not impact critical wildlife habitat areas.

A chronology of events related to this MRP application is enclosed. The BLM [formerly Minerals Management Services (MMS)] provided written concurrence for the coal recovery plan on July 29, 1983 and for the land use plan on August 22, 1983. The U.S. Fish and Wildlife Service was consulted regarding threatened and endangered species and delivered their concurrence on September 13, 1983. The State Historic Preservation Officer also provided written concurrence with OSM's finding of compliance with 36 CFR part 800. The Utah Division of Oil, Gas and Mining has received no adverse comments during the public comment period.

The information in the Price River Mining and Reclamation Plan, as well as other information documented in the recommendation package and made available to the applicant, has been reviewed by UDOGM staff in coordination with OSM project leaders David Maxwell and Bennett H. Young.

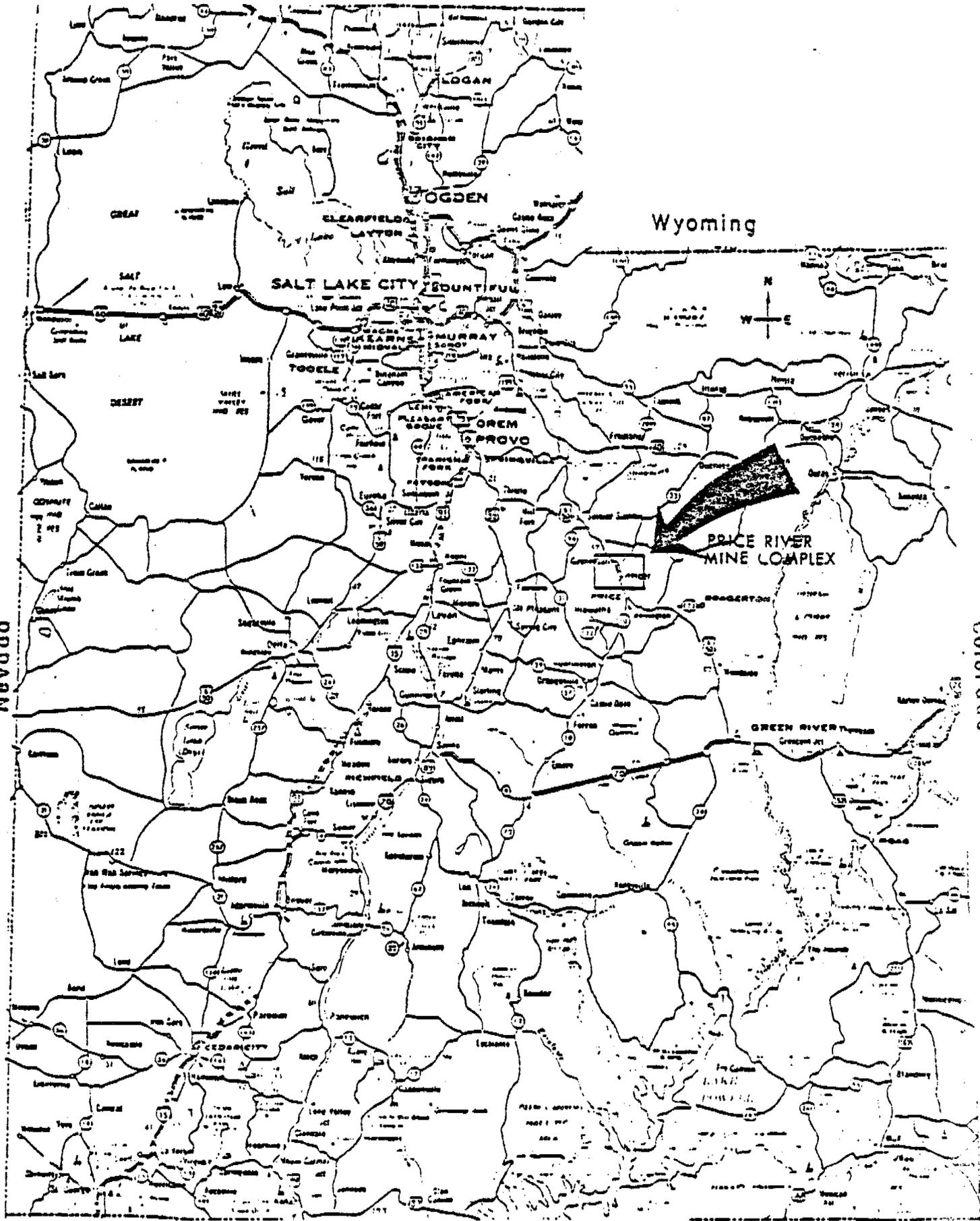
Idaho

Wyoming

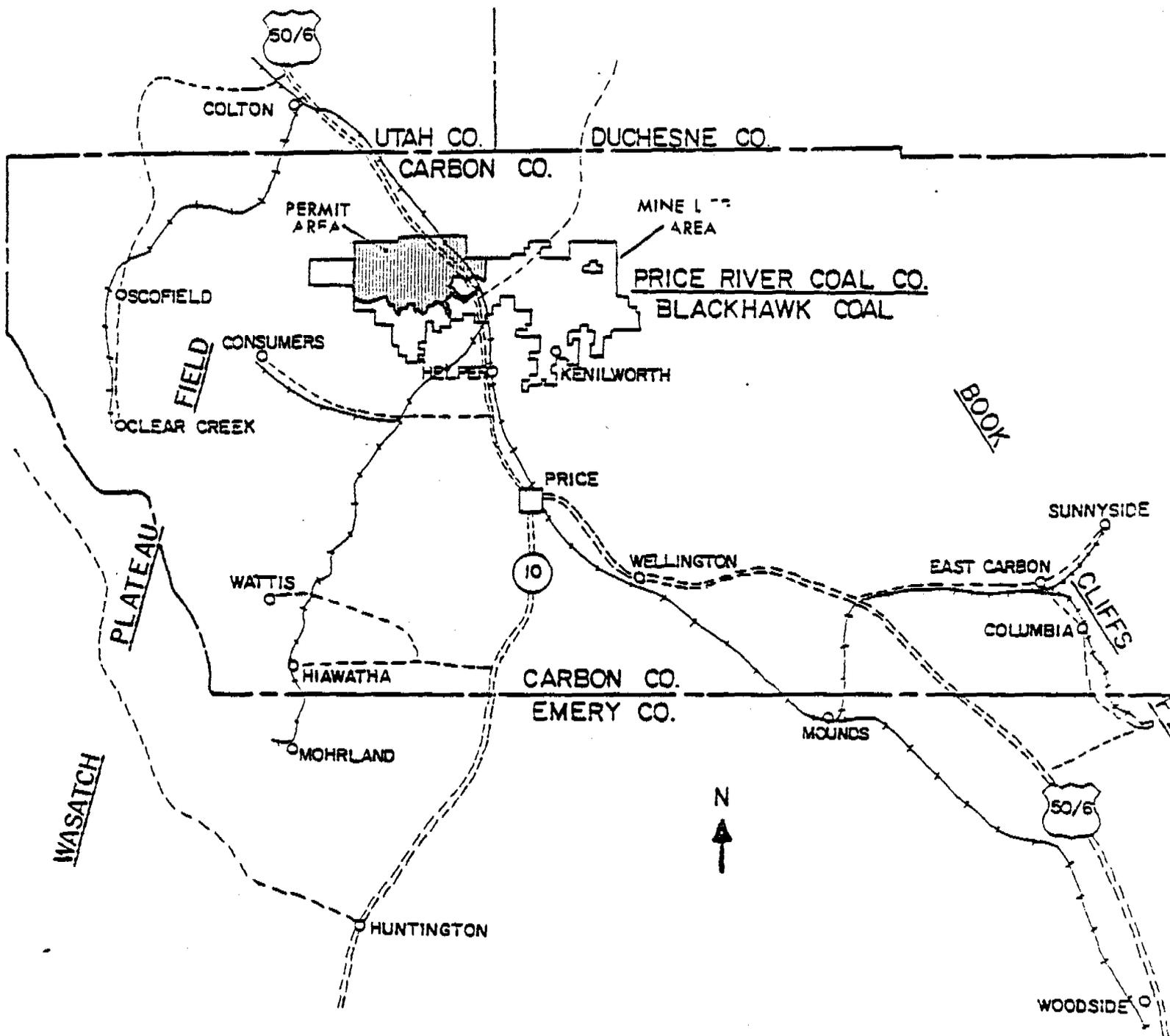
Nevada

Colorado

Arizona



PRICE RIVER MINE COMPLEX



(Not to scale)

CHRONOLOGY OF EVENTS

Price River Coal Company
Price River Mine Complex

Application for Mining and Reclamation Plan and Permit Approval

DATE	EVENT
Mar. 20, 1981	Price River Coal Company (PRCC) submits the Mining and Reclamation Plan (MRP) for the Price River Mine Complex.
Apr. 16, 1981	U.S. Forest Service (USFS) disapproves the subsidence monitoring plan for the Price River Mine Complex.
Apr. 24, 1981	U.S. Geological Survey (USGS) reviews the proposed MRP for the Price River Mine Complex and finds deficiencies in several disciplines.
May 29, 1981	The Office of Surface Mining (OSM) determines that the PRCC MRP is deficient.
Dec. 11, 1981	The Utah Division of Oil, Gas and Mining (UDOGM) invokes "administrative delay" in the review of the MRP. Mining will continue at the Price River Mine Complex.
Aug. 25, 1982	PRCC submits an itemized response to OSM's apparent completeness review (ACR) and revises their MRP (revised from May 20 to August 9, 1982). This response essentially entails the submittal of a new Permit Application Package.
Dec. 7, 1982	PRCC receives the joint OSM - UDOGM review of PRCC's response to the ACR for the Price River Mine Complex.
Jan. 13, 1983	Meeting in Salt Lake City between representatives of OSM, UDOGM and PRCC to discuss deficiencies in the PRCC mine plan.
Feb. 15, 1983	OSM and UDOGM staff visit PRCC and tour the facilities and discuss technical deficiencies in the MRP.

Mar. 24, 1983 PRCC representative meets with OSM in Denver to discuss permit terms and permit area as well as rights of successive renewal.

Apr. 5, 1983 PRCC submits responses to the ACR.

Apr. 11, 1983 PRCC submits additional data for the ACR.

May 5, 1983 OSM sends a letter to PRCC that clarifies permitting concepts.

June 9, 1983 PRCC provides additional information to include in the MRP.

July 21, 1983 OSM requests clarifications and additional information from the review of the PRCC ACR responses submitted on June 9, 1983.

Aug. 8, 1983 PRCC provides additional information to include in the MRP.

Aug. 29, 1983 Representatives of OSM, UDOGM and PRCC meet in Salt Lake City to discuss deficiencies in the ground water monitoring plan.

Sept. 15, 1983 A draft Technical and Environmental Assessment (TEA) is partially completed contingent on receipt of further information from PRCC.

Sept. 23, 1983 Representatives of OSM, UDOGM and PRCC meet in Salt Lake City to discuss the need for additional information and clarification prior to completing the TEA.

Oct. 5, 1983 OSM and UDOGM determine the PRCC MRP to be complete.

Oct. 19, 1983 PRCC initially publishes a Notice of Filing of Complete Mine Plan in the Price Sun-Advocate newspaper.

Nov. 9, 1983 The final notice is published in the Price Sun-Advocate newspaper.

Nov. 17, 1983 PRCC provides final information to clarify issues identified in the TEA.

Dec. 11, 1983 The public comment period closes.

Feb., 1984 OSM recommends approval of the PRCC MRP.

FINDINGS

Price River Coal Company
Price River Mine Complex
Application for Mining and Reclamation Plan

I. The Utah Division of Oil, Gas and Mining and the Office of Surface Mining (OSM) have determined that the MRP submitted on March 20, 1981 and updated through November 17, 1983 and the permit with conditions are accurate and complete and comply with the requirements of the Utah State Program, the Surface Mining Control and Reclamation Act (SMCRA), and the Federal Lands Program including the Mineral Leasing Act. [786.19(a)]

II. The State of Utah and the Office of Surface Mining have prepared the Technical and Environmental Assessment (TEA) and based on this have made the following findings:

1. The applicant proposed acceptable practices for the reclamation of disturbed lands. Ground cover will be re-established utilizing introduced species, which were successfully growing in this area prior to the onset of mining operations. UDOGM and OSM have determined that reclamation, as required by the Act, can be feasibly accomplished under the MRP. [786.19(b)]

2. The cumulative hydrologic impact assessment (CHIA) for the Price River Mine Complex has been made by UDOGM and OSM and the operation has been designed to prevent any material damage to the hydrologic balance. An assessment of mining operations in the vicinity of the Price River mine showed that there are no active coal mining operations upstream except for those that are isolated from the Price River by Scofield Reservoir. State leases exist upstream of the mine, but mine plans have not yet been developed for these tracts. Some mining exists downstream on the Price River, but is not sufficiently near the Price River mine to be considered in a cumulative hydrologic impact assessment. Due to the lack of other coal mining operations in the Price River basin that could potentially have any cumulative impact on the hydrologic system, the Cumulative Impact Area (CIA) includes only the Price River Mine complex lease and immediate area. A summarization of findings follows:

The surface water control plan is sufficient to prevent uncontrolled runoff from leaving disturbed areas within the surface facilities sites. The chemical quality of the surface water in the permit area is generally alkaline with various parameters that have been found to exceed water quality standards or equivalent NPDES criteria for discharge points, primarily as a result of coal and coal fines being allowed to wash into Hardscrabble Canyon in the past. Although the water quality at the mine site was declining prior to the implementation of surface water controls, current monitoring data indicates that these controls are providing improvement to the water quality.

Reduction of flow of surface water will occur as a result of evaporation from sediment ponds. The amount of waters evaporated is expected to be insignificant. However, there is a potential to reduce baseflow to the streams. An analysis of the amount of ground-water flow intercepted by mining represents only .6 to .9 percent of the Price River mean annual flow. This intercepted ground water potentially represents a maximum of 56 percent of the water rights held by the mine. Any diminution of baseflow can be replaced by the mine.

During active mining, inflow into the mine from the regional aquifer system is expected to be in excess of the natural recharge of the aquifer system, indicating that water is being removed from storage. This will result in a decrease in the hydrostatic head of the Blackhawk/Star Point aquifer. Due to a lack of potentiometric data, the loss of head cannot be quantified. This water removed from ground water storage will eventually be replaced as recharge occurs.

Incremental increases in TDS and TSS constituent loads to receiving waters, based on comparing TDS values from the Blackhawk monitoring wells to water from abandoned mine workings, are expected to be within established effluent limitations. The impact is therefore considered to be minimal.

Subsidence impacts to the area as a result of mining will be controlled by limited extraction of coal in the mine under Price River and Willow Creek. Impacts to springs and surface waters by subsidence are expected to be minimal due to the amount of overburden and that there is no historical occurrence of subsidence in the area.

This assessment of the probable cumulative impact of all anticipated mining on the hydrologic balance of the PRCC CIA has shown that the proposed coal mining operation has been designed to prevent material damage, (in terms of impacts to the quantity and/or quality of water which are required to maintain or support uses of the local hydrologic system) outside the permit area over the entire projected life of the mine through bond release.

3. After reviewing the description of the proposed permit area, the OSM has determined that the area is:

a. Not included within an area designated unsuitable for mining operations. [UMC 778.16]

b. Not within an area under study for designating lands unsuitable for coal mining operations. [UMC 764 and 765].

c. Not on any land 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). [786.19(d)(3)]

d. Within 100 feet of the outside right-of-way of a public road. There are facilities in Hardscrabble Canyon that are within 100 feet of a public road, but they are excluded from this prohibition because they existed prior to enactment of PL 95-97. [UMC 786.19(d)(4)]

e. Not within 300 feet of an occupied building. [UMC 786.19(d)(5)]

4. OSM's issuance of a permit and the Secretarial decision on the Mineral Leasing Act plan are in compliance with the National Historic Preservation Act and implementing regulations (36 CFR 800). The life-of-mine area includes a cemetery site that represents the known extent of cultural resources sites in the vicinity of the permit area. [UMC 786.19(e); see concurrence letter section]

5. The applicant has the legal right to enter and begin mining activities in the permit area. [UMC 786.19(f)]

6. The applicant has submitted proof and OSM's records indicate that prior violations of applicable laws and regulations have been corrected. [786.19(g): Personal communication with Jody Merriman, OSM Federal Reclamation Specialist, OSM Albuquerque Field Office, January 12, 1984]

7. OSM's records confirm that all fees for the Abandoned Mine Reclamation Fund have been paid. [UMC 786.19(h); Personal communication with John Sender, OSM Fee Compliance Officer, Albuquerque Field Office, January 10, 1984]

8. OSM records show that the applicant does not control and has not controlled mining operations with a demonstrated pattern of willful 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. [786.19(h); Personal communication with Jody Merriman, OSM Federal Reclamation Specialist, OSM Albuquerque Field Office, January 12, 1984]

9. Coal mining and reclamation operations to be performed under the permit will not be inconsistent with other underground mines in the general vicinity of the Price River Mine Complex. [786.19(j)]

10. The analyses completed by UDOGM and OSM show that the bond amount will be adequate. The applicant must post the performance bond required under the Act, the Utah State program, and the Federal Lands Program prior to permit issuance. The bond must be made payable to both the United States and the State of Utah in the amount of \$2,532,857. [30 CFR 742.12(b), 786.19(k)]

11. The applicant has provided evidence and OSM and UDOGM have found that there are no prime farmlands in the permit area. [UMC 786.19(1)]

12. Negative alluvial valley floor (AVF) determinations have been made for the drainages in the proposed permit area and life-of-mine area. Alluvial deposits along the perennial streams will be not be disturbed further by the continuance of mining operations. Agriculture that does occur downstream of the Price River Mine Complex typically consists of small areas that rely on surface water diversions from the Price River. The mine is not expected to reduce this surface water source available to downstream users. [UMC 786.19(1)]

13. The proposed postmining land use for the permit area has been approved by UDOGM, OSM and BLM. [UMC 786.19(m)]

14. UDOGM and OSM have made all specific approvals required by the Act, the Utah state program and the Federal lands program. [UMC 786.19(m)]

15. The proposed operation will not affect the continued existence of threatened or endangered species or result in the destruction or adverse modification of their critical habitats. [UMC 786.19(o); Letter from U.S. Fish and Wildlife Service]

16. Procedures for public participation have complied with requirements of the Act, the Utah state program, the Federal lands program, and Council on Environmental Quality regulations (40 CFR Part 1500 et seq). [30 CFR 741.21(a)(2)(ii); see Chronology of Events]

17. The applicant has complied with all other requirements of applicable Federal laws and either has or has applied for permits from the Environmental Protection Agency. [30 CFR 741.17(d)]

Administrator
Western Technical Center

Headquarters Reviewing Officer

FINDING OF NO SIGNIFICANT IMPACT

The technical and environmental assessment preceding this Finding of No Significant Impact identifies certain environmental impacts that would occur from continued development of the Price River Coal Company's Price River Mine Complex. The permit area contains 8510 acres, and the life-of-mine area, 27,393 acres which includes Federal coal leases U-25484, U-25485, U-058184, U-019524, SL-029093-046653, SL-046652, U-0148779, SL-071737, SL-048442-050115, U-0146345, and U-25683 and State coal leases ML-11940, ML-18148, ML-13681, ML-1892 and SL-046652.

The Price River Coal Company operation is located in the Price River drainage basin. An assessment of alluvial valley floors in the area of the mine was undertaken to determine the impact from proposed operations. A determination was made by OSM and UDOGM that agricultural areas downstream of the mine complex are typically small and use surface water diversions from the Price River. The mines are not expected to reduce this surface water source available to downstream users. Furthermore, the nature of the operations is such that it would not materially damage the quantity and quality of water in surface and ground-water systems that supply the AVF.

Several variances have been requested and approved and discussed within the technical and environmental assessment. The facilities were constructed prior to PL-95-87, therefore, they were not constructed in accordance with presently-existing regulations. After careful analysis by UDOGM and OSM, it has been ascertained that to bring the mine facilities into total compliance it would cause more environmental damage than to issue carefully planned and monitored variances.

Impacts identified by OSM would be appropriately mitigated to reduce harm to the environment by the environmental protection measures specified in the mine plan. Stipulations have been incorporated into the permit where necessary to provide additional environmental enhancement.

Based on the evaluation of impacts in the Technical and Environmental Assessment prepared by OSM and UDOGM, the concurrence prepared by the Bureau of Land Management, and the U.S.G.S. EIS entitled Development of Coal Resources in Central Utah issued in 1979, I find that the proposed action would cause no significant adverse impacts on the quality of the human environment. Preparation of an Environmental Impact Statement (EIS) under the National Environment Policy Act (NEPA), 42 U.S.C. 4321 et seq., is therefore, not required.

Approved:

Administrator, Western Technical Center

Date

UNITED STATES
DEPARTMENT OF THE INTERIOR
OFFICE OF SURFACE MINING

This permit, UT 0007 which incorporates Utah Permit ACT/007/004, is issued for the United States of America by the Office of Surface Mining (OSM) to:

Price River Coal Company
P.O. Box 629
Helper, Utah 84526

for the Price River Mine Complex. The Price River Coal Company serves as the designated operator on Federal, State and County coal leases obtained by Blackhawk Coal Company as well as fee land owned by Blackhawk. Federal leases include: U-25484, U-25485, U-058184, U-019524, SL-029093-046653, SL-046652, U-0148779, SL-071737, SL-048442-050115, U-0146345 and U-25683. State leases include: ML-11940, ML-18148, ML-13681, ML-1892, and SL-046652. This permit is not valid until a performance bond is filed with the Office of Surface Mining in the amount of \$2,532,857 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. 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 211 and Chapter VII and 43 CFR 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 et seq., which are now in force and applicable or, except as expressly limited herein, may hereafter be 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 (as defined in 30 CFR 700.5) on the following described Federal lands (as shown on the permit area map, Attachment I) within the permit area at the Price River Mine situated in the State of Utah, Carbon County, and located in Federal leases U-25484, U-25485, U-058184, U-019524, SL-029093-046653, SL-046652, U-0148779, SL-071737, SL-048442-050115, U-0146345, and U-25683 and State leases ML-11940, ML-18148, ML-13681, ML-1892, and SL-046652, located in portions of:

T. 12 S., R. 9 E.
Sec. 25 through 36

T. 12 S., R. 10 E.
Sec. 31

T. 13 S., R. 9 E.
Sec. 2 through 6, 8 through 10

T. 13 S., R. 10 E.
Sec. 6, 10, 16

Carbon County, Utah, and to conduct surface and reclamation operations connected with mining on the foregoing described property subject to the conditions of the lease, the approved mining and reclamation plan (MRP), and all applicable conditions, laws and regulations. The Crandall Canyon surface facilities area, included within the permit area, has not been specifically addressed in this permit approval and has been approved under a separate action.

Sec. 3

This permit is issued for a term of 5 years commencing on the date the permit is signed by the permittee.

Sec. 4

The permit rights may not be transferred, assigned, or sold without the approval of the Director, OSM. Request for transfer, assignment, or sale of permit rights must be done in accordance with 30 CFR 740.13(e).

Sec. 5

The permittee shall allow the authorized representatives of the Director including, but not limited to, inspectors and fee compliance officers, and the Utah Division of Oil, Gas and Mining 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 and 842.13; and,

b. Be accompanied by private persons for the purpose of conducting an inspection in accordance with 30 CFR 842, when the inspection is in response to an alleged violation reported by a private citizen.

Sec. 6

The permittee shall conduct surface and coal mining and reclamation operations only on those lands specifically designated as being within the permit area as shown on maps submitted in the 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, all persons 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 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 the Utah Division of Oil, Gas and Mining and OSM in approving alternative methods of compliance with the performance standards of the Act, the 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 Utah state program and the Federal lands program.

Sec. 13

If during the course of operations on the permit area, 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 - In connection with this permit, the permittee shall have the right to appeal: (a) any actions or decisions of any official of OSM pursuant to 30 CFR 787; (b) any actions or decisions of any official of the Bureau of Land Management under 43 CFR 3000.4; (c) any action, order, or decision of any official of the Bureau of Land Management (formerly the Minerals Management Service) under 30 CFR 290; or (d) any action or decision of any other official of the Department of the Interior arising from this permit decision under applicable regulations.

Sec. 15

SPECIAL STIPULATIONS - In addition to the general obligations and performance requirements set out in the leases and this permit, the permittee shall comply with the following conditions:

Condition No. 1

The applicant must provide a plan for sampling the physical and chemical suitability of topsoil materials to be used in reclamation and the suitability of subsoil material in coal refuse disposal areas and other disturbed areas. Additionally, guidelines detailing the range of characteristics for suitable materials should be proposed. This plan is to be submitted to OSM and UDOGM for approval within 30 days of mine plan approval.

Condition No. 2

The applicant must provide a plan for identifying available soil material in the permit area and recovery of that material for reclamation. A materials balance must be provided showing the amount of material available and where that material will be used in reclamation. This plan is to be submitted to OSM and UDOGM for approval within 30 days of mine plan approval.

Condition No. 3

The applicant shall complete reclamation of Hardscrabble Canyon and Sowbelly Gulch by December 31, 1986 and Goose Island by August 31, 1985. If the existing surface water control structures are not reclaimed and replaced with adequately-sized channels by that time, the applicant shall upgrade the structures within ninety days. Plans shall be submitted to the regulatory authority one month prior to the reclamation deadline. Structures included are: culverts 1 and 4 and ditches 1, 4, and 6 in Hardscrabble Canyon (Goose Island) and culverts 3 and 10 in Sowbelly Gulch.

Condition No. 4

The applicant must submit a plan for regrading of rills and gullies that might develop once reclamation is complete. This plan must identify how often the site will be inspected to determine if this type of erosion has occurred and at what stage of rill and gully development the applicant intends to commence filling of the gullies. This plan must be submitted within 30 days of permit approval.

Condition No. 5

Where golden eagle nests are found in the future, surface disturbances will not occur within 0.25 or 0.5 miles of the nest when surface disturbances would be below or above the nest, respectively.

Condition No. 6

Surface disturbances will not be allowed on elk critical winter range during the period November 1 through May 15.

Condition No. 7

Where elk calving areas are identified in the future, exploration activities would not be allowed during the period June 1 through July 15.

Condition No. 8

The applicant shall not cause surface subsidence effects from underground mining disturbance to occur outside the approved permit area.

PRICE RIVER COAL COMPANY
TECHNICAL AND ENVIRONMENTAL ASSESSMENT

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INTRODUCTION

The Price River Coal Company has applied for a permit to continue underground mining operations in the Price River Mine Complex. The operation is located ten miles north of Price, Utah and approximately 110 miles southeast of Salt Lake City, Utah. The permit area encompasses approximately 8,500 acres and includes the Price River and Willow Creek which are perennial streams, the Denver & Rio Grande Western Railroad, and Route 33 and 6 which are Federal highways. All mine portals and surface facilities existing or planned during the life of the operation are located in Carbon County and all underground workings.

The Price River Mine area has up to 9 seams which can be mined throughout the life of the operation. Mining in this area has been in existence since the turn of the century, and within the permit area, extensive mining has occurred in several of the seams. In some areas, up to five seams have already been mined. Abandoned workings occur both above and below the proposed workings. In the proposed operation, within any single location of the mine, up to 5 seams could be mined. The seams vary in thickness, depth and continuity throughout the property. The minimum thickness of coal that can be economically recovered is 5 feet and the maximum thickness that will be recovered is 12 feet. The depth of cover over the coal seams ranges from approximately 300 feet to 2500 feet. Production at the mine is expected to ultimately reach 6.5 million tons per year. During the permit term, production rates are uncertain due to the changing coal market. During the period of time during which the permit application was being reviewed, the operation was shut-down and started-up reflecting the uncertainty in expected production at the mine.

The mines are accessed through two portal areas and one shaft facility in the permit area located in Sowbelly Gulch, Hardscrabble Canyon and Crandall Canyon. In addition, coal is conveyed from the Utah Fuel No. 1 portal under Highway 6 to a coal preparation plant near the Price River. Associated with the plant is a coal refuse pile. This area is referred to as Castlegate. Other areas of disturbance are the Willow Creek equipment storage area which is located along Willow Creek, and Gravel Canyon which is located along the Price River and is used for topsoil storage. The facilities have all been constructed with the exception of Crandall Canyon which is currently being constructed. There are no other surface disturbances planned during this permit term.

The topography of the area is very rugged with high plateaus dissected by steep canyons. Massive sandstone layers form cliffs around the sides of the canyons. The facilities areas are primarily located in the canyon bottoms, with some cut and fill structures providing additional work area. Reclamation of the facilities will include the retention of some of the cuts and fills which have been in existence for many years and which have become stabilized in many instances. Retention of the cuts will blend in with the surrounding topography of steep cliffs. The large fill created by the refuse disposal in the Castlegate area will significantly alter the appearance of that site. The mine area is sparsely vegetated with pinyon-juniper stands being common.

Price River Coal Company originally submitted a Permit Application Package (PAP) on March of 1981. An Apparent Completeness Review (ACR) was completed by OSM on April, 1981 and the Price River Coal Company submitted a response to the ACR on August 25, 1982. This response essentially entailed the submittal of a new PAP. A second ACR was completed in November of 1982 and a meeting was held with the applicant to discuss the additional deficiencies in January, 1983. The applicant submitted several responses through June, 1983 which were reviewed for adequacy. Final questions were developed and sent to the applicant on July, 1983 and the final responses were received in August, 1983. The Technical and Environmental Analysis commenced at that time.

During the period of time that the above reviews were progressing, the Price River Coal Company requested approval of a modification to the PAP which included the construction of shaft facilities in Crandall Canyon in the northwest portion of the mine area. This modification was reviewed and approved by the State of Utah, Division of Natural Resources and Energy, Department of Oil, Gas and Mining on February 19, 1982. Disturbance by this facility was not evaluated during the review of the mining operation except as it affected the Cumulative Hydrologic Impacts Assessment (CHIA).

Impacts of the Proposed Mining Operation

The impacts which will occur in response to approval of this mining and reclamation plan will for the most part be beneficial. The Price River Mine Complex is an existing operation and surface disturbances have existed for many years. As such, there is 144 acres of surface disturbance of which 121.5 acres will be reclaimed after mining as a result of continued operation by Price River Coal Company. The proposed reclamation plan has been reviewed under the requirements of the permanent regulatory program and has been found to be adequate. The land will be regraded to a stable configuration, topsoil material replaced, and revegetated. The postmining land use would be one primarily of grazing which would also be beneficial to wildlife in the area such as mule deer and elk.

Approval of the proposed mining operation would allow for the recovery of several million tons of coal. The exact amount of coal to be recovered during the permit term has not been identified due to fluctuating market conditions and thus changes in production levels at the mine. The extraction of the coal will result in subsidence of the land over the mine. This subsidence is expected to be a reasonably even settling of the land over most of the mine due to the depth of cover and the existence of thick, massive sandstone layers over most of the mine. The exception to this occurs where the area is dissected by the Price River and Willow Creek. In these areas, the applicant is proposing partial extraction to prevent subsidence. Therefore, the proposed underground mining operation is not expected to have significant impact on the land surface.

Impacts to the hydrologic regime are expected to be very minor. The area has already been extensively mined and the ground water system disturbed. Continuance of the mining operation is not expected to significantly alter the existing ground water system and any impacts to the surface water system are expected to be very minor. Price River Coal

Company holds water rights in the area, and if flow is reduced to the Price River, under worse-case conditions, the reduction in flow will not exceed the companies water rights. The surface water drainage from the disturbed sites is being controlled using several sediment control structures including sediment ponds with associated diversion structures, dugouts, and straw bale dikes. Significant increases in sediment loading are not expected.

Continued construction of the coal refuse disposal area in Schoolhouse Canyon i the Castlgate Facilities area will alter the appearance of that canyon. However, the refuse pile is being constructed to be stable and will be reclaimed according to permanent performance standards.

Alternatives for the Proposed Mining Operation

Alternative #1 would be no action. The Federal Mineral Leasing laws required that the Secretary of the Interior respond to permit applications and approve, disapprove, or conditionally approve mining operations on Federal leases. Therefore, the alternative to take no action is not viable and will not be discussed further.

Alternative #2 would be approval of the proposed action with conditions. This is the preferred alternative. The Technical and Environmental Analysis enclosed herein, describes the preferred alternative including the affected environment and impacts associated with the proposed action.

Alternative #3 would be disapproval. The disapproval alternative would result in the closure of the existing operations. Such a closure would result in the loss of jobs in Carbon County, Utah. This alternative would preclude the continued development and mining of steam coal. The mine operator would begin reclamation of the disturbed surface.

TOPSOIL PROTECTION

A. Description of the Existing Environment

Available topsoil in the Price River Area is limited. The terrain is rocky and the soils are variable in nature as a result of weathering and the parent material. A description of the soil types that exist in the mine area is provided on Table 8-1, page 425 of the permit application. Soil descriptions for the areas which have been disturbed are described on pages 427 to 443. Generally, the soil types have been defined in terms of three major physiographic sections, the Wasatch Plateau, Book Cliffs, and the Mancos Shale Lowlands. The first two sections are typically located on steep slopes and are rocky. The Book Cliffs Section may also have a silt loam to loam surface. The Mancos Shale Lowland soils are high in soluble salts and are generally a silty clay.

Within the existing surface disturbance areas, topsoil has not been removed and stockpiled because the disturbances were prior to 1977. The exception is the Crandall Canyon area which is currently being constructed. In this area, topsoil has been removed and stockpiled in Gravel Canyon or is being utilized in reclamation. Three test pits were completed in the Crandall Canyon area to identify the material present. The A-horizon material was very thin, three to five inches, but the subsoil material, which included buried A-horizon material and other loamy type material was generally over 70 inches thick. The material was tested and found suitable as a plant growth media. In addition, the soil did not contain excessive amounts of coarse material. The total disturbance in the Crandall Canyon area was 28 acres. From this area approximately 45,000 to 50,000 cubic yards of material have been salvaged. This would indicate that an average depth of 12.5 inches of soil material has been recovered. The applicant has indicated that an additional 8,000 cubic yards of material is available in Crandall Canyon resulting in an average depth of 15 inches of material to be removed from the canyon.

Test pits which were dug in other areas of the mine plan generally indicate the existence of coarse fill material which, though not toxic, is not a suitable soil material. Under the coal refuse disposal pile in Schoolhouse Canyon, test pits were dug to determine the nature of the foundation material. These test pits indicated the existence of very coarse colluvial material containing significant quantities of boulders. The site faces in southwest direction, and given this orientation and the nature of the soil material, very droughty conditions existed.

B. Description of Applicant's Proposal

The applicant has provided soil descriptions and laboratory information for thirteen backhoe pits in the mine plan area. Much of the permit area has previously been disturbed by mining activity and the topsoil in these areas was not salvaged. Topsoil from Crandall Canyon and other areas will be utilized to re-topsoil these previously disturbed areas. Topsoil stockpiles will be adequately revegetated using a mixture composed predominantly of cool season grasses.

The applicant proposes to apply topsoil to a depth of six inches on reclaimed areas and an additional four feet over coal refuse material. This will require a total of 235,644 cubic yards of material (this includes an additional 10,503 cubic yards beyond what the applicant stated due to an error in calculations). This material was proposed to come from Crandall Canyon, from material stored in Gravel Canyon, and it was anticipated that approximately 170,000 (actually 180,000 once the figures are corrected) cubic yards would be purchased in the vicinity of Helper, Utah. Prior to placement of the material, the applicant proposes to test its suitability to support the type of vegetation to be planted at the mine. No specific testing method has been identified. Fertilizer will be added as needed according to the results of the testing program.

The topsoil material will be placed upon the regraded sites after the surface has been scarified to promote root penetration and prevent slippage surfaces.

C. Evaluation of Compliance

Since the areas to be permitted in this evaluation have already been disturbed and there has not been any topsoil material salvaged, the applicants proposal is generally acceptable as proposed. Sufficient volumes of material will have to be located from areas other than the existing facilities areas. Currently, the information provided by the applicant indicates that approximately 180,000 cubic yards of material are not available on site.

An analysis of the refuse material in Schoolhouse Canyon was provided by the applicant indicating that the material was not toxic. Therefore, it may be feasible to cover the refuse pile with only enough material to provide for sufficient root penetration, approximately 18 inches. This would reduce the required amount of soil material needed for reclamation by 92,828 cubic yards. This would substantially lower the amount of material which might have to be purchased. Although the coal refuse is coarse, and would create droughty conditions if covered by only 18 inches of material, this was the condition of the area prior to placement of any refuse in the Canyon. Additional testing of the refuse for potential toxicity is required prior to a final determination of non-toxicity to plant growth.

Information presented by the applicant indicates that there is substantial soil material in Crandall Canyon which has not been recovered. If the applicant were to have recovered 60 inches of material from Crandall Canyon, sufficient soil material could have been obtained from excavation over only 18 acres to reclaim the facilities areas with the required 235,644 cubic yards of material. The applicant has disturbed 28 acres and apparently not recovered the subsoil material which could be used for reclamation in other areas. It is proposed that the applicant has sufficient material on site to reclaim the the facilities in Price River Complex with topsoil and subsoil from Crandall Canyon. Further testing by the applicant would clearly define the feasibility of this proposal. In addition, further testing of the topsoil material must be conducted to ensure its suitability as plant growth media.

D. Proposed Special Stipulations

The applicant must provide a plan for sampling the physical and chemical suitability of topsoil materials to be used in reclamation and the suitability of subsoil material in coal refuse disposal areas and other disturbed areas. Additionally, guidelines detailing the range of characteristics for suitable materials must be proposed. This plan is to be submitted to OSM and UDOGM for approval within 30 days of mine plan approval.

The applicant must provide a plan for identifying available soil material in the permit area and recovery of that material for reclamation. A materials balance must be provided showing the amount of material available and where that material will be used in reclamation. This plan is to be submitted to OSM and DOGM for approval within 30 days of mine plan approval.

E. Summary of Compliance

The applicant is in compliance with this section with the proposed stipulation.

F. Proposed Departmental Action

Approval of this portion of the mining and reclamation plan.

G. Alternatives to the Proposed Action

There are no viable technical alternatives to the proposed topsoil handling plan. Due to the fact that this is an existing operation and the limited amount of material available in the area, the applicant is proposing a reasonable topsoil handling operation.

H. Environmental Impacts of the Proposed Departmental Action

Approval of this operation will have a beneficial impact in the mine area. Existing operations would be reclaimed to a suitable postmining land use which would otherwise remain in an unreclaimed condition.

SURFACE WATER HYDROLOGY

A. Existing Environment

The surface water drainage pattern is an integral part of the Price River mine plan as stream valleys provide the only areas sufficiently level to allow the construction of surface facilities. Therefore, each of the four distinct facilities sites included in the mine plan, Sowbelly Gulch, Hardscrabble Canyon, Willow Creek and Castlegate/Utah Fuel are constructed adjacent to their respective streams, and are consequently controlled by topographic constraints characterizing the stream valleys.

The mine lies within the Price River watershed, a perennial stream that flows to the southeast through the permit area. Price River has a contributing drainage area of 415 square miles and a mean annual discharge of 112 cfs (cubic feet per second). Runoff in the river is regulated by Scofield Reservoir north of the mine site. The other perennial stream in the permit area, Willow Creek, has a watershed area of 77.4 square miles, and flows to the southwest, joining Price River immediately downstream of the Willow Creek surface facilities area. The mean annual discharge for this stream is approximately 8 cfs. Spring Canyon is intermittent, flowing to the southeast along the southern edge of the permit boundaries. At its confluence with Price River below the permit area, it has a contributing watershed of 22 square miles, and a limited number of stream flow records indicates that mean annual discharge approaches 0.3 cfs. Sowbelly Gulch and Hardscrabble Canyon are both ephemeral streams with drainage areas of 3.1 and 2.8 square miles, respectively. Sowbelly Gulch is a tributary of Spring Canyon, while Hardscrabble Canyon joins the Price River at the town of Martin south of the permit area.

The chemical quality of surface water in the permit area is generally alkaline. Some pH readings have been taken at 9.4. Other parameters that have been found to exceed water quality standards or equivalent NPDES criteria for discharge points include sulfate, fluoride, phenol, oil and grease, iron, total dissolved solids and total suspended solids. While oil and grease appear to derive from mining-related activities, the iron and fluoride are probably naturally-occurring constituents of geologic strata in the vicinity of the permit area (Vaughn Hansen, 1976). TSS, TDS and sulfate are found in particularly high quantities in Hardscrabble Canyon. Suspended and dissolved solids are the result of coal and coal fines that were indiscriminately allowed to wash into the stream during mining that occurred prior to the present operations. The presence of sulfate and, in some instances, phenol, is also a reflection of the coal fines. The high sediment yields are in part indicative of the highly erodible mudstones and siltstones in the vicinity of the mine (USGS, 1976).

Precipitation at the site is low, varying according to elevation from 10 to 20 inches per year. This rate is further diminished by the high rate of evaporation, approximately 55 inches per year. The 2-year, 10-year, 25-year, 50-year and 100-year, 24-hour storm events yield 1.3, 1.9, 2.3, 2.7 and 2.9 inches, respectively.

Water rights available to Price River Coal Company include direct flow

rights, Price River; reservoir rights, Scofield Reservoir; mine inflows and springs; and the Price River Water Improvement District. Discharge quantities for these water rights are presented on page 375 of the permit application. See the Ground Water Quantity section for an additional discussion of Price River water rights.

B. Description of the Applicant's Proposal

Surface Water Control Structure Design - General

The applicant has provided each of the surface facility areas with a sediment control plan based on diversion ditches and berms to route flow around the disturbed area, sediment ponds, sediment sumps, and straw dikes. These structures are all currently existing. Berms surround the perimeter of the facility areas, and are constructed to a height of approximately two feet. These serve to direct runoff from adjacent hillsides away from the facilities, thereby reducing the required size for sediment ponds. At the same time, they prevent the random discharge of flow from the facility areas into the hydrologic regime. Diversion ditches are designed to carry flow from a 10-year, 24-hour storm. The exception is the refuse pile diversion at Castlegate which is designed to carry the 100-year, 24-hour storm peak since it is designed as a permanent structure. Required peak flow capacity is calculated from the Rational Formula method, which tends to provide conservative figures in comparison with checks against the SCS method for small watersheds. The runoff coefficient, C , was estimated to be 0.4 for small watersheds and overland flow and 0.5 for larger drainage areas. The rainfall intensity parameter, i , was calculated from the time of concentration (t_c) for each watershed and the amount of precipitation that would occur at that t_c for an hour. Parameters utilized in the Rational Formula for each watershed are given in Tables 7-4 and 7-5, Chapter VII of the permit application.

Ditches were sized using Mannings Equation. The roughness coefficient, n , was based on the cover and hydraulic radius of the ditch section. Ditch sections are trapezoidal and ditch depths have been designed to incorporate a freeboard of 0.3 inches above the water surface. Channels are earthen or excavated into rock, and are riprapped where the channel gradient exceeds 5 percent (Chapter VII, page 414 of the permit application).

Sediment pond volume is calculated from the 10-year or 25-year, 24-hour peak flow and the sediment volume that can be expected from the disturbed area. With the exception of ponds in Castlegate, none of the structures is provided with an outlet or spillway. The ponds are designed as non-discharging evaporation cells that are sized to hold all the runoff from a 25-year storm on top of the maximum sediment pool. Pond volumes for those in Castlegate are sufficient to hold the 25-year storm runoff, but are simultaneously discharging reservoir storage. Sediment values are calculated at 0.035 acre feet per acre of disturbed area. This is a conservative figure in comparison with soil losses calculated with the Universal Soil Loss Equation (Chapter VII, page 409 of the permit application). Sediment ponds at the mine site are generally excavated, although several are supplied with freeboard dikes, or berms to increase

the storage size. Pond 011 and the refuse pile settling pond at Castlegate are both provided with embankments. Ponds are not receiving discharge from mine inflows. Only one portal is currently discharging, mine #3 at Hardscrabble Canyon, and that discharge point has an individual NPDES permit. A general NPDES permit covers all other potential sediment pond discharge points at the mine site.

Straw dikes and sediment sumps have been provided for those disturbed areas that are not located within the watershed of a sediment pond. Routine maintenance will be provided for these alternative sediment controls, removing and replacing straw dikes when they become saturated with sediment (letter of commitment from the applicant, November 17, 1983). The applicant is requesting that a small area exemption from the requirements of 817.42(a) be granted for those portions of the permit area. The requests are as follows:

Location	Acreage	Control
Sowbelly Gulch guard shack, road	0.5	straw dikes
Sowbelly Gulch substation	0.068	none
Sowbelly Gulch chlorination facility	0.05	none
Hardscrabble Canyon bathhouse, office #3 portal	5.7	straw dikes
Willow Creek expansion area	3.6	sump
Willow Creek access road	1.1	sump
Castle Gate raw water pond	0.9	sump
Castle Gate scale, guard shack	0.85	sump
Castle Gate topsoil storage (Gravel Canyon)	1.8	berm

The reclamation plan for these facilities includes the reconstruction of temporary diversions to a permanent channel capable of carrying the peak flow from a 100-year, 24-hour storm. All supplementary sediment controls, including sumps and straw dikes, will be removed. Sediment ponds will be removed after vegetation has been satisfactorily established within the

watershed (Chapter III, page 137 of the permit application).

Sowbelly Gulch

Sowbelly Gulch is an access area for the #5 mine and contains various support buildings for that operation. Regrading of the site to construct these facilities required that the ephemeral stream in this canyon be permanently diverted, although the relocation was not drastic and retained the channel in approximately the same configuration. Since this is an ephemeral stream, the diversion was designed only for the peak flow from a 10-year, 24-hour storm. Five other ditches have been constructed at the site to divert flow away from the permit area and are constructed adjacent to berms that surround the perimeter of most of the site. Temporary ditches will be reclaimed to the channels shown on exhibit 3.2-3. Reclaimed ditch sections are designed to carry flow from a 100-year, 24-hour storm.

The sediment control plan at Sowbelly Gulch involves three excavated sediment ponds, 003, 004 and 005, that are connected via an 18-inch diameter culvert. The applicant connected the ponds in order to take maximum advantage of the total storage area that the three ponds provide. The topography is such that the construction of large ponds at the appropriate locations (immediately downstream of the greatest disturbed area) is not possible. Individually, pond 003 is not sufficient to handle the runoff from its watershed. Combined with the volumes in ponds 004 and 005, which are slightly more than sufficient for their watersheds, pond 003 can handle the required sediment and runoff because it can drain excess flows into the other two ponds. Pond 004 handles runoff from approximately 4.9 acres, pond 004 handles flow from 7 acres and pond 005 has a contributing drainage area of approximately 2 acres. All but approximately 2.5 acres is disturbed. The ponds are not provided with a discharge structure, and are considered to be evaporation cells. This design was approved by the Utah Division of Oil, Gas and Mining (letter from Sally Kefer, April 20, 1982). The pond designs are given on exhibit 3.2-2 of the permit application. The exhibit was subsequently corrected by information submitted by the applicant on October 31, 1983 to show revised water surface levels in pond 004. Sediment excavated from the ponds will be temporarily stored at the north end of the storage area within the pond watershed.

Hardscrabble Canyon

Hardscrabble Canyon is currently the site of two active portals, #3 and #4. Prior to 1977, coal washing and preparation activities were conducted in Hardscrabble Canyon, therefore, there are some remnants of that operation, such as the Goose Island refuse pile, that are still located here and that are contributing runoff to the sediment control system. The ephemeral stream in this canyon was diverted at the upstream end of the facilities area for the construction of this refuse pile, and reconstructed at the downstream end to carry flows from a 10-year, 24-hour storm event. Two other temporary diversions have been constructed around the #4 portal facilities area. Berms are constructed in conjunction with the ditches along the southwest perimeter of the facilities area. At the

close of operations, these ditches will be reclaimed to the configuration shown on exhibit 3.3-3. The Goose Island refuse pile diversions will also be reclaimed as the refuse will be regraded as part of reclamation activities.

Sediment control is provided by three ponds, 006, 007 and 008 that will store runoff from disturbed areas as well as handle flow from adjacent hillside areas. Topographic constraints are such that the installation of diversions around the entire site to prevent mixing of runoff from disturbed and undisturbed areas is not feasible. The ponds are non-discharging excavated structures, although pond 007 has been provided with a partial five-foot berm. Pond designs are shown on exhibits 3.3-2a and b. The drainage area contributing to pond 006 is 39 acres, that contributing to 007 is 15 acres, and the watershed contributing to pond 008 is 18.5 acres. The total disturbed area controlled by the sediment control plan is approximately 17 acres. Sediment removed from the ponds will be stored at the Goose Island refuse pile.

Willow Creek

The Willow Creek area is currently used only for storage and for a ventilation system, although it is anticipated that mining may be developed through the old Castle Gate #2 portals when market conditions improve. Willow Creek itself has not been diverted as the facilities were constructed adjacent to the left bank of the stream. There are three overland flow diversions along the western edge of the facilities area, and the entire site is surrounded by a berm to prevent uncontrolled discharge into Willow Creek. These diversions will be reclaimed to the sections shown on exhibit 3.6-3.

Sediment control is provided by two ponds, 018 and 019. Pond 018 has a drainage area of approximately 3.9 acres, although the design specifications in Table 3.6A of the permit application state 2.8 acres. Pond 019 has a drainage area of approximately 4.6 acres. These are non-discharging structures designed to hold the runoff from a 25-year, 24-hour storm, and will operate as evaporation cells. Sediment removed from the ponds during the life of the operations will be stored at the east end of the storage area within the drainage area of a pond.

Castle Gate/Utah Fuel, Schoolhouse Canyon Refuse Pile

The Castle Gate area houses the coal preparation facilities that are expected to be in place for 35 to 100 years. The facilities are located along the left bank of Price River, with the exception of the Gravel Canyon topsoil storage area and the Utah Fuel #1 mine. The conveyor from this portal area crosses over the river to the preparation facilities. Price River has not been diverted for these operations, but there have been nine other diversions of overland flow or ephemeral streams constructed to divert runoff from undisturbed areas away from the site as shown on exhibit 3.4-2. One of these diversions is a permanent structure, and will carry the peak flow from a 100-year, 24-hour storm. This diversion is the reconstructed channel of Barn Canyon that carries the runoff from the Schoolhouse Refuse pile diversion. All temporary diversions will be

reclaimed to the configurations shown on exhibit 3.4-3.

Sediment control is provided by four ponds, 011, 012A, 012B, and 010 at the facilities area. A large embankment structure has been constructed immediately downstream of the Schoolhouse Canyon refuse pile to capture sediment at that location. Pond 011 has a drainage area of 13.3 acres, all disturbed, and its design is shown on exhibit CGE-103. The pond is a discharging structure and is equipped with an 18-inch diameter pipe. Ponds 012A and 012B are connected via an 18-inch culvert to maximize storage volume, as shown on exhibit CGE-104-1. Pond 012B has a berm with a maximum height of 9 feet, and an 18-inch diameter outlet pipe that discharges into a riprapped channel. The drainage area contributing to ponds 012A and B is approximately 21 acres. Pond 010 serves as the sediment control system for the Utah Fuel portal area. It is a non-discharging excavated pond provided with a small freeboard berm. The drainage area contributing to the pond is 1.5 acres. Sediment removed from any pond at the Castle Gate area will be stored at the Schoolhouse Canyon refuse pile.

The refuse pile sediment pond has an embankment with a height of 25 feet measured from the upstream toe to the crest of the spillway. The pond does not have a pipe outlet, but has been provided with a spillway channel that is capable of carrying the flow from a 100-year, 24-hour storm in the event that the refuse pile diversion fails. A pump will be available to pump out the structure as needed. The embankment has 3H:1V side slopes and materials tests indicate that the structure has an adequate factor of safety. The reservoir geology is such, however, that seepage is expected to occur. The pond can store a maximum of approximately 11 acre feet of runoff and sediment from its 63-acre watershed, which is the amount needed to store runoff from a 25-year, 24-hour storm and sediment from all 63 acres. Any flow from the spillway will be routed through a 60-inch culvert into Price River. Pond designs are provided in the Golder report, which is an attachment to the permit application. This pond will be removed during site reclamation after vegetation has been satisfactorily established on the refuse pile.

Surface Water Monitoring

The surface water monitoring plan consists of ten stations that are monitoring streams affected by the four surface facilities areas in addition to other streams within the general permit area boundaries. Parameters that will be monitored during the life of operations include: stream flow, total dissolved solids, total suspended solids, pH, total iron, total manganese, temperature, oil and grease. Grab samples are taken twice monthly at each station and stream flow is measured at that time by determining average velocity and cross-sectional area of the channel. The surface water monitoring plan is described in Section 7.2-2, page 387 of the permit application.

NPDES monitoring requirements will be fulfilled according to the schedule set forth in the January, 1983 submittal from PRCC. At those points that potentially discharge (currently two ponds in Castle Gate, mine #3 in Hardscrabble Canyon and the Peerless Mine elsewhere within the permit area), samples will be taken twice monthly or when there is flow and

reports will be submitted quarterly. Effluent limitations are as follows: TSS, daily maximum, 70 mg/l; total iron, 2 mg/l; TDS, 2000 mg/l or 1 ton per day; oil and grease, 10 mg/l; pH, 6.5-9.0. Note: although the applicant has NPDES permits for all sediment ponds, it is not anticipated that those without outlet structures will discharge.

C. Evaluation of Compliance

Surface Water Control Structures - General

The applicant has provided a surface water control plan that is adequate to prevent uncontrolled runoff from leaving disturbed areas within the surface facilities sites. Small area exemption requests are reasonable for the most part. The most significant small area exemption has been requested for the mine #3 area of Hardscrabble Canyon, where mine inflows are currently being pumped to the surface. Additionally, there are several support buildings in that area. While runoff from an area such as this would normally be routed to a sediment pond, NPDES monitoring data indicates that the quality of mine inflows are currently well within the effluent limitations. Furthermore, there is only a very restricted area within which a sediment pond could be built and the applicant has provided straw dikes as a sediment control device. Because the disturbance of reconstruction would exceed benefits from the two to three years remaining before site reclamation, this small area exemption will be granted.

Design of the individual control structures has been accomplished according to accepted engineering practice and in accordance with the regulatory requirements. The applicant has designed ditch sections that can adequately handle the required peak flow, although the velocity in many of the sections exceeds 5 feet per second (fps). A statement was made by the applicant on page 414, Chapter VII of the permit application that ditches with grades exceeding five percent will be riprapped. While this is an appropriate action, some of the ditch segments are on grades less than five percent, and the velocities are still excessive. Ditches which have velocities greater than 5 fps are identified in the calculations submitted by the applicant in the August, 1983 submittal. Although the applicant has not committed to riprapping all ditches with velocities greater than 5 fps, any erosion damage occurring in ditch sections from high velocities will be mitigated during routine inspections undertaken by the applicant and riprap will be placed as necessary when displaced (page 414, Chapter VII of the permit application). The applicant is in compliance with this section of the regulations.

Sowbelly Gulch

Sediment ponds 003, 004 and 005 provide a combined sediment storage volume that is adequate to serve the Sowbelly Gulch area. Designs for existing ditches and reclaimed ditch sections are adequate to pass the required flow. The applicant is in compliance with provisions for surface water protection in Sowbelly Gulch (see the Roads section for a discussion of culverts in Sowbelly Gulch).

Hardscrabble Canyon

The applicant is proposing to phase out Hardscrabble Canyon in two to three years. Therefore, the surface water control plan is not a long-term installation. Three ditch segments in Hardscrabble Canyon are underdesigned; D-1, D-4, and D-6. These ditches effectively control the required size of the sediment ponds, and they should be upgraded to achieve the necessary cross-sectional area to pass the 10-year, 24-hour storm. In this case, however, ditches D-1 and D-4 will no longer be necessary when the Goose Island refuse pile is reclaimed in 1984-1985. Providing that this reclamation occurs on schedule, it will not be necessary to enlarge these ditches for the remainder of their useful life. Ditch D-6, however, is a different case in that it was intentionally constructed below regulatory requirements because of severe topographic constraints. To resize this diversion would cause the entrance road to the facility to become so constricted as to prevent safe operation to continue at the site. Given that the applicant is planning to reclaim the site within four years and will be maintaining the ditch according to the plan presented on page 414, Chapter VII of the permit application, it appears that environmental damage will not occur. Therefore, the applicant will not be required to reconstruct the ditch. On-going maintenance activities will provide assurance that the ditch will function adequately during the remaining life of the site. However, if the reclamation of Goose Island or Hardscrabble Canyon is delayed beyond the dates specified within the permit application, the regulatory authority will require that ditches D-1, D-4 and D-6 be upgraded (see proposed stipulations in this section).

The pond 007 storage volume is currently inadequate to handle the runoff and sediment from its drainage area. Since Hardscrabble Canyon is going to be phased out, it will serve no purpose to increase the size of the pond since it has been performing adequately to this point. In order to increase the potential storage area of the pond temporarily, the applicant has stated that sediment in the pond will be removed before it reaches 30 percent of the sediment storage volume.

With the implementation of the proposed stipulation, the applicant will be in compliance with with provisions for surface water protection in Hardscrabble Canyon.

Willow Creek

The surface water control structures at Willow Creek are currently adequate for the existing disturbance at that site. If, however, development of the Castle Gate #2 portals does occur, the applicant will be required to enlarge the sediment ponds. The ponds have been designed using runoff figures derived for undisturbed areas (Table 3.6A and B), and while it is sufficient now, new construction activities will require that a higher curve number be chosen for calculating flows.

The applicant is in compliance with the provisions for surface water protection at Willow Creek.

Castle Gate/Utah Fuel, Schoolhouse Canyon

The refuse pile pond has been designed to a stable configuration. A high potential for seepage under and through the embankment has been mitigated by incorporating a blanket drain and relief well into the embankment design. In order to keep the regulatory authority advised of the status of the embankment, the applicant will provide OSM and DOGM annual reports regarding the condition of this embankment, summarizing the MSHA-regulated weekly inspections of the pond. Any potential hazard to the structure will be identified during these inspections, and the regulatory authority will be informed of the longterm stability of the dam via the inspection reports.

Pond 011 in the coal preparation area is receiving runoff from several inlet channels, since it is in the center of its drainage area. This pond is a discharging structure. Adequate detention of the inflow is regulated by the pond configuration and outlet size. The plan view of this pond, exhibit CGE-104, shows that the inlets to the pond are relatively close to the outlet. A check of the short-circuiting potential (Barfield, et al, 1981, page 426), revealed that the pond is not efficiently designed, probably due to topographic constraints, and will short-circuit, creating areas of dead storage. The applicant will be monitoring the pond if it discharges, at which time any exceedence of solids limitations will be detected. If such an exceedence is demonstrated, the applicant has stated that baffling, or some other design alteration, will be provided to allow for more efficient settling of pond inflows. The applicant is in compliance with the provisions for surface water protection at Castle Gate/Utah Fuel and Schoolhouse Canyon.

Surface Water Monitoring

The monitoring requirements set forth in the NPDES permit are adequate, however, the revised standards given in 40 CFR 434.42 call for the measurement of settleable solids rather than total dissolved solids. This change should be reflected as the NPDES permit is updated.

The applicant is in compliance with this section of the regulations.

D. Proposed Stipulations

The applicant shall complete reclamation of Hardscrabble Canyon and Sowbelly Gulch by December 31, 1986 and Goose Island by August 31, 1985. If existing surface water control structures are not reclaimed and replaced with adequately-sized channels by that time, the applicant shall upgrade the structures within ninety days. Plans shall be submitted to the regulatory authority one month prior to the reclamation deadline. Structures included are: culverts 1, 4 and 6 in Hardscrabble Canyon (Goose Island) and culverts 3 and 10 in Sowbelly Gulch.

E. Summary of Compliance

The applicant is in compliance with the sections of the regulations dealing with the protection of the surface water regime.

F. Proposed Departmental Action

Approve the permit.

G. Alternatives to the Proposed Action

There are no technically-feasible or economically viable alternatives to the proposed action.

H. Impacts of the Proposed Action

Although the water quality at the mine site was observed to be declining prior to the implementation of surface water controls, current monitoring data reveals that these controls are resulting in a marked improvement in water quality that is within effluent limitations. It is expected that they will continue to do so. Water quantity will be slightly decreased off the permit area because the sediment ponds will act as evaporation lagoons. This will not, however, significantly impact water quantities downstream of the sites because the drainage areas contributing to these ponds are small. In those areas where water is pumped from the mine to the surface, this reduction in runoff will be offset by the contribution of mine discharge.

HYDROLOGIC BALANCE - GROUND WATER

A. Description of the Existing Environment

Regional Geology

The Price River Mine Plan Area is located in the northwestern portion of the Book Cliffs coal field in Central Utah. The coal bearing rocks of the Book Cliffs Coal Field consist of approximately 1,400 feet of Upper Cretaceous sandstones and siltstones with minor amounts of shales, mudstones, and clays. These rocks comprise the Blackhawk Formation of the Mesa Verde Group. In addition to the coal bearing Blackhawk, several other rock formations are of interest in the area of the Price River mine complex. In ascending order, these rock formations include the Masuk Shale Member of the Mancos Shale, the Star Point Sandstone, the coal-bearing Blackhawk Formation, the Castlegate Sandstone, the Price River Formation, the North Horn Formation, and the Flagstaff Limestone. The Flagstaff Limestone forms most of the ridge tops in the region, and is generally covered by 0 to 50 feet of unconsolidated colluvial/alluvial material. Solution channels and fractures are present within the Flagstaff Limestone. The Flagstaff is about 500 feet thick in the Price River Canyon area.

The North Horn Formation consists of a series of shale, sandstone, conglomerate and limestone beds, and is up to 2,500 feet thick in the area. The Price River Formation consists of medium grained sandstone and shaley sandstone, and is up to 1000 feet thick in the area. Beneath the Price River Formation lies the Castle Gate Sandstone, which is about 500 feet thick in the area. The Castle Gate is the predominant cliff-former in the Price River Canyon, is easily recognizable and serves as a marker bed in the area.

The Blackhawk Formation, as mentioned previously, contains the significant coal beds of the region. The Blackhawk ranges from 900 to 1300 feet thick in the Price River Canyon, with the predominant coal beds assembled in the lower 500 feet. The alternating discontinuous fluvial channel sandstones and shales of the Blackhawk comprise the majority of the Formation. The Aberdeen sandstone member is about 170 feet thick in the vicinity of the Price River Complex. The Aberdeen is lithologically discontinuous to the channel sands of the Blackhawk in that it is lithologically similar to the massive littoral sandstone tongues of the Star Point below. The Aberdeen is "regional" in areal extent and along with the Star Point is considered the only "regional" aquifer. The Blackhawk intertongues with the Star Point below which makes a definite contact difficult to identify.

The Star Point is about 600 feet thick in the area, and consists of three predominant sandstone tongues (similar to the Aberdeen above), representing a regressive-deltaic-littoral sequence, which intertongues with the gray marine shales of the Masuk member of the Mancos shale below. These massive sandstone tongues are cliff-formers in the Spring Canyon, located in the lower portion of the mine plan and adjacent area.

The basal unit of interest in the region is the Masuk member of the

Mancos Shale. It typically is several thousand feet thick. The Masuk is generally nonresistant, forming flat desert surfaces and badlands in the area and is considered to be devoid of water..

The strata present in the region strike northwest to west, and dip 3 to 6 degrees to the north into the Uinta Basin. As a result of the dipping nature of the formations, and the highly eroded characteristics of the land surface, all the formations of interest outcrop in a progressively southward fashion within the mine plan and adjacent areas.

Unconsolidated alluvial material is found along the canyon bottoms of streams in the area. This material is generally several tens of feet thick, and is up to several thousand feet in width along major perennial drainages such as the Price River.

Local Hydrologic Regime

Within the mine plan and adjacent area, three distinct aquifer systems have been identified by the applicant. These systems include a perched aquifer system(s) within the Price River, North Horn and Flagstaff Limestone Formations; the regional aquifer system, which includes the Star Point in the Blackhawk Formation and extends into the underlying sandstone below; and several alluvial aquifer systems which exist along the major stream courses in the area.

Perched aquifer system. The perched aquifer system is described in the permit application as consisting of small, discontinuous ground water bodies which receive natural recharge from local precipitation and discharge as small seeps and springs. The seeps and springs are located generally at a sandstone-shale interface, and many flow only seasonally. Recharge to this system is postulated to be less than 5 percent of annual precipitation; recharge typically occurs in the higher plateau ridgetop location.

Regional aquifer system. The regional aquifer system in the mine plan area can be divided into two hydro-stratigraphic units, the upper Blackhawk and the lower Blackhawk-Star Point Sandstone. Recharge to the regional system probably occurs along exposed surfaces in areas where the Blackhawk forms the surface formation. Some limited recharge may also occur from overlying beds above. Discharges from the regional aquifer system in the study area include springs, principal water-courses including Spring Canyon Creek, Willow Creek and the Price River, and inflow into abandoned mine workings in the area.

Values for hydraulic conductivity and transmissivity were calculated for the regional aquifer system from two test wells which penetrate the Blackhawk Formation. Hydraulic conductivities were in the range of 10 to the minus 1 to 10 to the minus 4 ft/day, and, transmissivities were on the order of 127 to 486 feet squared per day over the thickness zones tested. The zones were tested over 808 and 651 feet, respectively. Total saturated thickness of the regional system is not known. Transmissivity and hydraulic conductivity values for the coal were found, through similar testing, to be within the same magnitude as the other portions of the

formation. The transmissivity values obtained for the Blackhawk Formation indicate that the formation would classify as having poor well development potential (U.S. Bureau of Reclamation, 1977).

A potentiometric surface map for the regional aquifer could not be made by the applicant, due to the limited number of wells situated in the formation and the fact that the system has been altered by past mining disturbance. As a result, the direction of flow and hydraulic gradient within the regional system are not fully understood. Fifty or more mines have operated within the limits of the study area, some dating back as far as 85 years. Forty eight of the mines are now abandoned. Abandoned mine workings extend a distance of about 14 miles across the mine plan area. Discharge from the Blackhawk Formation is accumulating in these old mine workings.

Alluvial aquifer system. Alluvial aquifers are found along the Price River, Willow Creek, and Spring Canyon Creek. Published information indicates that the aquifers are quite permeable and that flows of up to 500 gpm can be expected for wells completed in the alluvial deposits. The regional aquifer system and the alluvial systems are thought to be interconnected. Although the mechanism of recharge for the alluvial system in the study area has not been investigated, it is assumed that baseflow comes from the regional aquifer.

Springs and Seeps in the Area

A records and information search by the applicant has revealed the presence of 61 springs in the study area. 48 of the springs were found to be issuing from formations overlying the Blackhawk Formation, 3 were located issuing from the Blackhawk, and 10 springs were located issuing from formations underlying the Blackhawk. The springs identified by the applicant have water rights appropriated to them; in most instances, the designated use is stockwatering. Several of the springs have designated uses of domestic or irrigation purposes. Most notably, Crystal and Goat Springs, located in the Spring Creek Canyon just south of the permit area, supply the domestic needs for three homes and, when sufficient supply is available, for irrigating a small orchard. A third spring in the Spring Creek Canyon, Gravel Spring, is owned by Price River Coal and supplies industrial water to the #5 Mine. All three of these Spring Canyon springs are thought to be alluvial in nature; a veneer of alluvium exists atop the Mancos Shale in this area.

Ground Water Quality

Baseline ground water quality data have been assembled at the study site by the applicant over the time period 1977 to 1981. A total of six monitoring wells and three springs were utilized in the program at one time or another. No other water wells in the study area were found to exist by the applicant on the basis of a legal search. Also, during 1977 and 1978, several water samples were obtained from water accumulating in the abandoned Royal Mine, and in 1978 two samples were obtained from mine #3 discharge. A complete listing of the analytical results can be found in Appendix 7-A of the permit application; only the salient features will be

discussed here.

The highest level of total dissolved solids reported during the monitoring period occurred for the August 9, 1978 Mine #3 discharge sample. The value was 4420 mg/l TDS. A second sample, obtained on August 23, 1978, showed a value of 1400 mg/l TDS. These were the only samples collected at the station. Total dissolved solids levels for samples obtained from the abandoned Royal Mine (22 samples, total) ranged from 700 to 1350 mg/l. Total dissolved solids for the monitoring wells situated in the Blackhawk Formation (wells MC 203, 205 and 207) ranged from a low of 1195 mg/l for MC 205 to a high of 1887 mg/l for MC 207. Results for a total of nine samples (1 for MC 205 and 4 each for MC 206 and 207) were reported. In addition to these baseline investigations, on January 19, 1983, a single sample was obtained from the abandoned Kennilworth Mine, and a TDS value of 1210 mg/l was reported.

Total dissolved solids levels for the three springs monitored during the baseline investigation (Crandall Canyon Spring, Mathis Canyon Spring and Dry Canyon Spring) ranged from 770 to 1068 mg/l and 255 to 380 mg/l, respectively.

Other constituents identified by the applicant as noteworthy include phenols (which may be associated with the coal, especially in naturally burned areas), sulfate, and oil and grease. A review of the applicant's ground water quality data also indicates that total iron values are noteworthy in well MC 206 (a high value of 264 mg/l reported) and in a Royal Mine sampling station (a high value of 16.4 mg/l reported). A maximum dissolved iron value of 23.6 mg/l for well MC 206 has also been reported. Well MC 206 is located in the Blackhawk Formation, adjacent to the abandoned Carbon Fuel #3 Mine, and the abandoned Rolapp #2 mine.

B. Description of the Applicant's Proposal

The applicant proposes that ground water impacts as a result of mining will be minimal. Impacts to the perched aquifer system will be negligible on the basis of the great thickness (1500 feet) of overburden separating the aquifer and its associated springs, from the coal seams to be mined. Minimal subsidence impacts to this aquifer are therefore anticipated.

Impacts to the regional aquifer system are also proposed by the applicant to be minimal. Although seepage into the mines is to be expected (as evidenced by past water accumulations in abandoned mine workings) the overall impact is postulated by the applicant to be inconsequential. Inflow rates measured in the #5 Mine and the #3 Mine range from 3.5 to 48.7 gallons per minute. These rates correspond to a discharge per unit area of disturbance of 0.015 to 0.05 gpm/acre. Measurements made in several of the abandoned mines (Aberdeen, Utah Fuel #1, Royal and Kennilworth) range from 0.004 to 0.024 gpm per acre of disturbance. Converted to inches per year of recharge assuming discharge equals recharge over the disturbed areas, these measurements correspond to 0.08 in/year to 0.46 in/year of recharge. The average value for the four abandoned mines is 0.28 in/yr. For the Price River Coal #5 and #3 Mines, the values are 0.29 to 1.02 in/year, respectively. The average values of recharge using #5 and #3 mine inflow

rates is 0.4 in/year. The applicant concludes that these values are of a low enough nature to not warrant concern; and it should be noted that the values are very near the expected annual recharge rate for the regional aquifer.

During active mining, the discharge rate into the mine is expected to be in excess of the natural recharge to the aquifer system, indicating that water is being removed from aquifer storage. As mining ceases, the inflow rates are expected to be reduced until equilibrium is established between recharge and discharge rates. The applicant speculates that once abandoned, the mines which lie below the regional water table will gradually fill until either equilibrium is reached within the mine, or as is conceivable, discharge occurs at the land surface via an access portal. Many of the abandoned mine workings are interconnected via rock tunnels, and it is possible that the tunnels may serve as spillways or overflows to other underground areas as the mines fill.

The applicant further proposes that ground water quality impacts (as evidenced by total dissolved solids levels) will be minimal, based on a comparison of values obtained from the Blackhawk monitoring wells with those seen in samples collected from the abandoned mine workings. A concern, however, does exist for oil and grease, as mine waters have been shown to contain elevated levels for this parameter. The applicant proposes to physically remove all accumulations of oil and grease prior to discharging any mine drainage into surface waters (Vaughn Hansen Associates, May 1983, p.34).

The applicant also proposes that disturbance to the regional aquifer has occurred during the past 85 years over which extensive historical mining has taken place, with little, if any, measurable impact to water resources in the area. Impacts are proposed to be only of local as opposed to regional scope.

In regard to impacts to the Price River and its associated alluvial aquifer, the applicant proposes that any reduction of flow to the Price River system, as a result of past interception of water in the active portions of the #3 and #5 mines, is on the order of 14 gpm. This value is calculated on the basis that if 0.28 in/year of recharge (The average value observed for the four abandoned mines studied in the area) is intercepted by a disturbed area equivalent to the Price River Coal #3 and #5 existing mines, the flow rate is approximately 14 gpm. This value represents a reduction of about 0.03 percent of the historical average flow of the Price River.

Using a similar analysis, mine inflows can be estimated for the life of the mine. Assuming that mine inflow in the abandoned mine workings is equal to recharge and subsequent baseflow to the Price River, then the average recharge to the Blackhawk-Star Point aquifer can be estimated by averaging the quantity of mine inflows. The applicant averaged inflows from four abandoned mines ($0.08 + 0.35 + 0.46 + 0.21 + 0.4 = 0.28$ in/year) in the area to obtain an average inflow. Two other mines within the PRCC complex (No.3 and No.5) were not used in this average. The average values using these mine inflow values is 0.3 in/year, and will be considered a

worst case scenario.

For the life of the mine, after the 8336 acres have been undermined, reductions in flow to the Price River will be on the order of 120 to 182 gpm (0.27 to 0.45 cfs), for the "average and worst" cases, respectively. This represents a reduction of 0.2 to 0.4 percent of the annual flow of the Price River of 112 cfs (near Heiner).

PRCC holds a 1.7 cfs water right allocation on the Price River. The amount of flow reduction represents only 16 to 24 percent of the allocated water right on the Price River.

Subsidence impacts to the alluvial aquifers are also proposed to be minimal. See the Subsidence section of this analysis for a discussion of subsidence impacts.

For a discussion of treatment of the mine water discharges, see the Surface Water section of this analysis. The applicant has obtained NPDES permits for the discharge of water from some of the old workings on the site.

C. Evaluation of Compliance

The applicant has complied, through collection of baseline data and statement of intent regarding future actions, with applicable parts of Section UMC 817.41 of the Utah Permanent Regulatory Program. However, there are a number of uncertainties regarding the assumptions and data base utilized by the applicant in projecting the probable hydrologic consequences of mining.

Hydrologic information available from adjacent areas suggests that the regional aquifer system as described by the applicant can be divided into two hydrostratigraphic units, the upper Blackhawk and the lower Blackhawk-Star Point. The upper Blackhawk hydrostratigraphic unit is represented by discontinuous fluvial channel sandstone and adjacent siltstones and shales which would best be characterized as an aquifer of limited areal extent described as perched aquifers by the applicant. The lower Blackhawk-Star Point hydrostratigraphic unit is represented by areally extensive, massive sandstone beds interbedded (due to tonguing with the Masuk member of the Mancos below) with low permeable marine shales. The massive sandstone beds (or tongues) consist of the three Star Point tongues and the overlying Aberdeen Sandstone of the Blackhawk. These massive sandstone beds are generally not interconnected hydraulically except where faults or fractures allow this. This is a regional conceptual model of the hydrogeologic setting and locally some variations may occur. Therefore, uncertainties still exist on the specific nature of the local ground water system. For this discussion however, the system will be referred to as the regional aquifer system.

These uncertainties are not viewed as significant enough in nature to disapprove their permit application; however it is impossible, as a result of the uncertainty, the limited data base, and the complex nature of the hydrogeologic system to accurately quantify the incremental hydrogeologic

impacts resulting from the proposed mining. For example, the timing, location, and quantity of future potential surface discharge of intercepted mine water remains unclear. Likewise, the reduction in overall potentiometric head in the regional aquifer, as groundwater is intercepted by the mines and water is removed from aquifer storage, is unknown. Similarly, the projections of water quality impacts by the applicant, although supported by the limited number of total dissolved solids analyses of mine waters, are not statistically verified; factors such as contact time may prove to alter the applicant's contention over the long-term. The range of values in total dissolved solids observed for mine waters to date (700 to 4420 mg/l; 25 samples total) indicates that the water quality concerns are yet unclear.

Since the natural hydrogeologic regime has been altered by past mining activities, and the regional aquifer system is apparently penetrated by only three wells, it is impossible with the information available to establish flow gradients and directions in the study area. Hence the incremental impact of the proposed mining on these aquifer parameters is unclear.

The applicant has provided sufficient information to demonstrate that impacts to the perched aquifer system, and the 48 springs associated with the perched system, will be negligible. Impacts associated with the proposed mining will be limited to the regional aquifer system and its associated discharge areas.

Given the uncertainties regarding the characterization of the complex hydrogeologic conditions present in the regional aquifer, it is impossible to verify the applicant's contention of inconsequential future impact without implementing a comprehensive operational monitoring plan. Past observations seem to support, on a broad scale, the contention of the applicant that past mining has had limited effect on the water resources of the area. However, in order to measure incremental impacts, and to expand the data base so that future mining proposals in the area can be evaluated properly (primarily in terms of cumulative hydrologic impact), operational monitoring, coupled with statistical treatment of the data, is necessary.

It is uncertain, based on the information assembled to date, whether future treatment of mine water discharges or other alternative mitigative measures will be necessary. Such measures may include proper sealing of mine openings, etc. A larger data base, capable of statistical treatment, will aid in the future review of such measures.

Therefore, it is considered imperative that a comprehensive operational monitoring plan be established prior to the onset of additional mining under the areas both east and west of the Price River. The greatest insight regarding future impacts can best be gleaned by accurately monitoring past and present mining activities. Supplement 1 contains the ground water monitoring plan for the Price River Coal Company Mine Complex, as prepared by OSM.

D. Proposed Departmental Action

Approval of this section of the application, pending addition of Supplement 1, Ground Water Monitoring Plan, prepared by OSM.

E. Alternatives to the Proposed Action

There are no technically viable alternatives to the proposed action which would alter the effects of mining on the hydrologic system.

F. Environmental Impacts of the Proposed Departmental Action.

Potential effects in the mine plan area and adjacent area are four fold including: (1) decrease in the hydrostatic head of the regional aquifer system, coupled with diminution of flow to identified springs interconnected with the system; (2) decrease in the quantity of water discharged to the Price River and tributaries; (3) incremental increases in dissolved constituent loads to receiving waters; and (4) subsidence impacts to perennial streams and/or springs above the mine. The duration and magnitude of the first three potential impacts are unquantified at this time. Further monitoring will be necessary to measure incremental impact. Speculation, based on past mining activities in the area, indicates that the impacts will not be severe; rather, they will be of local significance. However, mine water can be expected to accumulate following cessation of mining, as evidenced by past operations. The Castle Gate #2 mine as of 1968 contained over 428 million gallons of water (1,313 AF) and the Castle Gate #3 mine, 128 million gallons (392 AF). The Kenilworth A seam mine as of 1968 contained 165 million gallons (506 AF). The ultimate effects of such accumulations in both the proposed mines and the abandoned workings are unclear at this time. Impacts relating to subsidence are discussed in another section of this TEA.

SUPPLEMENT 1

Ground Water Monitoring Plan

Ground water monitoring is necessary in the study area encompassing the Price River Mine Complex to insure that the mining and reclamation plan has been developed to minimize hydrogeologic impacts both on-site and off-site. The principal elements of the plan outlined herein are a compilation of suggestions proposed by the applicant, coupled with concerns of the OSM due to the uncertain nature of probable hydrologic consequences of the proposed mining.

1. Stations

Information assembled by the applicant suggests that potential impacts to the hydrologic regime will be limited to the regional aquifer system. This regional system is thought to be interconnected with the 13 springs in the area and also with the alluvial systems found along three perennial drainages. Five wells are currently sited in the regional aquifer, and are delineated by the applicant as MC 205, MC 206, MC 207, BW-23 and BW-24. Seven of the thirteen springs believed to be connected with the system are located on the west side of the Price River, where mining will be limited to during the proposed five year year permit term. An eighth spring in the immediate area, shown as B-22 on Figure A-1, is thought to issue from the strata overlying the regional system; however, due to its proximity to the mine plan area, it is included in the program. The stations to be included in the program therefore include:

B-22 Crandall Canyon Spring
BM-29 Discharge from the abandoned Kennilworth Mine
BM-30 Discharge from the abandoned Utah Fuel No. 1 Mine
BM-31 Discharge from the abandoned mine near Mutual in Spring Canyon
BM-32 Gravel Spring in Spring Canyon

2. Frequency and Parameters

Sampling shall be performed quarterly for the following parameters:

Field	Lab
pH	TDS
Specific Conductance	Alkalinity (Total)
Temperature	Acidity (Total)
Flow	Oil and Grease
	Iron (Total)
	Manganese (Total)

In addition to the quarterly monitoring, the following parameters shall be analyzed on a semi annual basis at the above stations:

Calcium	Sodium	Bicarbonate	Sulfate
Magnesium	Potassium	Chloride	Iron (dissolved)
SAR			

3. Active Mine Inflows

The applicant shall also monitor all mine inflows, when encountered, into the active workings during the permit term. The applicant shall report quarterly on the results, and shall compare observed inflow rates with those projected in the mine plan submittals dated May 1983 and September 21, 1983. The quarterly information will be used to confirm or deny the usefulness of the projections made in the permit application, and adjustments will be made as necessary. The location(s) of mine inflows within the mine should be stated and identified in the quarterly report. At this time, no water quality analyses are thought to be necessary on the active mine inflows.

PRCC CUMULATIVE HYDROLOGIC IMPACT ASSESSMENT (CHIA)

INTRODUCTION

This is an assessment of the probable cumulative hydrologic impact of all anticipated mining with respect to the Price River Coal Company (PRCC) complex on the Price River basin.

The PRCC complex is located in the Book Cliffs Coal Field and is adjacent to the Wasatch Plateau Coal Field and is within the Price River drainage basin. There are no active coal mining operations upstream except for those in the Mud Creek watershed. The hydrological effects of these mining operations in the Mud Creek watershed are essentially totally buffered from the Price River by Scofield Reservoir. There are several State coal leases that exist upstream that might potentially be mined in the future, but are not considered in this CHIA since no permit application has been or is expected to be received in the near future. Downstream of the PRCC complex, mining occurs within several watersheds which ultimately discharge into the Price River and then into the Green River. Due to the lack of other coal mining operations in the Price River basin that could potentially have any cumulative impact on the local hydrologic system, the Cumulative Impact Area (CIA) includes only the PRCC complex lease and immediate area.

Over the estimated life of the mining operation a total of 19,950 acres of land will have been undermined. Some of this area has been previously disturbed by earlier mining within several of the coal seams within the PRCC complex with little, if any, measurable impact to the water resources in the area, according to the applicant.

SURFACE WATER SYSTEM

The PRCC complex includes four watersheds of the Price River Basin. The four watersheds are Willow Creek, Spring Canyon Sowbelly Gulch and Hardscrabble Canyon. These are described in the Surface Water Hydrology section of the Technical and Environmental Assessment (TEA).

Water Quality

Sediment control which is described in the TEA, is based on diversion ditches and berms to route flow around the disturbed areas, sediment ponds, sediment sumps, and straw dikes, all of which are presently in place. The sediment ponds are designed as non-discharging evaporation cells sized to hold runoff from a 25 year storm event on top of the maximum sediment pool. Only one portal is currently discharging and has an individual NPDES permit. The surface water control plan is sufficient to prevent uncontrolled runoff from leaving disturbed areas within the surface facilities sites. The chemical quality of the surface water in the permit area is generally alkaline with various parameters that have been found to exceed water quality standards or equivalent NPDES criteria for discharge points, primarily as a result of coal and coal fines being allowed to wash into Hardscrabble Canyon in the past. Although the water quality at the mine site was declining prior to the implementation of surface water

controls, current monitoring data indicates that these controls are providing improvement to the water quality.

Water Quantity

Reduction of flow of surface water will occur as a result of evaporation from sediment ponds. The amount of waters evaporated is expected to be insignificant. Interception of potential flow to the Price River from the Blackhawk/Star Point aquifer is discussed below.

GROUND WATER SYSTEM

Three aquifer systems are described by the applicant. These systems include perched, regional and alluvial aquifer systems. The aquifers can be more accurately grouped into four hydro-stratigraphic units: 1) carbonate strata overlying the Blackhawk, 2) the upper Blackhawk, 3) the lower Blackhawk/Star Point Sandstone and 4) the Mancos Shale. These are described in the Ground Water Section of the TEA. The hydro-stratigraphic units that will be directly impacted by mining operations are the upper Blackhawk and the lower Blackhawk/Star Point Sandstone.

Water Quantity

Assuming that mine flow in abandoned mine workings is equal to recharge, then the average recharge to the Blackhawk/Star Point aquifer can be estimated by averaging mine inflows. For the life of the mine, approximately 19,950 acres will have been undermined, resulting in approximately .6 to 1.0 cfs (288 to 411 gpm) of ground water being intercepted. This would reduce baseflow to springs and streams in the area by essentially the same amount.

The amount intercepted represents only .6 to .9 percent of the 112 cfs mean annual flow of the Price River. PRCC holds 1.7 cfs (763 gpm) of water rights on the Price River. The .6 to 1.0 cfs of intercepted ground water potentially represents 38 to 56 percent of this 1.7 cfs water right.

During active mining, inflow into the mine from the regional aquifer system is expected to be in excess of the natural recharge of the aquifer system, indicating that water is being removed from storage. This will result in a decrease in the hydrostatic head of the Blackhawk/Star Point aquifer. Due to a lack of potentiometric data, the loss of head cannot be quantified. This water removed from ground water storage will eventually be replaced as recharge occurs.

Water Quality

Incremental increases in TDS and TSS constituent loads to receiving waters, based on comparing TDS values from the Blackhawk monitoring wells to water from abandoned mine workings, are expected to be within established effluent limitations. The impact is therefore considered to be minimal.

SUBSIDENCE

Subsidence impacts to the area as a result of mining will be controlled by limited extraction of coal in the mine under Price River and Willow Creek. Impacts to springs and surface waters by subsidence are expected to be minimal due to the amount of overburden and that there is no historical occurrence of subsidence in the area. Further discussion is in the Subsidence Section of the TEA.

MONITORING

A detailed monitoring program has been proposed to verify the probable lack of impacts to the hydrologic balance of the PRCC complex both during the permit term and for the life of the operation. The proposed ground water monitoring plan will also provide additional information on the relationship of mining to spring discharges.

SUMMARY

In the discussion in the Ground Water Section of the TEA, projected impacts to the hydrologic system were analyzed. Based upon the limited data presented by the applicant, impacts were determined to be probably minimal.

Impacts to the hydrologic balance by continued mining in the PRCC complex are expected to be minimal. Continued surface and ground water monitoring will more clearly substantiate this conclusion as mining progresses. Due to the extensive mining disturbance that has already occurred in the past and the apparent lack of any impacts to the hydrologic system, it is anticipated that the monitoring plan will substantiate this conclusion.

FINDING

This assessment of the probable cumulative impact of all anticipated mining on the hydrologic balance of the PRCC CIA has shown that the proposed coal mining operation has been designed to prevent material damage, (in terms of impacts to the quantity and/or quality of water which are required to maintain or support uses of the local hydrologic system) outside the permit area over the entire projected life of the mine through bond release.

COAL RECOVERY

Since this is Federal Coal, the Bureau of Land Management is responsible for the evaluation of coal recovery. A letter of concurrence has been submitted by this agency stating that the applicant is maximizing recovery of coal in this operation (see Order 3, 1983 letter).

EXPLOSIVES

The applicant does not plan for the use of any explosives during the permit term.

MISCELLANEOUS COMPLIANCE SECTION

A. Signs and Markers

The applicant has stated that signs will be placed in the permit area to identify the mine and permit at the entrance to the facilities, buffer zones and topsoil stockpiles. In addition, the applicant will place perimeter markers around all facilities sites. The applicant is in compliance with this section.

B. Disposal of Non-coal Wastes

The applicant has provided plans for haulage of sewage material from some of the facilities areas and connection to sewage systems in other areas. According to a statement from Price River Coal Company to OSM (see memo from Dave Maxwell to Debbie Richardson, Nov. 7, 1983), non-coal wastes are removed from the mine on a regular basis by the Carbon-Emery Disposal Company. The applicant is in compliance with this section.

C. Cessation of Operations - Temporary

The applicant has stated that should temporary cessation of operation become necessary, the regulatory authority will be notified.

D. Cessation of Operation - Permanent

The applicant has provided extensive plans for the reclamation of the mine area once mining is complete. See the appropriate sections of this analysis dealing with reclamation.

E. Coal Processing Wastes

Applicant's Proposal

The applicant is proposing to continue construction of a coal waste disposal pile in Schoolhouse Canyon located near the preparation plant. The pile consists primarily of coarse coal refuse from the heavy media circuit which handles +3/8 inch material, and -28 mesh material from the froth flotation circuit. Occasionally slimes from clarifier are placed in the pile and mixed with the coarse refuse. The refuse material is trucked to the disposal site and placed on top of the previously graded lift. Lifts are being graded in thicknesses of no more than 2 feet. Inter-ramp slopes will be constructed at angles of 2h:1v, which means that the overall slope of the face of the pile will be somewhat flatter than 2h:1v.

An underdrain was constructed by the applicant from blasted material created during the construction of the diversion ditch above the pile. The material was placed in the canyon bottom for most of the length of the pile. The drain was constructed to be at least 4 feet thick.

The final height of the pile as proposed in this submittal by the applicant is approximately 200 feet. Plans are being considered to increase the size of the pile to increase the life of the disposal site.

Once construction is complete, the pile will be covered with 18 inches of suitable material and revegetated. For a discussion on the suitability and availability of cover material, see the Topsoil Section of this Technical Analysis. For a discussion of surface water control structures which are in place during the life of the construction phase of the pile and for permanent structures, see the Surface Water Section of this analysis.

During the construction of the pile, inspections will take place quarterly. Placement of the materials will be evaluated for adequate mixing and density. The overall stability and appearance of the pile will be determined and the 5 piezometers which are in place will be measured. The inspections will also be conducted to ensure that all organic material is being removed prior to placement of refuse.

Evaluation of Compliance

The applicant conducted in-place density measurements of the material in the refuse pile and sampled the material and ran tests to determine shear strength, cohesion and angle of internal friction. A stability analysis was performed using the "Method of Slices" technique and the data collected. It was determined that the stability of the pile far exceeded the required 1.5 static safety factor.

From the peizometer data which has been collected, the pile has been shown to be free draining. The maximum water depth measured by monitoring has been six feet, and this occurred during an abnormal wet period. The wells show several inches of water or less the rest of the year.

The applicant is in compliance with all sections of the regulatory requirements dealing with coal refuse disposal.

BACKFILLING AND GRADING

A. Description of the Existing Environment

The topography of the area around the Price River Mine Complex consists of very steep and rugged terrain. The area is dominated by flat plateau tops and steep sided canyons and cliffs are a predominant feature. The drainages generally have very steep gradients until the canyon bottom is reached where the gradient flattens.

The mine is located in the northwestern portion of the Book Cliffs coal field in Central Utah. The coal bearing rocks of the Book Cliffs Coal Field consist of approximately 1,400 feet of Upper Cretaceous sandstones and siltstones with minor amounts of shales, mudstones, and clays. These rocks comprise the Blackhawk Formation of the Mesa Verde Group. In addition to the coal bearing Blackhawk, several rock formation are of interest in the area of the Price River mine complex. In ascending order, these rock formations include the Mancos shale, the Star Point sandstone, the coal-bearing Blackhawk Formation, the Castlegate Sandstone, the Price River Formation, the North Horn Formation, and the Flagstaff Limestone. The Flagstaff Limestone forms most of the ridge tops in the region, and is generally covered by 0 to 50 feet of unconsolidated colluvial/alluvial material. Solution channels and fractures are present within the Flagstaff Limestone. The Flagstaff is about 500 feet thick in the Price River Canyon area.

The North Horn Formation consists of a series of shale, sandstone, conglomerate and limestone beds, and is up to 2,500 feet thick in the area. The Price River Formation consists of medium grained sandstone and shaley sandstone, and is up to 1000 feet thick in the area. Beneath the Price River Formation lies the Castle Gate Sandstone, which is about 500 feet thick in the area. The Castle Gate is the predominant cliff-former in the Price River Canyon, is easily recognizable and serves as a marker bed in the area.

The Blackhawk Formation, as mentioned previously, contains the significant coal beds of the region. The Blackhawk ranges from 900 to 1300 feet thick in the Price River Canyon, with the predominant coal beds assembled in the lower 500 feet. The alternating sandstones and shales of the Blackhawk comprise the majority of the Formation. The largest sandstone member is the Aberdeen Sandstone, which is about 170 feet thick in the vicinity of the Price River Canyon.

Beneath the Blackhawk Formation lies the Star Point Sandstone. The Star Point is several hundred feet thick in the area, and consists of three predominant sandstone tongues, representing a transgressive-regressive sequence, which are separated by gray marine shales of the Mancos shale. The sandstone tongues are cliff-formers in the Spring Canyon, located in the lower portion of the mine plan and adjacent area.

The strata present in the region strike northwest to west, and dip 3 to 6 degrees to the north into the Uinta Basin. As a result of the dipping nature of the formations, and the highly eroded characteristics of the land

surface, all the formations of interest outcrop in a progressively southward fashion within the mine plan and adjacent areas.

Unconsolidated alluvial material is found along the canyon bottoms of streams in the area. This material is generally several tens of feet thick, and is up to several thousand feet in width along major perennial drainages such as the Price River.

B. Description of the Applicant's Proposal

The surface facilities associated with the Price River Mine are already in existence. The portal facilities were constructed prior to 1977 and consist of cuts and fills to form bench areas for buildings, storage areas, etc.,. However, the majority of the facilities are located on the canyon bottoms with the cut and fill areas providing additional space on benches just above.

The applicant is proposing to grade the sites to a minimal extent, backfilling slopes as needed to establish suitable postmining contours, a stable land form and to backfill the portals. Cut faces will be left in the canyons, but this will blend in with the surrounding land forms such as cliffs. The applicant has specifically mentioned reducing only one cut which is located in colluvium. The slope is located in Sowbelly Canyon and is approximately 12 feet high. It will be backfilled to a 2h:1v slope or flatter slope. Also the applicant has stated that a coal refuse pile which existed in Hardscrabble canyon prior to 1977 and which is currently being used as a storage area will be significantly recontoured. The old refuse pile will be regraded to 2.5h:1v in as many areas as possible. The remaining cuts and fills have been shown to be stable for over 7 years and in most instances longer than that period of time and will not require significant grading. For a discussion of the stability of the coal refuse pile in Schoolhouse Canyon, see Refuse Disposal in the Miscellaneous Section of this Technical Analysis.

The applicant did not provide any information on expected swell factors in the backfilled material. Due to the minimal amount of material which will be handled, determination of a swell factor is not critical to the evaluation of backfilling and grading.

The material that the applicant will be using for backfilling and grading is primarily the weathered strata in the Blackhawk formation. This material is not toxic and has been supporting vegetation on old fill areas. The areas which will be graded will also be covered with 6 inches of suitable topsoil material which will also promote reestablishment of vegetation. The coal refuse pile which exists in Hardscrabble Canyon will be covered with four feet of suitable plant growth media, revegetated and riprapped where necessary to ensure that refuse material will not impact surface water drainages. The active refuse pile which exists in Schoolhouse Canyon will be covered with 18 inches of suitable material (for further discussion on the Schoolhouse Canyon refuse pile, see the Miscellaneous Section of this analysis). This depth of cover should provide a sufficient root zone for the vegetation and prevent upward migration of salts. The availability of the cover material and topsoil material is

discussed in the Topsoil Section of this Technical Analysis. All material will be obtained from the permit area.

Backfilling and grading activities will commence as soon as mining is complete in each of the portal areas, and weather allows.

C. Evaluation of Compliance

The applicant has proposed to grade the mine facilities areas to a configuration compatible with the surrounding terrain. Existing slopes have been shown to be stable by the performance history, and postmining slopes will also be stable. Two slope areas will be significantly regraded to lesser angles which will increase stability. The applicant is proposing to cover coal refuse with an adequate depth of suitable material and other areas will be covered with 6 inches of topsoil material. Backfilling and grading will occur as soon as possible after mining is complete. The applicant has committed to reseeding and replanting where necessary to maintain the reclaimed areas, but no mention was made of methods to be used to reclaim rills and gullies that might form. The applicant is not in compliance with this section.

D. Proposed Stipulation

The applicant must submit a plan for regrading of rills and gullies that might develop once reclamation is complete. This plan must identify how often the site will be inspected to determine if this type of erosion has occurred and at what size of the rills and gullies the applicant intends to commence filling of the gullies. This plan must be submitted within 30 days of permit approval.

E. Summary of Compliance

With the proposed stipulation, the applicant is in compliance with this section.

F. Proposed Departmental Action

Approval of this section with the proposed stipulation.

G. Alternatives to the Proposed Action

There are no technical or economically viable alternatives to the proposed action.

H. Impacts of the Proposed Action

The impacts from the proposed action would be beneficial. An existing operation would be reclaimed upon completion of mining. The area would be contoured to a configuration more compatible with the natural surroundings than the existing workings currently are.

WILDLIFE

A. Description of Existing Environment

The mine plan area occurs in the submontane and montane life zones. It occupies nine wildlife habitat types which include: riparian/wetland types, cliff and talus, sagebrush, pinyon-juniper forest, shrublands, aspen, ponderosa, park land, and spruce-fir forests. An estimated 200 vertebrate wildlife species could potentially inhabit the site.

Aquatic habitats associated with the mine plan area support three species of game and four species of non-game fish. Game fish include the yellowstone cutthroat, rainbow, and brown trout. Respectively, spawning occurs between early-May to mid-June, mid-March through June, and mid-October to late December. Due to the near year-round spawning of these three species, streambed and water quality integrity are critical factors to the maintenance of these populations. Additionally, four non-game species occur. These are the speckled dace, mountain sucker, carp, and mottled sculpin.

It should be noted that the Price River stream sections associated with this project, as with much of the terrestrial habitats, have been disturbed historically from highway construction, mining, industrial activities and the like.

Two hundred and forty nine species of birds are known to occur in the biogeographic area of the Price River Mine Complex. In particular, water associated terrestrial and cliff habitats are of importance to many species, especially birds.

Wetlands and open water are locally important to waterfowl, especially during nesting (15 March to 15 July) and through migrations (15 March to 15 May and 15 August to 15 October). The great blue heron is a year long resident of the project area and occupies riparian habitats.

The project area provides substantial habitat for a multitude of raptors including turkey vultures, bald and golden eagles, four species of falcon, six species of hawks and seven species of owls. Most of these species are of high interest. The available information for most raptor species is not site specific. However, it is known that the golden eagle and the American peregrine falcon are year round residents and the bald eagle and arctic peregrine falcons winter residents. There are no known occurrences of nesting bald eagles, American, or arctic peregrin falcons. There is a known active golden eagle aerie in R9E, T13S, Section 5 NW1/4. The mine plan and adjacent areas have been ranked as being of substantial value to golden eagles.

Other avian species of interest include blue, ruffed, and sage grouse, California quail, chukar, band-tailed pigeon, morning doves, yellow-billed cuckoo, assorted woodpeckers and sapsuckers, Grace's warbler, Scott's oriole, and the grasshopper sparrow.

A wide range of mammals occupy the region of the Price River Complex ranging from small mammals (least shrew and various bats) to medium sized mammals (snowshoe hare, cottontails, northern flying squirrels, and various mustelids) to larger mammals including the gray wolf, red and kit fox, black bear, various cats, mule deer, and elk.

The permit area includes year round concentrations of mule deer. Units 276 and 32 of the project site include high priority range. No known annual fawning areas have been identified although riparian and aspen zones are known to be important for both fawning and calving. No known annual calving grounds have been identified. A portion of the permit area includes high priority elk winter range.

B. Description of Applicant's Proposal

The applicant has provided a multi-faceted program for the protection and enhancement of wildlife and their habits. The program includes:

- o access control -- the applicant has limited access of non-mine personnel to the mine plan area through secured gates and a security staff. This measure is intended to limit human interference with wildlife and to prevent hunting on mine property.
- o minimize disturbance -- the applicant intends to minimize disturbances related to mining and mining activities. For future disturbances, the applicant will consult wildlife management agencies and obtain information on species which occupy the areas and mitigation suggestions.
- o employee education -- the applicant will educate employees as to general awareness of wildlife problems and related environmental values through training programs. Personnel involved with handling waste have been trained in spill prevention and cleaning procedures.
- o powerline design -- the applicant has and will construct all powerlines in accordance with environmental criteria for electric transmission systems per USDI and USDA, 1970.
- o waterway protection -- the applicant has proposed a sediment control and pollution prevention plan for waterways. This includes sediment ponds, berms, diversions, petrochemical containment, revegetation, and buffer zones.
- o habitat restoration and enhancement -- the applicant's habitat restoration and enhancement plan includes revegetation with grasses, introduced forbs, and few shrubs and trees.
- o roads -- the applicant will consult wildlife management agencies during the planning stages of any roads or potential barriers to wildlife. Agency mitigation plans will be adopted by the applicant.

It is the intention of the applicant to notify UDWR of any high interest wildlife species which occur on a regular or irregular basis in the mine plan area.

C. Evaluation of Compliance

The applicant's proposed wildlife protection and enhancement plan is adequate. The revegetation plan proposed by the applicant will offer both cover and food to wildlife in the area and is suitable for reaching the proposed grazing postmining land use.

The U. S. Fish and Wildlife Service has stated that no threatened or endangered species are known to exist in the area, therefore, no mitigation or protection plans are required.

The applicant is in compliance with this section.

D. Proposed Stipulations with Justification

Where golden eagle nests are found in the future, surface disturbances will not occur within 0.25 or 0.5 miles of the nest when surface disturbances would be below or above the nest, respectively.

Surface disturbances will not be allowed on elk critical winter range during the period November 1 through May 15.

Where elk calving areas are identified in the future, exploration activities would not be allowed during the period June 1 through July 15.

E. Summary of Compliance

The applicant will be in compliance with this section upon showing compliance with the above stipulations.

F. Proposed Departmental Action

Approve this section of the mining and reclamation plan with the above stipulations.

G. Alternatives to the Proposed Departmental Action

None

H. Environmental Impacts of the Proposed Departmental Action

Due to the shift in land-use from a multiple-use to a primarily grazing land-use, impacts include the potential for a loss of wildlife habitat and general wildlife values. Although no additional acreage will be disturbed by this action, the potential for impacts associated with human presence and increased mining activity exists.

REVEGETATION

A. Description of the Existing Environment

The applicant's mine is located in an historic mining area. Man controlled land influences include grazing, highway construction, mining and power generation which have affected this area for decades.

The Price River Mine area is characterized by mean annual rainfall of 13 to 25 inches across the permit area with the majority of precipitation occurring in the winter. The applicant has identified six vegetation types in the permit area and three disturbed land types.

Five of the six vegetation types will be affected by mining activity. They are sagebrush-grasslands, mixed brush communities, coniferous forest, pinyon-juniper forest, and riparian bottom. A vegetation type which occurs in the permit area but will not be disturbed is the saltbrush type. The disturbance areas are categorized as pre- or post- SMCRA mining disturbances, and other disturbances.

The sagebrush grasslands occupy steep dry slopes and lower elevation drainages in the permit area. Artemisia tridentata and A. nova are the sage species which occur in this type. In addition, approximately 50 forbs, seven wheatgrasses, smooth brome, blue grama grass, muhly, indian rice grass, two bluegrasses and needle-and-thread grass occur in this type.

The mixed brush type occurs in relatively moist sites and maintains highly variable species compositions. The most common shrub species in this type are scrub oak (Quercus grambelii), snowberry (Symphoricarpos occidentalis), and sagebrush (Artemisia tridentata). This type includes approximately 17 grass species, 71 forbs, 2 succulents, and 32 shrubs and sub-shrubs.

The pinyon-juniper type is generally found on dry, rocky slopes and flats. The dominant species are pinyon pine (Pinus edulis) and Utah juniper (Juniperus osteosperma). The type is accompanied by other species including mountain mahogany (Cercocarpus ledifolius), scrub oak, sagebrush, rabbitbrush (Chrysothamnus nauseosus and viscidiflorus), and wheat grasses (Agropyron spp.).

The riparian bottoms include a larger number of species. The type is either characterized by the presence of cottonwoods (Populus augustifolia) or open grasslands. The type includes an abundance of grasses, rushes, sedges, forbs, trees, and shrubs.

The coniferous forest type generally occurs at higher elevations on north facing slopes and in some of the moister drainages in the permit area. The dominant tree in this type is Douglas fir (Pseudotsuga menziesii). The type also includes Utah juniper, Ponderosa pine (Pinus ponderosa), and white and subalpine fir (Abies concolor and lasiocarpa). Ground cover in this type varies inversely with forest density.

Of the non-major vegetation types, saltbrush (Atriplex canescens) and grease wood (Sarcobatus vermiculatus) dominate the saltbrush community. Disturbed areas are dominated by Russian thistle (Salsota kali), summer cypress

(Kochia scoparia) convolvulus (Convolvulus arvensis) and rabbitbrush.

B. Description of the Applicant's Proposal

The applicant's mine plan area encompasses 767 acres of disturbed land of which 144 acres are directly associated with the proposed mine plan and of that 121.5 acres will ultimately be reclaimed. The acreage that will not be reclaimed includes permanent roads (See the ACR response, April 5, 1983).

As the Crandall canyon riparian bottom has already been disturbed, the applicant has not sampled the vegetation community for baseline information. However, the other four vegetation types have been sampled for baseline cover information and reference areas have been established and sampled for all five types. Productivity estimates have been provided by the SCS. No sampling has been performed by the applicant in estimating productivity.

Sample adequacy has been achieved for all reference areas and plant communities to be disturbed (See Table 3.2 in the permit application, page 493). Vegetative cover on all reference areas was not significantly different ($t = 0.05$) from corresponding affected areas in Barn Canyon (See Table 3.4 in the permit application, page 495). Vegetative similarity indices were 50 percent or greater. Reference areas for sites previously disturbed have been chosen on a subjective basis but are felt to be representative of the areas disturbed. The applicant will monitor reference areas at three to five year intervals. Site conditions will be evaluated by the local SCS office, should problems arise, the applicant will discuss and act upon improvement recommendations made by DOGM and SCS.

Three seed mixes have been proposed for different situations in the permit area. The applicant provides a seed mixture along with possible variants for topsoil stockpiles (See Table 9-2-1 in the permit application, page 535), moist sites and north facing slopes (See Table 9-2-2 in the permit application, page 537), and dry sites, south facing slopes, roadways, and spoil areas (See Table 9-2-3 in the permit application, page 540)

A specific seed mix will be broadcast and covered over areas to be revegetated. Each mix contains greater than 25%, by pure live seed, highly competitive introduced species. However, the introduced species are deemed suitable to the permit area due to historic land use. The seed mixes will establish and provide erosion control probably through a few highly successful individuals. Although these mixes will provide a permanent vegetative cover, it is unlikely that the reclamation will progress towards a native, diverse plant community.

The applicant has proposed a bulk seed mix of largely native plant materials which will be seeded in addition to seed mixes 2 and 3 (Tables 9-2-2 and 9-2-3). The applicant has included over 60 trees, shrubs and forbs. The proportion of species within the bulk mix will be based on percentage by weight with the percentage of each species being equal. Of course, species composition of the final mix will be limited by availability.

Four plant lists (See Tables 9-2-6 to 9-2-9 in the permit application pages 546 to 549) have been provided for shrub and tree plantings. The species

listed are generally appropriate providing they are planted in suitable locations. The applicant has proposed that a minimum of three shrub and two tree species be planted at a minimum density of 400 species per acre on moist sites and that a minimum of five shrub and two tree species be planted on dry sites at a minimum density of 300 individuals per acre.

After topsoil replacement, the applicant will mulch the area to be reclaimed with either cover crop, or a straw or hay mulch. The mulch will be crimped if appropriate. Straw/hay mulch would be applied at rates between 25 and 50 lbs/acre. Seedings and plantings will take place during the first fall planting season after topsoiling.

The applicant will monitor reclaimed sites for cover, productivity, density, and frequency during each of the first three years and in subsequent odd numbered years to determine if supplemental planting and seeding are needed. Analyses will be obtained using the same sampling and statistical techniques used in collecting baseline data. Revegetation areas will be inspected several times each year to identify any problems.

C. Determination of Compliance

The applicant has provided a plan for revegetation adequate to meet each of the pertinent regulatory requirements. Reference areas have been established and will be managed to provide a standard for evaluation of revegetation success. A revegetation plan has been prepared which provides information on the species which will be planted and the seeding rates. Seeding will occur by broadcasting and either a cover crop or straw/hay mulch will be applied. Introduced species will be planted, but this has been determined to be suitable for this site because of utilization of these species in this area prior to the proposed operation.

Reclamation can be feasibly accomplished by the plan described above.

D. Stipulations with Justification

None

E. Summary of Compliance

The applicant will be in compliance with all regulatory requirements pertaining to revegetation.

F. Proposed Departmental Action

Approval of this section of the mining and reclamation plan.

G. Environmental Impacts of the Proposed Departmental Action

The Price River Mine Complex is an existing operation. No additional surface disturbances will result from approval of the proposed operation during the permit term. Approval of this permit will allow the reclamation of the disturbed sites once mining is complete. This would have the effect of enhancing the land use for grazing and wildlife, and stabilize surfaces that do not currently have any vegetation growing due to use of the area for mining.

H. Alternatives to the Proposed Action

There are no technically viable alternatives to the proposed revegetation plan.

ROADS

A. Description of the Existing Environment

With the exception of the road leading into Sowbelly Gulch, roads to the surface facilities areas are owned by the county. Roads were constructed prior to 1977 to access previous mining operations in this vicinity. Road grades in the surface facilities areas generally do not exceed five percent as they are constructed on graded bench areas adjacent to streams.

B. Description of the Applicant's Proposal

The applicant has provided each of the roads during the life of operations with culverts that also serve as part of the surface water control plan associated with drainage diversions. In some cases, these diversions are adjacent to the roads and serve as collectors for road runoff. Where that does not occur, roads may be specifically provided with triangular ditches that intercept runoff. Culvert sizing is based on the flow that can be expected from a 10-year, 24-hour storm event under inlet control. Nomographs from the Bureau of Public Roads were utilized to determine sizing requirements. Each culvert is provided with a metal end section at the inlet and outlet, stone or concrete headwalls and impact dissipaters, i.e. riprap, at discharge points (page 414, Chapter VII of the permit application). Design criteria for 21 culverts was supplied in the August, 1983 submittal from PRCC. Additional culvert information was supplied in the October 31, 1983 submittal.

The surfacing materials on the roads in the mine plan area are of suitable quality. The road in Hardscrabble Canyon is a county road and would be maintained according to county requirements. The other roads in the permit area have been in existence for several years and have not had any adverse impacts on the environment as evidenced by vegetative growth along the sides of the roads and the quality of the surface water draining from the facilities areas. Some water quality samples did show high oil and grease concentrations, but this most likely came from the maintenance and machinery storage yards at the sites.

The stability of the road cuts and fills has been shown to be adequate based on the performance history of the slopes along the roads. The slopes have been in existence for over seven years and have not shown any significant degradation. Roads on the bench areas will be graded during the final reclamation process to a stable configuration along with the rest of the bench area.

Regrading of the surface facilities area will result in restoration of the roads. Reclamation of the roads will require removal of some culverts, however, several will stay to provide some type of permanent access to the site. This access is required for utilization of the area for light grazing. In addition, the road in Hardscrabble Canyon is a county road. In Sowbelly Gulch, three culverts will be left in the surface facilities area, but the reclamation plan for the road below that site is not known. In Hardscrabble Canyon, there are several bridges that will remain as part

of the access road. The Willow Creek area will be left with one set of culverts to allow access over the stream. Castle Gate will retain three sets of large culverts. One of these is part of the diversion system for the refuse pile constructed in Schoolhouse Canyon.

C. Evaluation of Compliance

A check of culvert sizing demonstrated that there are several undersized structures at the site which will require continued maintenance to achieve adequate surface water control. The applicant has requested that the drainage control plan for Sowbelly Gulch and Hardscrabble Canyon be accepted in its existing state because both of these sites will be phased out in the next two to four years. In its current condition, culvert C-1 in Hardscrabble Canyon has a high potential for erosion damage. C-1 is a 24-inch corrugated metal pipe that could potentially receive 690 cfs from a drainage area of 550 acres. This culvert is associated with diversions D-1 and D-4 which are described in the surface water hydrology portion of this Technical Analysis. As stated therein, the structures are all scheduled to be removed when the Goose Island refuse pile is reclaimed in 1984. Another undersized culvert at Hardscrabble Canyon is C-4, which is a 60-inch CMP that could potentially receive 700 cfs from a drainage area of 623 acres. While not as serious a situation as that presented by C-1, C-4 is not fully adequate for the required flow capacity. In this case, however, C-4 replacement would necessitate closure of the portal area and load-out facility access for an untenable amount of time. Given the short-lived nature of Hardscrabble Canyon, it is unlikely that environmental damage will occur due to this culvert. In addition, the applicant will maintain these structures during the short time that they will be in existence until reclamation is complete.

In Sowbelly Gulch, culvert C-3, a 72-inch culvert, is handling flow from at least 1006 acres. This drainage area yields a flow of approximately 825 cfs, while the pipe can carry only 350 cfs at an HW/D of 1.5. This particular culvert will be left as part of reclamation activities, at which time an overflow section, RC-2, will be created in the road to reduce the flow requirement of the culvert. Another undersized culvert, C-10, is located near the confluence of Sowbelly Gulch with Spring Canyon. The sixty-inch culvert is not sized to handle the runoff from the 1,947-acre watershed. The applicant has provided statements to the effect that the culvert has performed effectively for twenty years due to overflow sections and ditches in the adjacent Spring Canyon road that can route excess flow away from the culvert. However, to reduce potential erosion and maintenance problems that might arise after the Sowbelly Gulch site is reclaimed, the applicant has stated that plans will be made to restore flow capacity in Sowbelly Gulch at the culvert C-1 location. These plans will be submitted to the regulatory authority for approval within ninety days prior to site reclamation.

The undersized structures in Hardscrabble Canyon and Sowbelly Gulch appear to be functioning adequately based on past performance. In addition, the applicant intends to maintain the site while they are in place to ensure that the structures will function adequately. The extent of the under-design is such, however, that there should be no delays in reclaiming

the structures within the time frame proposed by the applicant. Timely reclamation will forestall any damage that may be caused by future storm events. Therefore, the applicant shall reclaim Hardscrabble Canyon and Sowbelly Gulch prior to December 31, 1986 and Goose Island prior to August 31, 1985. If the existing surface water control structures are not reclaimed and replaced with adequately-sized channels by that time, the applicant shall upgrade the structures according to the schedule set forth in the stipulation (see proposed stipulation in the Surface Water Hydrology section).

D. Proposed Stipulations

See the Surface Water Hydrology Section of this Technical and Environmental Assessment for the applicable stipulation.

E. Summary of Compliance

The applicant is in compliance with the sections of the regulations dealing with roads.

F. Proposed Departmental Action

Approve the permit.

G. Alternatives to the Proposed Action

There are no technically-feasible or economically viable alternatives to the proposed action.

H. Impacts of the Proposed Action

Implementation of the proposed plans for road reclamation should reduce the need for road maintenance at the close of mining operations. The existing drainage structures have performed adequately, and road stability has been maintained. There will be no adverse impacts from the currently-existing roads provided that maintenance during operations is routinely implemented.

SPECIAL PERFORMANCE STANDARDS - OPERATIONS ON PRIME FARMLAND

A. Description of the Existing Environment

There has been no history of farming in the area. The Soil Conservation Service (SCS) has determined that the area contains no prime farmland.

B. Description of the Applicant's Proposal

Based upon the historical use of the land and the SCS findings, the applicant has requested that a negative determination of prime farmland be made.

C. Evaluation of Compliance

The applicant has provided proper documentation that the land is not prime farmland. This section is in compliance.

D. Proposed Special Stipulations with Justification

None

E. Proposed Departmental Action

Approve the applicant's request that a negative determination be made.

F. Alternatives to the Proposed Departmental Action

None

G. Environmental Impacts of the Proposed Departmental Action

None

POST-MINING LAND USE

A. Description of Existing Environment

The potential land uses within the mine plan area are restricted due to inherent environmental restrictions such as slope, soil texture and water availability. Land in and surrounding the mine plan area is currently used for non-intensive, non-developed uses such as grazing, recreation, watershed, wildlife habitats, and in localized areas, small surface developments to support the underground coal mining activities. No farming activities exist within or near the mining area. Most of the area currently exists for light grazing and wildlife habitat. The area has been previously disturbed from past mining operations as discussed in Chapter V of the mining plan.

B. Description of Applicant's Proposal

Active surface disturbance, as discussed in Chapter III of the mine plan, will be necessary to support underground mine development. Surface disturbances anticipated during the permit term are in existence now and equal approximately 100 acres. Upon completion of the surface operations at the site, the affected areas will be reclaimed pursuant to the site specific reclamation plans presented in Chapter IX. The proposed post-mining land use is light undeveloped grazing. The applicant has stated it does not intend to request any re-designation of the present land use which is undeveloped pursuant to sub-definition (j) in UMC 700.5.

NOTE TO OSM: Subsequent to the work to be completed by Mark H., this section will have to be modified to reflect a change in postmining land use.

C. Evaluation of Compliance

The applicant has submitted information on the pre-mining uses, land capability and plan for restoration of the disturbed area. The determination of premining land use has been properly made, and the proposed postmining land use is appropriate for this situation.

The applicant has adequately made a commitment to restore the mined land to the proposed postmining land use and has described the means by which this is to be accomplished.

The applicant is in compliance with this section.

D. Proposed Stipulations with Justification

None

E. Summary of Compliance

The applicant is in compliance with this section.

F. Proposed Departmental Action

Approve this portion of the Mining and Reclamation Plan.

G. Environmental Impacts of the Proposed Departmental Action

No significant impacts are foreseen.

AIR RESOURCES PROTECTION

A. Description of Existing Environment

The proposed mine plan area is in a mean annual precipitation belt of 13 to 26 inches. Precipitation generally increases to the northwest. Most of the precipitation is in the form of snowfall in winter months. Temperatures are highly seasonal, with a short summer season (maximum temperatures in the low 80's) and cold temperatures in the winter (average lows are 5-10 degrees F in January). Air patterns generally follow the regional drainage patterns. Winds are moderate (generally not exceeding 20 mph) and are from the west and northwest. Air quality is generally good, and most of the region is designated a class II PSD area.

B. Description of Applicant's Proposal

Monitoring

The applicant does not propose to conduct any air quality monitoring programs.

Fugitive Dust Control

Fugitive dust will be controlled by the following measures:

- o access roads -- treatment with magnesium chloride and frequent watering
- o truck haulage -- intermittent application of magnesium chloride and routine water sprays
- o coal conveyors -- covering conveyors
- o bag houses -- negative pressure bag houses are installed and operating at all above-ground coal transfer points
- o drop and load-out points -- storage areas are filled by stacking tubes; load-out from piles is by sub-pile chutes; rail cars are sprayed with a glue-like, surface encrusting solution shortly after loading
- o storage piles -- with the high moisture content (10%) and quick load out, there is little time for desiccation; piles will be watered when it is necessary for longer storage

C. Evaluation of Compliance

The climatological data is acceptable. The fugitive dust control plan is adequate. No air quality monitoring plan is required, as the Utah Bureau of Air Quality has indicated that a program is unnecessary. The applicant is in compliance.

D. Proposed Stipulations with Justification

None

E. Proposed Departmental Action

Approve the air quality control plan.

F. Alternatives to the Proposed Departmental Action

None

G. Environmental Impacts of the Proposed Departmental Action

The adverse environmental impact of the proposed action on the regional air quality will be slight, and will be temporary, not extending beyond the reclamation phase of the proposed operation.

SUBSIDENCE

A. Description of the Existing Environment

The Price River Mine Complex is located in the Book Cliffs coal field in Central Utah. For a detailed description of the geology of this region, see the Ground Water Section of this Technical Analysis. The area is very rugged with high plateaus dissected by steep-sided stream channels. The operation will be mining several seams during this permit term under varying depths of cover ranging from approximately 250 feet to 2500 feet. The areas of shallow cover coincide with stream channels. Sandstone layers exist throughout the permit area which are fairly continuous both horizontally and vertically. The Castlegate Sandstone is approximately 500 feet thick and is located above all of the coal seams to be mined except in areas where stream channels have eroded through it. Below the lowest seam to be mined during this permit term is the Starpoint Sandstone. Interbedded with all of the coal seams are many more minor sandstone layers. The area has already been extensively mined within the permit term area, and in some areas, up to 5 seams have already been extracted. Plate 2 submitted with the hydrology report prepared by Vaughn Hansen Associates, June 1983 attachment to the permit application shows the extent of the previous mining.

The renewable resource lands and structures which the applicant has identified which should be protected by mining during this permit term are the Price River, the D&RGW railroad, two federal highways and the Price River Canyon Recreation Area located in Sections 21 and 28 along the northern border of the permit term area (See page 70 of the permit application). The highways and railroad are located along the Price River stream channel. Above the mine on the top of the plateau, the land is primarily used by wildlife and cattle for light grazing. There are no major aquifers which will be disturbed (See the Ground Water Section of this Technical Analysis). For a discussion of cultural resources, see the Cultural Resources Section of this Technical Analysis.

B. Description of the Applicant's Proposal

The applicant is intending to protect the Price River, D&RGW railroad, federal highways and the Price River Canyon Recreational Area by limited mining under these areas. The applicant has defined an area on the surface under which there will be no pillar extraction or longwall mining by projecting a 45 degree angle of draw from the lowest seam to be mined to the surface. Within these areas, there will be no pillar extraction and in areas where multiple seam mining will occur, the pillars will be superimposed between the seams to be mined. Pillars will be designed to be stable using methods defined by the National Coal Board (see additional information submitted by the applicant August, 1983). A further review of the pillar design criteria showed that the method proposed by A. H. Wilson in "The Mining Engineer", June 1972, Number 141, is the method used by the National Coal Board as described by Price River Coal Company. This method is very conservative as applied by Price River and should allow for the development of pillars which will be stable for a relatively long period of time. Additionally, the operator is planning to design the pillars in these

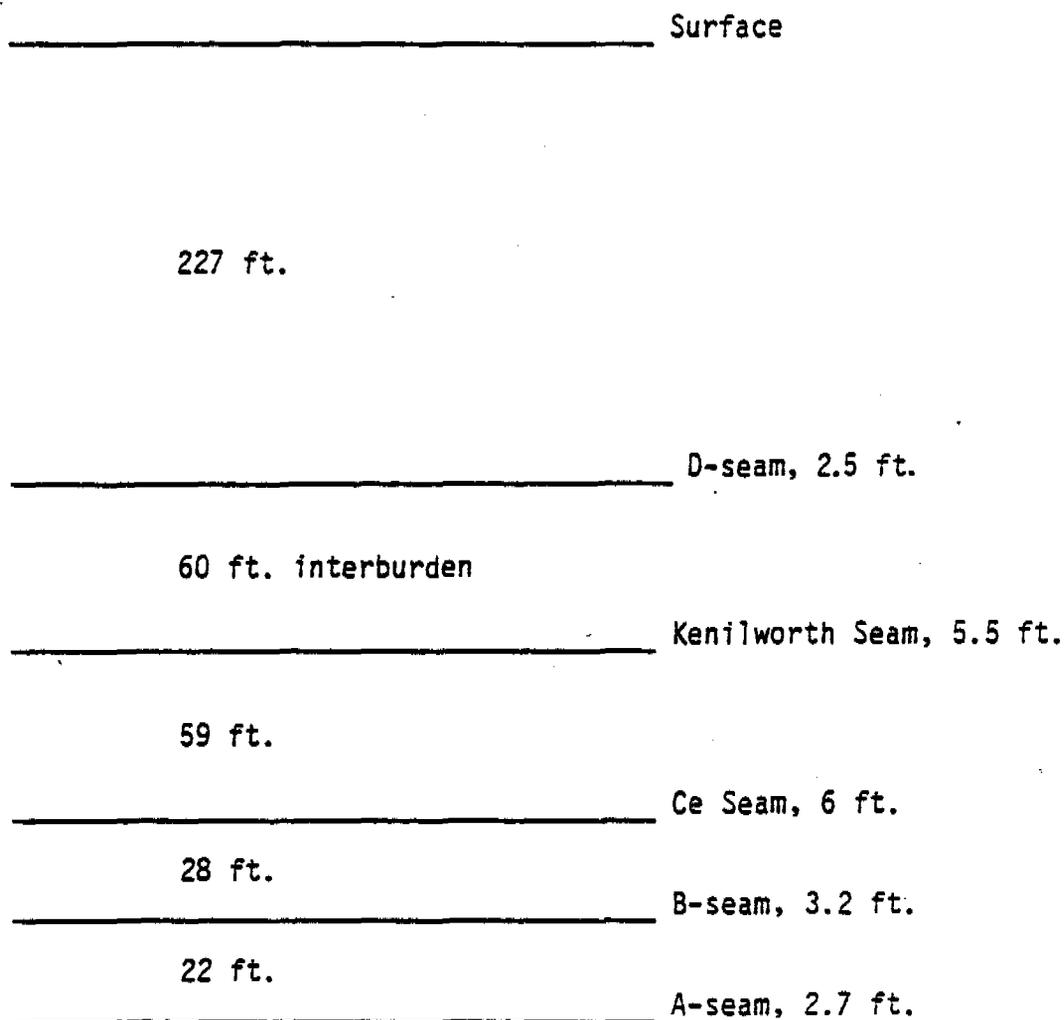
areas for the lowest coal seam to be mined and then superimpose this same size pillar in all upper seams to be mined (Phone Log, August, 1983 with Laine Adair, Price River Coal Company). As a result, the pillars in the upper seams will be very conservatively designed. In addition, past mining experience in this region indicates that the coal has a tendency to remain very stable over the long-term. Abandoned operations have been investigated and the coal pillars show only minor degradation (Phone Log, August, 1983 with Laine Adair, Price River Coal Company).

In one area of the mine under the Price River in Section 35, there will be up to five seams extracted where one seam has already been mined out. Based upon the mine maps and drill log data supplied by Price River, these five seams would be mined within only 250 to 350 feet of the surface, and up to 30 feet of coal between the five seams could be removed. Figures 1 and 2 attached, show drill log information from two holes located in the vicinity of the area in question. Due to the relatively thin interburden between some of these layers and that the uppermost layer has been mined leaving pillars which were not regularly shaped, concern exists as to the feasibility of the proposed operation to protect the river, roads and railroads. It is the operators contention that the sandstone layers in the mine area will support the layers between the seams and between the upper seam and the surface and that mining of a similar nature has occurred in other operations in this area. Substantial information on conditions in other areas has been provided by the applicant indicating that multiple seam mining with thin interburden has taken place and there has been no subsidence problems noticed due to lack of any pillar failure. Also a recent U.S. Bureau of Mines study at the mine showed that under certain conditions, the effects of mining between seams is often difficult to detect (Phone Log, August, 1983, with Laine Adair, Price River Coal Company). Drill log information was submitted by the applicant in November, 1983, substantiating that extensive sandstone layers do exist in the area of concern. In summary, the geologic conditions at the site show that multiple seam mining can occur with relatively thin interburden and the effects will be minimal between seams. With the additional conservatism in the mine design provided in the pillar design, protection of the Price River should be achieved.

In this operation, the surface effects of subsidence on the high plateau are also mitigated by the existance of the sandstone layers which are prevalent throughout the site. It is the applicant's contention that the sandstone layers will have a tendency to bend as the area is mined out and finally settle on the caved strata above the workings. This would prevent severe cracking at the surface and would cause only a gradual settling. To date, there has not been any significant cracking of the surface even though up to two feet of subsidence has been measured (June 1983 submittal).

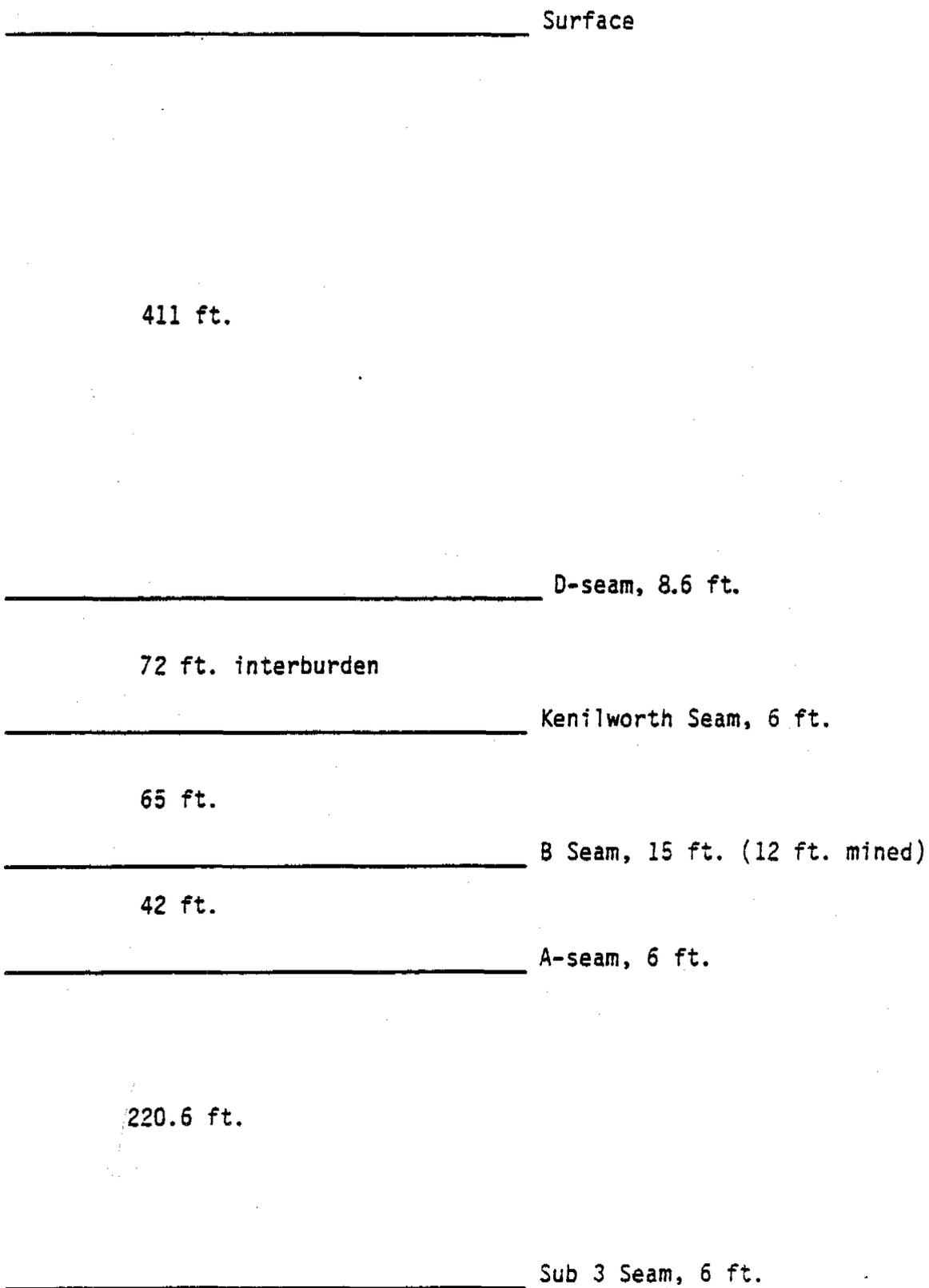
The applicant has proposed to monitor the areas above the mine using areal photography and grid surveys on the surface to develop data to establish the effects of mining on the surface (Permit Application, page 68). The monitoring points are shown on Exhibit 3-21 and will be advanced as mining progresses. In addition, the applicant has committed to monitoring in the vicinity of the Price River prior to mining within the

DRILL HOLE MC-52



Although this hole was not drilled through the Aberdeen to the Sub 3 Seam, the occurrence of the Aberdeen is very consistent throughout this area. Detailed lithologic information was submitted for three other drill holes and in each of these holes, the Aberdeen sandstone existed.

DRILL HOLE MC-6



area defined by the angle of draw (see the August, 1983 submittal). Therefore, information will be obtained supporting the applicant's proposed plan. If subsidence impacts occur which were not planned, then the opportunity exists for revision of the mine plan.

C. Evaluation of Compliance

The applicant has proposed a plan which will protect significant structures and resources from the effects of subsidence. In addition, a monitoring plan has been proposed to evaluate the proposed subsidence control plan. Based upon information provided by the monitoring plan, the mining operation can be modified if necessary to mitigate subsidence impacts. The applicant is in compliance with this section.

D. Proposed Stipulations with Justification

The applicant shall not cause surface subsidence effects from underground mining disturbance to occur outside the approved permit area.

The applicant shall submit to the regulatory authority a cultural resources survey, and if necessary plans for mitigation of impacts to these resources ninety days prior to any longwall mining or retreat mining in areas previously undisturbed by mining or in areas where planned mining will create any surface disturbance.

E. Proposed Departmental Action

Approval of this section of the mining and reclamation plan with the proposed stipulation.

F. Alternatives to the Proposed Departmental Action

None

G. Environmental Impacts of the Proposed Departmental Action

With the proposed stipulation, the applicant has proposed an operation which will protect significant resources and structures from subsidence. As such, no impacts resulting from subsidence caused by the proposed operation are anticipated.

H. Alternatives to the Proposed Action

There are no technically viable alternatives to the proposed plan.

BONDING

A. Description of Applicant's Proposal

The applicable period of liability beyond the cessation of production is ten years. The applicant has identified only one bonding increment. The applicant has prepared and submitted to OSM estimated bond amounts and supporting calculations, included here as Attachment 1. Summaries of total bond amounts proposed by the applicant are:

<u>Area</u>	<u>Proposed Bond (\$)</u>
Sowbelly	142,177
Hardscrabble	346,339
Castle Gate & Utah Fuel #1	2,552,929
Willow Creek	132,377
TOTAL	3,173,822

A \$350,000 bond for the Crandall Canyon site has been previously posted in 1980, and is therefore not included in this analysis. The applicant also proposed a series of alternative bond amounts assuming the possibility of a variance for the 4 foot cover requirement over refuse material.

B. Evaluation of Compliance of the Proposal

The OSM has analyzed the bond estimates and supporting calculations provided by the applicant. Applicant estimates were based on standard construction cost estimation industry guides (such as the Dodge Guide for Heavy Construction -- used primarily for the earthwork estimates -- and the Means Guide used for building demolition) and on past experience. All costs from references not using a 1983 dollar basis were escalated to 1983. Calculations by the applicant are broken down into five general categories of reclamation activities:

- o demolition and disposal of buildings
- o portal sealing
- o grading
- o topsoil replacement (re-soiling)
- o revegetation

Unit costs for each of the five categories above were calculated by the applicant, and the unit costs were then applied to each of the four areas to be reclaimed. The following conclusions were made as a result of the OSM analysis of the unit cost calculations and subsequent bonding estimates:

- o there is no provision for a contractor fee which would be necessary if the operator were to default and the project were to be taken over by a contractor
- o on the grading unit cost section, the stated unit costs for dozers and scrapers may have been reversed; the total cost of

\$1.05 per cubic yard, however, is reasonable and therefore adequate for subsequent bond calculations on a site-by-site basis

- o after performing a cost estimate of necessary maintenance activities added to a standard 10 % contingency factor, the 15 % contingency and maintenance factor used by the applicant has been judged to be adequate
- o acreage estimates for disturbed areas (and subsequent reclamation activities) do not include 3 acres for Gravel Canyon
- o an incorrect cubic yard was used in the Hardscrabble re-soiling calculations. The actual volume required is 39,140 cubic yards
- o an incorrect cost per cubic yard was used in the Sowbelly re-soiling calculations (the correct figure should be \$3.50 per cubic yard, resulting in a total re-soiling cost of \$45,428); however, the total estimate for Sowbelly does not carry through this error, and is therefore adequate
- o a cost has not been included for inflation for the next 2.5 years which is the time to the mid-permit review
- o costs associated with topsoil handling have been revised based upon the analysis presented in the Topsoil Section of this Technical Analysis
- o other calculations on the site-by-site basis were adequate

To resolve the deficiencies noted above, the following additions and changes will be made to the applicant's bonding calculations:

- o a contractor fees will be added as appropriate in the bond estimate reflecting the assumptions that references used by the applicant make concerning this cost
- o costs for grading and revegetation of the 3-acre Gravel Canyon site will be included
- o the difference in the Hardscrabble re-soiling error will be included
- o volumetrics and costs have been revised in the estimate to reflect the analysis in the topsoil Section. These include covering of the Castlegate refuse pile with 18 inches of material, and obtaining all material from on-site.
- o an amount has been added to the bond estimate reflecting anticipated inflation over the next 2.5 years. Based upon Bureau of Labor Statistics, Industrial Commodities Index, inflation over the past five years has been: 1979 - 16.5%, 1980 - 13.3%, 1981 - 8.4%, 1982 - 1.6%, and 1983 (annualized) - .9%. Clearly the trend is dramatically decreasing. Therefore, a 1% inflation

factor will be used.

The changes to the bond estimate have been made on the calculation sheet submitted by the applicant and included as Attachment 1 for comparison. The new total for the bond, including Crandall Canyon at \$350,000 is \$2,532,857.00

In addition to the bonding calculations, the applicant has submitted a certificate of insurance in its permit application. The certificate has adequate provisions for minimum liability coverage and duration of liability. However, the certificate expired April 1, 1983. The rider for notification of the regulatory agency if any substantive changes in the policy including termination or failure to renew is adequate.

C. Stipulations with Justification

The applicant shall provide evidence of a new certificate of insurance including the notification rider to replace the one which has expired. The certificate will be subject to OSM approval.

D. Summary of Compliance

The applicant will be in compliance with bonding provisions when the above stipulation is addressed.

E. Proposed Departmental Action

Approval of this section of the mining and reclamation plan with the above stipulation.

F. Environmental Impacts of the Proposed Departmental Action

Once sufficient bond is posted by the applicant and adjusted as required, there will be assurance of land reclamation as proposed in the mining and reclamation plan and approved by the regulatory authority. The process of reclamation would normally be completed by the applicant. However, under conditions of bond forfeiture, the regulatory agency will be responsible for the reclamation using the funds contained in the performance bond.

LEGAL, FINANCIAL, AND COMPLIANCE INFORMATION

Legal, financial, and compliance information can be found on pages 29 through 52, Chapter 2 of the permit application. The private mineral estate will not be severed from the surface estate by this operation by surface mining. Therefore, the documentation required by UMC 778.15(b) is not required or applicable.

Pursuant to UMC 778, and on the basis of evidence submitted by the applicant, the Utah Division of Oil, Gas and Mining and the Office of Surface Mining find that Price River Coal Company does not own or control any operations which are currently in violation of any law, rule, or regulation of the United States, or any state law, rule, or regulation, or any provision of the Surface Mining Control and Reclamation Act or the of the Utah State Program.

ATTACHMENT I

RECLAMATION COSTS AND BONDING

Resulting from comments in the Apparent Completeness Review, we have re-evaluated our reclamation costs and bonding needs through use of standard construction cost manuals. We have used the 1983 edition "Dodge" guides for most earth work and a 1976 "Means" guide for building demolition costs. Some items of reclamation are either not addressed in construction guides (portal sealing) or are not reasonably comparable to the methods or materials needed (planting and seeding). For such items we have projected our own costs which are based on either actual completed project costs (in the preceding six months) or from courtesy supplier/contractor budget figures.

We have divided reclamation costs into five phases: Demolition and Disposal of Buildings, Portal Sealing, Grading, Topsoil Replacement and Re-vegetation. Each item is discussed and assumptions explained as follows:

(1) Demolition and Disposal of Buildings

Cost per cubic yard of building demolition and disposal - no salvage value, was arrived at as follows: Denver rates for labor and materials were taken from Dodge 1983 guide to heavy construction costs, and a factor of 1.92 for labor costs from 1976 to 1983, and a factor of 1.77 for material cost from 1976 to 1983, were derived therefrom.

Means building construction data for 1976 was used as a basis for labor and materials - for demolishing small or single buildings, no salvage included, steel, the labor was:

<u>Crew</u>	<u>Daily, including Subsistence, Overhead and Profit</u>	<i>Note: Means recommends 25% additional costs for subcontractor work since 90% of jobs are completed this way. Therefore, add 25% to demolition costs.</i>
(1) Foreman	\$ 98.80	
(2) Building Laborers	186.40	
(1) Equip. Oper. (Med.)	123.20	
(2) Truck Drivers	<u>190.40</u>	
	\$ 598.40 X 1.92 =	\$1,148.93

Equipment, daily, including subsistence, O & P:

1 - Front end loader	251.70
2 - Hvy dump trucks	<u>258.70</u>
	\$ 510.40 X 1.77 =
	<u>903.41</u>

\$2,052.34

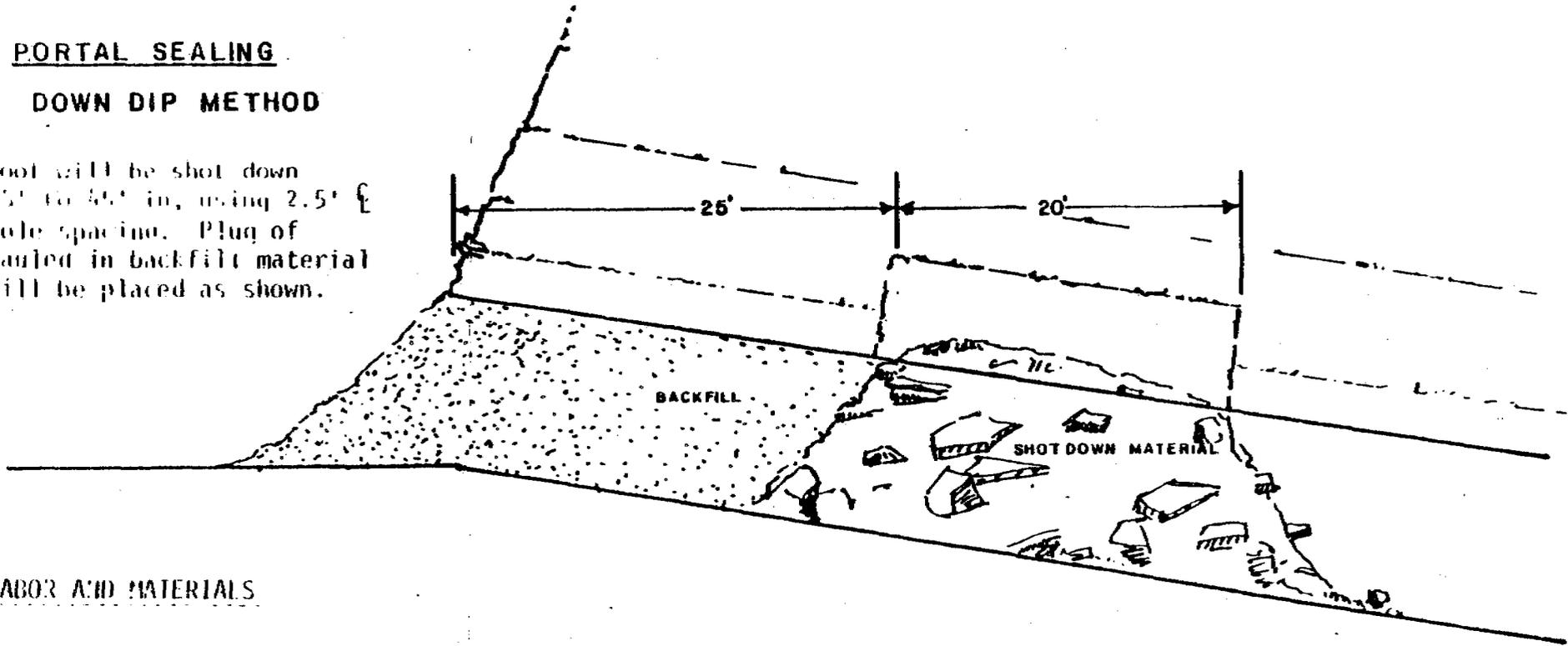
$$\frac{\$2,052.34}{12,300 \text{ cf/day}} = \$0.17^{.21} / \text{cu. ft./steel}$$

$$\frac{\$2,052.34}{8,500 \text{ cf/day}} = \$0.25^{.31} / \text{cu. ft./concrete}$$

PORTAL SEALING

DOWN DIP METHOD

Roof will be shot down 25' to 45' in, using 2.5' hole spacing. Plug of hauled in backfill material will be placed as shown.



LABOR AND MATERIALS

Blasting - 20' x 20' x 6' area
 @ 2.5' hole pattern = 64 holes

Hole Drilling:	1 man, 1 shift =	\$ 150.00
	Compressor & Stoner	300.00
Loadino & Shooting:	1 man, 1 shift =	150.00
Powder		100.00
Caps		100.00
Shot Hire		2.50

NOTE: There are 7 down dip portals on the permit area.

Total Cost: \$14,017.50

Backfilling

250 yds³ hauled and placed @ \$4.80/yd³ = 1,200.00

TOTAL \$2,002.50

Add 35% for OH, profit, subcontractor costs = \$2703.38



PRICE RIVER COAL COMPANY
 ENGINEERING DEPARTMENT
 HELPER, UTAH

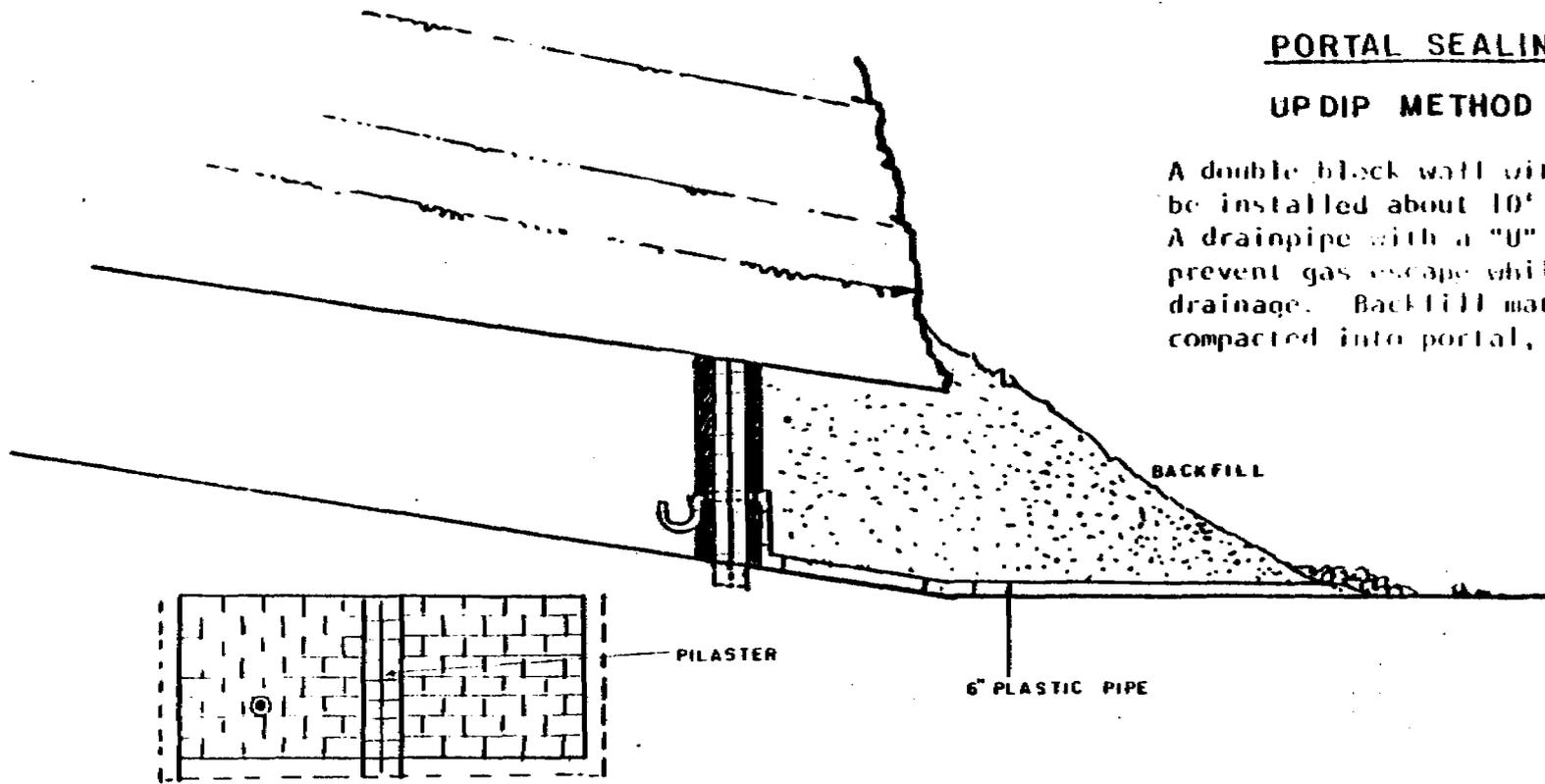
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21 pages

PORTAL SEALING

UP DIP METHOD

A double block wall with pilaster will be installed about 10' into portal. A drainpipe with a "U" tube inlet will prevent gas escape while allowing drainage. Backfill material will be compacted into portal, against wall.



COSTS

1. <u>Build Wall - 9' X 22'</u>		
A.	520 blocks - 76¢ ea. =	\$ 390.00
	Labor - 2 men, 1 shift -	300.00
B. <u>Sealing Wall</u>		
	4 bags mortar @ \$10/ea. =	40.00
	4 bags cement @ \$20/ea. =	80.00
	Labor - 1 man, 1/2 shift =	75.00
	<u>Subtotal</u>	\$ 885.00
2. <u>Install "U" tube and Discharge Pipe</u>		
	35', 6" pipe @ \$4.00/ft. installed =	140.00
	6" plastic "U" tube assembly =	150.00
	Installation: 1 man, 1/2 shift =	75.00
	<u>Subtotal</u>	365.00
3. <u>Backfill</u>		
	200 yds ³ of material hauled and pushed into place @ \$4.80/yd ³ =	960.00
	<u>TOTAL</u>	\$ 2210.00

NOTE: Two up dip portal seals on property will cost \$4,420.00.

ADD 35% for OH profit & subcontractor costs = 2983.50



PRICE RIVER COAL COMPANY
ENGINEERING DEPARTMENT
HELPER, UTAH

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Dump charges in 1976 were $\$2.50/\text{cu.yd} \times 1.92 = \$4.75/\text{yd.}$
in 1983; $4.75 \div 27 = \$0.18/\text{cu.ft.}$
_{.22}

Then, $\$0.17/\text{cu.ft.}$ for demolition, steel
0.18 dump charge
 $\$0.35/\text{cu.ft.}$
_{.44}

$\$0.25/\text{cu. ft.}$ for demolition, concrete
0.18 dump charges
 $\$0.43/\text{cu.ft.}$
_{.54}

(2) Portal Sealing

We have had to determine the cost based on costs of materials and labor to us. Both entry sealing and the equipment and materials to do so are common place on a mine site. Review the attached illustrations for the up dip and down dip portal seals.

(3) Grading

Cost figures for grading were obtained from the 1983 Dodge Guide for heavy construction. The assumptions made are:

1. That the equipment used would be two scrapers, moving $4,000 \text{ yds}^3/\text{day}$ @ $34\text{¢}/\text{yd}^3$ and one dozer, moving $700 \text{ yds}^3/\text{day}$ @ $71\text{¢}/\text{yd}^3$
2. That a one foot thickness of material will have to be moved over the entire disturbed area. ($1,614 \text{ yds}^3/\text{acre}$)
3. All materials will have to be handled by the scrapers and the dozer, resulting in a cost per $\text{yd}^3 = \$1.05$ and the cost per acre = ~~$\$1,700.00$~~ 2295.00

The Dodge reference specifically excludes OH, etc. Therefore add 35%.

(4) Re-soiling

Cost figures for topsoil placement, obtained from Dodge, 1983, include factors for loading, hauling, spreading and purchased material.

Loading:

A 5 yd^3 loader will be used which adds $24\text{¢}/\text{yd}^3$.

Hauling:

The cost of hauling varies with distance. We will use over-the-road trucks. Materials will be either hauled from Gravel Canyon or from the local Helper area.

(4) Re-soiling (continued)

<u>Distance (mi.)</u>	<u>HAULING COSTS</u>		<u>Ad'd OH, etc. @ 35%</u>
	<u>\$/yd³</u>	<u>+ Loading Factor (Total Cost/yd³)</u>	
1/2	\$ 0.97	\$1.21	1.3
1	1.20	1.44	1.74
2	1.49	1.73	2.34
3	1.81	2.05	2.75
5	2.43	2.67	3.60
8	3.25	3.50	4.52

Spreading:

Using landscaping figures from the Dodge Guide for spreading loam on slopes; the cost per yd³ = 67¢ or \$541.00/acre. × 1.35 for OH, etc. = \$730.35

Purchase:

We currently have 45,000 - 50,000 yds³ of soil stored at Gravel Canyon and about 8,000 yds³ excess in Crandall Canyon; however, our total needs could be near ~~100,000~~ yds³. Although we hope to fill out this need from new developments, we anticipate the potential for purchase. Should we purchase soil materials, we will strive to obtain a source in the immediate Helper area. We will purchase via a lump sum bid for material delivered to the site.

*incorrect figure,
how ever the bond was
calculated with the
correct figure*

Dodge recommends about \$8.70/yd³ (with Utah materials adjustment factor - .94). We will use this figure.

Note: PRCC's topsoil needs may be significantly reduced in the near future. The R.A. has suggested that on-site materials be tested and utilized if satisfactory. We feel that No. 5 Mine site has potential for use of existing materials. Also, tests to date indicate that our refuse is non-toxic and could be exempt from the four-foot cover requirement. We will expect a bond reduction should tests favor our situation.

(5) Revegetation

Revegetation costs are primarily derived from recent experience and actual prices for material. Factors are considered for fertilizing, seeding and mulching, shrub or tree planting and evaluation of the plantation. Factors are explained in more detail on pages 555-557 in the MRP (Chapter IX).

Fertilizing: About \$100.00/acre includes labor and materials

Seeding and Mulching:

Prices for seed mixes are derived from several local and regional native seed supply companies. For example, seed mix #3, page 540, MRP, was purchased last fall at a cost of \$110.00/acre. Some species and mixes

(5) Revegetation (continued)

Seeding and Mulching: (continued)

will cost more. Dodge recommends \$287.00 but with no discussion of mix. We will use \$300.00/acre for seed cost. $\times 1.35 = 405$

Seed will be broadcast simultaneously with mulch, through use of a mulch blower. Cost for operation of a blower based on three-man crew is \$60.00/hr. and three hours/acre = \$180.00/acre. $\times 1.35 = 243.00$

Cost of straw varies locally from \$1.25/bale to \$3.50/bale; average \$2.50. Twenty-two (22) bales needed per acre = \$55.00/acre.

A tractor mounted crimping device will cost \$35.00/hr and take two hours/acre = \$70.00/acre. $\times 1.35 = 94.5$

Total Seeding and Mulching Cost = ~~\$605.00~~/acre.

897.50

Planting Trees and Shrubs:

Material costs, derived through comparison of State Forest Nursery prices and commercial grower/distributor prices, averages about 75¢/seedling. Total cost (see page 556, MRP) will be about \$290.00 for labor and stock. add OH, etc to labor = $160 \times 1.35 = 216.00$

total $\$216.00 + \$132.00 = 348.00$

Evaluation of Success of Plantations:

Based on recent vegetation survey costs for this property we will use \$40.00/acre for planting evaluation.

Total per acre revegetation costs = ~~\$1,035.00~~ = 1285.50

(6) Maintenance and Contingency

Fifteen (15%) percent of total cost will be added to cover post reclamation maintenance and unforeseen problems.

SUMMATION OF PRCC BONDING/RECLAMATION COSTS

<u>Site</u>	<u>No Variances Granted</u>	<u>4' Refuse Covering and Substitute Re-soiling</u>
Grawl Canyon		10,742.00
Sowbelly	\$ 142,177.00	\$ 96,515.00 189,576.00
Hardscrabble	346,339.00	312,962.00 475,225.00
Castle Gate	2,552,929.00	954,790.00 1,304,600.00
Willow Creek	132,377.00	132,377.00 27,552.00
Crandall Canyon *	<u>350,000.00</u>	<u>350,000.00 350,000.00</u>
TOTAL	\$ 3,523,822.00	\$ 1,846,644.00

* Bond Posted - 1980

With an annual inflation rate of 1% for 2 1/2 years to the mid-term review, the total bond amount is

\$2,532,857.00

COST OF RECLAMATION AND BONDING

ESTIMATE

SITE: Castle Gate and
Utah Fuel No. 1

ACRES: 58

DATE OF ESTIMATE: 3-14-83

35 - Facility Area + 112, 512 #1
23 - Refuse Pile

LIFE OF FACILITY: 30 - 80 years

COSTS*

(1) Demolition.....	\$	<u>529,000.00</u>	<u>661,250.00</u>
(2) Portal Sealing.....		<u>4,420.00</u>	<u>5967.00</u>
(3) Grading.....		<u>98,600.00</u>	<u>133,110.00</u>
(4) Re-soiling.....		<u>1,527,888.00</u>	<u>296,531.00</u>
(5) Revegetation.....		<u>60,030.00</u>	<u>81,055.00</u>
Subtotal		<u>2,219,938.00</u>	<u>1,177,913.00</u>
(6) Maintenance and Contingency (15%).....		<u>332,990.00</u>	<u>176,487.00</u>
TOTAL COST AND PROPOSED BOND AMOUNT	\$	<u>2,552,929.00</u>	<u>1,354,400.00</u>

* See attached detailed breakdown forms for each phase of reclamation (1 through 5).

(1) DEMOLITION AND DISPOSAL COSTS FOR BUILDINGS AND STRUCTURES

* Type - construction materials of building

Steel = \$0.35/ft³

Concrete = \$0.43/ft³

Site: Castle Gate and Utah Fuel No. 1

	<u>Structure/Building</u>	<u>Type</u>	<u>Volume Standing (ft³)</u>	<u>Cost</u>
1.	<u>Preparation Plant</u>	<u>Steel</u>	<u>782,080</u>	<u>\$ 273,728.00</u>
2.	<u>Bath House</u>	<u>Steel</u>	<u>182,695</u>	<u>63,944.00</u>
3.	<u>Div. 2 - U.F.</u>	<u>Steel</u>	<u>14,621</u>	<u>5,118.00</u>
4.	<u>Div. 4 - Transfer House</u>	<u>Steel</u>	<u>7,776</u>	<u>2,722.00</u>
5.	<u>Div. 5 - Truck Dump</u>	<u>Steel</u>	<u>5,814</u>	<u>2,035.00</u>
6.	<u>Div. 8 - Breaker Bldg.</u>	<u>Steel</u>	<u>82,800</u>	<u>28,980.00</u>
7.	<u>Div.10 - Raw Coal</u>	<u>Concrete</u>	<u>34,749</u>	<u>14,943.00</u>
8.	<u>Div.12A - Sample</u>	<u>Steel</u>	<u>21,924</u>	<u>7,674.00</u>
9.	<u>Div.13 - Clean Coal</u>	<u>Concrete</u>	<u>82,800</u>	<u>35,604.00</u>
10.	<u>940' Belt - Tube</u>	<u>Steel</u>	<u>47,250</u>	<u>20,510.00</u>
	<u>Substation, Power Poles</u>	<u>940 x 4² x Pi</u>		
11.	<u>and Miscellaneous</u>	<u>--</u>	<u>--</u>	<u>--</u>
12.	<u>4540 Belt - Gallery</u>	<u>Steel</u>	<u>163,440</u>	<u>57,204.00</u>
		<u>4540 x 6²</u>		
13.				
14.				
15.				
16.				
17.				
18.				
19.				
20.				
	<u>TOTAL DEMOLITION AND DISPOSAL COST.....\$</u>			<u>529,000.00 x 1.25</u>
				<u>661,250</u>

(2) PORTAL SEALING

UP DIP (^{2,983.50}~~\$2,210~~/ea.) Number 2

DOWN DIP (\$2,002/ea.)

Total cost..... \$ ^{5,967.00}~~4,420.00~~

(3) GRADING COSTS

²²⁹⁵
\$1,700/Acre Acres to be Reclaimed 58

Total cost..... \$ ^{133,110}~~98,600.00~~

(4) RE-SOILING COSTS (A) * See Also attached (B) and (C) re-soiling costs for total.

I. Quantity of soil material needed ⁸³⁹⁰⁵~~176,733~~ yds³ (acres X 807)

Where Obtained Gravel Canyon 10,000 yds³

Haul Distance 1/2 miles

Cost yd³ delivered \$ ~~1.21~~ 1.63

Total cost..... \$ ^{16,300.00}~~12,100.00~~

A + B + C = \$1,409,477.00 ~~221,017~~

II. Spreading Soil (^{.90}~~67¢~~/yds³ = ~~\$541.00/Acre~~)

Total cost..... \$ ^{75,514.00}~~118,411.00~~

Grand Total (I and II)..... \$ ^{296,531.00}~~1,527,888.00~~

(1) For refuse pile covering specify acres of
 refuse 23 and ^{2,720}~~6,450~~ yds³/acre ^{55,660}~~148,488~~ yds³
 for 18" of cover + 28,245 yds³ Facility Area = 35 x 807
 total = 83,905

(4) RE-SOILING COSTS (B)

I. Quantity of soil material needed $\frac{73,905}{166,733}$ yds³ (acres X 807)
Where Obtained Crandall Canyon $\frac{73,905}{8,000}$ yds³
Haul Distance 3 miles
Cost yd³ delivered \$ 2.05-2.77
Total cost..... \$ 16,400.00 ^{204,717.00}

(4) RE-SOILING COSTS (C)

I. Quantity of soil material needed 158,733 yds³ (acres X 807)
Where Obtained Helper Area
Haul Distance 3 miles
Cost yd³ delivered \$ 8.70
Total cost..... \$ 1,380,977.00

(5) RE-VEGETATION - Seeding and Planting

Castle Gate and
Site: Utah Fuel No. 1 Acres to be Reclaimed 58

Fertilizer (\$100.00 X Acres)	<i>see revised unit costs</i>	\$ 5,800.00
Seeding & Mulching (\$605.00 X Acres)		<u>35,090.00</u>
Tree & Shrub Planting (\$290.00 X Acres)		<u>16,820.00</u>
Evaluation of Success (\$40.00 X Acres)		<u>2,320.00</u>
Total Seeding & Planting Costs.....		<u><u>60,030.00</u></u>
		<i>58 x 1397.50 = \$81,055</i>

Travel Canyon: 3 acres (\$2295A for grading, and \$1255A for revegetation) = \$10,742.00

COST OF RECLAMATION AND BONDING

ESTIMATE

SITE: Sowbelly Gulch - No. 5 Mine

ACRES: 13.5

DATE OF ESTIMATE: 3-14-83

LIFE OF FACILITY: Thru 1985

COSTS*

(1) Demolition.....	\$ 40,000.00	50,000.00
(2) Portal Sealing.....	4,004.00	5,407.00
(3) Grading.....	22,950.00	30,492.00
(4) Re-soiling.....	42,706.00	61,280.00
(5) Revegetation.....	13,972.00	17,354.00
Subtotal	126,632.00	165,023.00
(6) Maintenance and Contingency (15%).....	18,545.00	24,753.00
TOTAL COST AND PROPOSED BOND AMOUNT	\$ 142,177.00	189,776.00

* See attached detailed breakdown forms for each phase of reclamation (1 through 5).

(1) DEMOLITION AND DISPOSAL COSTS FOR BUILDINGS AND STRUCTURES

* Type - construction materials of building

Steel = \$0.35/ft³

Concrete = \$0.43/ft³

Site: Sowbelly Gulch - No. 5 Mine

	<u>Structure/Building</u>	<u>Type</u>	<u>Volume Standing (ft³)</u>	<u>Cost</u>
1.	Block Building	(C) 10 x 10 x 8	800	\$ 344
2.	Block Building	(C) 10 x 10 x 8	800	344
3.	Arch	(S) 35 x Pi x 10 ²	10,996	3,849
4.	Arch	(S) 30 x Pi x 10 ²	9,425	3,299
5.	Arch	(S) 30 x Pi x 10 ²	9,425	3,299
6.	Arch	(S) 30 x Pi x 10 ²	9,425	3,299
7.	Steel Building	(S) 10 x 10 x 8	800	280
8.	Steel Building	(S) 10 x 10 x 8	800	280
9.	Steel Building	(S) 10 x 10 x 8	800	280
10.	Steel Building	(S) 15 x 20 x 6	1,800	630
11.	Shop	(S) 50 x 30 x 10	15,000	5,250
12.	Lean-to	(S) 50 x 8 x 8	3,200	1,120
13.	Steel Building	(S) 40 x 20 x 8	6,400	2,240
14.	Water Tank, 65,000 gal.	(S)	8,667	3,034
15.	Water Tank, 10,000 gal.	(S)	1,333	467
16.	Fan	(S)	1,000	350
17.	Lower Pump House	(C) 20 x 20 x 10	4,000	1,720
18.	Misc. Foundations	(C)	5,100	2,193
19.	Substation (move)	--	--	--
20.	5 Trailers and 1 Box Car (move)	--	--	--
21.	Misc. Power Poles, etc.	--	--	7,722

TOTAL DEMOLITION AND DISPOSAL COST

\$ 40,000 x 1.25 =

Bonding/2 (3-83)

50,000

(2) PORTAL SEALING

UP DIP (\$2,210/ea.) Number 2

DOWN DIP (^{2703.38}~~\$2,002~~/ea.)

Total cost..... \$ 5407.00
~~4,004.00~~

(3) GRADING COSTS

^{2,295}
~~\$1,700~~/Acre Acres to be Reclaimed 13.5

Total cost..... \$ 30,982.00
~~22,950.00~~

(4) RE-SOILING COSTS

I. Quantity of soil material needed 10,894 yds³ (1)
(acres X 807)

Where Obtained Gravel Canyon

Haul Distance 8 miles

Cost yd³ delivered \$ ~~3.25~~ 7.72

Total cost..... \$ 51,420.00
~~35,407.00~~

II. Spreading Soil (^{730.35}67¢/yds³ = ~~\$541.00~~/Acre)

Total cost..... \$ 9,860.00
~~7,299.00~~

Grand Total (I and II)..... \$ 61,280.00
~~42,706.00~~

(1) For refuse pile covering specify acres of
refuse -- and 6,456 yds³/acre -- yds³

(5) RE-VEGETATION - Seeding and Planting

Site: Sowbelly Gulch - #5 Mine Acres to be Reclaimed 13.5

Fertilizer (\$100.00 X Acres)	<i>See revised unit costs</i>	\$ 1,350.00
Seeding & Mulching (\$605.00 X Acres)		<u>8,167.00</u>
Tree & Shrub Planting (\$290.00 X Acres)		<u>3,915.00</u>
Evaluation of Success (\$40.00 X Acres)		<u>540.00</u>
Total Seeding & Planting Costs.....		<u><u>13,972.00</u></u>

$13.5 \times 1285.50 = 17,354.00$

ALTERNATIVE COSTS

Native soil materials tested and found suitable for revegetation -
No soil hauled in.

1. Delete	\$42,706.00 = \$83,926.00 + 15% =	\$83,926.00
		<u>12,588.00</u> (15%)
		<u><u>\$96,515.00</u></u>

COST OF RECLAMATION AND BONDING

ESTIMATE

SITE: No. 3 and No. 4 Mines
Hardscrabble Canyon

ACRES: 24

DATE OF ESTIMATE: 3-10-83

LIFE OF FACILITY: 2 years (from March 1983)

COSTS*

(1) Demolition.....	\$ 150,000.00	187,500.00
(2) Portal Sealing.....	70,010.00	13,517.00
(3) Grading.....	40,800.00	55,020.00
(4) Re-soiling.....	75,514.00	126,314.00
(5) Revegetation.....	24,840.00	30,852.00
Subtotal	301,164.00	413,763.00
(6) Maintenance and Contingency (15%).....	45,175.00	62,064
TOTAL COST AND PROPOSED BOND AMOUNT	\$ <u>346,339.00</u>	<u>475,827</u>

* See attached detailed breakdown forms for each phase of reclamation (1 through 5).

(2) PORTAL SEALING

UP DIP (\$2,210/ea.) Number 5

DOWN DIP (^{2703.38}~~\$2,002~~/ea.)

Total cost..... \$ ~~10,010.00~~ ^{13,517.00}

(3) GRADING COSTS

²²⁹⁵
\$1,700/Acre

Acres to be Reclaimed 24

Total cost..... \$ ~~40,800.00~~ ^{55,080.00}

(4) RE-SOILING COSTS

I. Quantity of soil material needed ^{39,140}~~31,464~~ yds³ (1) (acres X 807)

Where Obtained Gravel Canyon

Haul Distance 3 miles

Cost yd³ delivered \$ ~~1.73~~ 2.34

Total cost..... \$ ~~54,433.00~~ ^{71,588.00}

II. Spreading Soil (^{.90}~~674~~/yds³ = ~~\$541.00~~/Acre)

Total cost..... \$ ~~27,007.00~~ ^{35,226.00}

Grand Total (I and II)..... \$ ~~75,514.00~~ ^{126,814.00}

(1) For refuse pile covering specify acres of
refuse 3.5 and 6,456 yds³/acre ^{22,596}~~12,093~~ yds³

keep the site as near to original drainage.

(5) RE-VEGETATION Seeding and Planting

No. 3 and No. 4 Mines
Site: Hardscrabble Canyon Acres to be Reclaimed 24

Fertilizer (\$100.00 X Acres)	<i>See revised unit costs</i>	\$ 2,400.00
Seeding & Mulching (\$605.00 X Acres)		14,520.00
Tree & Shrub Planting (\$290.00 X Acres)		6,960.00
Evaluation of Success (\$40.00 X Acres)		960.00
Total Seeding & Planting Costs.....	\$	<u>24,840.00</u>

24 x 1285.50 = 30,852.00

ALTERNATE COSTS

If refuse pile is non-toxic and only 6" of material is needed -

Delete 12,093 yds³ of soil hauled

X \$1.73 =	\$ 20,921.00
X 0.67	<u>8,102.00</u>
	\$ 29,023.00

Reclamation Cost	\$ 301,164.00	
	<u>- 29,023.00</u>	
	\$ 272,141.00	
	<u>+ 40,821.00</u>	(15%)
	<u>\$ 312,962.00</u>	New Total

COST OF RECLAMATION AND BONDING
ESTIMATE

SITE: Willow Creek

ACRES: 11.0

DATE OF ESTIMATE: 3-14-83

LIFE OF FACILITY: 30 - 50 years

COSTS*

(1) Demolition.....	\$ 1,849.00	2311.00
(2) Portal Sealing.....	<u> --</u>	
(3) Grading.....	18,700.00	25,245.00
(4) Re-soiling.....	83,177.00	36,262.00
(5) Revegetation.....	11,385.00	14,140.00
Subtotal	<u>115,110.00</u>	77,758.00
(6) Maintenance and Contingency (15%).....	<u>17,266.00</u>	11,694.00
TOTAL COST AND PROPOSED BOND AMOUNT	\$ <u>132,377.00</u>	89,452.00

* See attached detailed breakdown forms for each phase of reclamation (1 through 5).

Site: Willow Creek

(2) PORTAL SEALING

UP DIP (\$2,210/ea.) Number NA

DOWN DIP (\$2,002/ea.)

Total cost..... \$ --

(3) GRADING COSTS

2295
\$1,700/Acre

Acres to be Reclaimed 11

Total cost..... \$ 25,245.00
~~18,700.00~~

(4) RE-SOILING COSTS

I. Quantity of soil material needed 8,877 yds³ (1)
(acres X 807)

Where Obtained ~~Purchase - Helper Area~~ Crandall

Haul Distance 4 miles

Cost yd³ delivered \$ ~~8.70~~ 3.18

Total cost..... \$ 28,227.00
~~77,230.00~~

II. Spreading Soil (67¢/yds³ = ^{536.35}~~\$541.00~~/Acre)

Total cost..... \$ 5,024.00
~~5,948.00~~

Grand Total (I and II)..... \$ 36,262.00
83,177.00

(1) For refuse pile covering specify acres of
refuse -- and 6,456 yds³/acre -- yds³

U.S. DEPARTMENT OF THE INTERIOR
OFFICE OF SURFACE MINING
RECLAMATION AND ENFORCEMENT
NOTICE OF A DECISION AND AVAILABILITY
OF TECHNICAL AND ENVIRONMENTAL ASSESSMENT FOR,
PRICE RIVER COAL COMPANY
PERMANENT PROGRAM PERMIT
PRICE RIVER MINE COMPLEX
CARBON 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 the Price River Coal Company to continue mining coal at its Price River Mine Complex.

The Price River underground coal mine is located in central Carbon County, Utah, 10 miles north of Price, Utah. The proposed permit area will cover 8510 acres. Maximum mine production will approach 6.5 million tons per year. The life of the mine operation is expect to be 35 to 100 years, depending on market conditions and development of extraction technology.

Any person with an interest that is or may be adversely affected by this Federal permit approval action may request a 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 the provisions of 5 U.S.C. Section 554, and the request for the hearing to review the OSM decision should be submitted to:

Hearings Division
Office of Hearings and Appeals
U.S. Department of the Interior
4015 Wilson Boulevard
Arlington, VA 22203

Pursuant to 40 CFR Sections 1501.4(b), (c) and (e) and 1506.6, notice is hereby given that OSM and the Utah Division of Oil, Gas and Mining have completed a technical and environmental assessment and finding of no significant impact for the mining and reclamation plan (MRP) for the Price River Mine Complex, Carbon County, Utah. OSM's recommendation to approve the Price River Coal Company's MRP and permit application with stipulations is in accordance with Sections 510 and 523 of SMCRA. OSM has determined that no significant environmental impacts would result from such approval.

The permit application package, technical and environmental assessment and finding of no significant impact are available for review at the following locations:

SUPPLEMENTAL SECTIONS TO THE TECHNICAL AND ENVIRONMENTAL ASSESSMENT

PRICE RIVER COAL COMPANY

Socioeconomic Impact Assessment

Price River Complex

At present, there are approximately 180 workers employed at the Price River Complex. The company anticipates increasing this workforce to 600 in 1988, and to 750 workers in 1990. Employment is forecasted to peak in the year 2000 at 1,200 workers. Approximately 140 construction workers are anticipated to be needed during the next six years to construct additional facilities on the property.

The addition of 420 mine workers over the next five years would support approximately 336 secondary jobs in the region. Due to the current unemployment situation in Carbon County (13%), the majority of these jobs would be absorbed by the existing labor force. The addition of 600 mine workers from 1988 to the year 2000 would create approximately 480 secondary jobs. During this period, forty percent (672) of the total mine related workforce is projected to migrate from outside the region to fill these jobs. The total mine related population is projected to reach 3,494 by the year 2000.

The primary Carbon County jurisdictions to be affected by the mine are Price and Helper and, to a lesser extent, Wellington. The population of Carbon County, (including the mine related population) is projected to increase 69 percent from its 1982 population of 24,183 to 40,344 in 1995. The year 2000 mine related population represents 12 percent of the county's projected total population. Over this same time period, Price and Helper (including the mine related population) are forecast to grow from 10,043 to 19,347 and 2,927 to 4,124 respectively.

Socioeconomic Stipulation

Price River Complex

The applicant shall comply with all applicable federal, state and local laws rules and regulations which impose duties with regard to socioeconomic analyses and/or mitigation plans that are required to be submitted prior to project expansion.

Such analyses and plans shall be developed and implemented in consultation with affected local governments, the Utah State Department of Community and Economic Development (UDCED) and OSM. In order to determine when such plans and analyses should be submitted, the applicant shall submit on an annual basis to OSM, Carbon County and the UDCED an update of its current and projected workforce figures.

Currently, Carbon County is experiencing some strain on public services and facilities from the existing population. The Carbon County School District facilities are at capacity. The Price City water treatment system is projected to exceed its capacity by 1985. The existing sewage treatment system is in need of upgrading at a projected cost of 4 to 6 million dollars. (See "Socioeconomic Assessment for the Sage Point Mine, "OSM, 1981 and 1983).

The expansion of the Price River Complex over the next five years will have a positive socioeconomic effect on Carbon County communities since the majority of workers will be hired from the existing labor pool. After 1986 however, the expansion of the operation will create, secondary impacts on the county's fiscal budget, public services and facilities. These impacts will primarily be on public education facilities and the water treatment system, as these are projected to reach service capacities in the 1985-1995 period.

Due to the company's employment forecast, the Price River Coal Company must comply with the Utah Resource Development Code, Utah Code An. Section 63-51-1 et seq. as well as the 1982 Carbon County Impact Regulation. A meeting was held on September 22, 1983 with the applicant, OSM, Carbon County and the Utah Department of Community and Economic Development (DCED) to discuss the requirements of these regulations. It was decided that since the applicant's plans for mine expansion was long-termed and not expected over the next five years, the company need not to submit an impact mitigation plan at this time. The applicant has agreed to work with the appropriate jurisdictions well in advance of the anticipated mine expansion to allow for proper planning of mine related impacts. (See attached stipulation and supporting correspondence).

Alluvial Valley Floors (AVF)

The proposed mining at the Price River Mine Complex is not expected to affect the alluvial deposits along the Price River and would not be expected to reduce ground water flow. Alluvial valley floors (AVF), as defined in UMC 700.5 and with respect to farming, do not exist in the disturbed area. Mining disturbance will not have an adverse impact upon downstream AVF's.

Agricultural areas downstream of the Price River Mine Complex are typically small and use surface water diversions from the Price River. However, the mines are not expected to reduce either the quantity or quality of surface water available to downstream users (see the Surface Water Hydrology and Cumulative Hydrologic Impact Assessment sections for additional information). The runoff associated with most of the areas is ephemeral and does not provide a reliable source for surface irrigation and for maintaining a water table adequate to provide subirrigation.

The average valley slope is usually greater than 20 percent and has no irrigated agricultural history. Valley bottoms are narrow, usually less than 300 feet wide. This width normally contains an incised stream channel, a road, and railroad tracks which leave little space for irrigated agriculture. Most of the land is currently used for unirrigated summer forage production.

PRICE RIVER COAL COMPANY

P.O. BOX 629 HELPER, UTAH 84526 (801) 472-3411

September 27, 1983

WESTERN TECHNICAL CENTER

1983 SEP 30 AM 11:45

OSM-WTC

Mr. Dave Maxwell
Office of Surface Mining
Western Technical Center
Brooks Towers, 1020 15th Street
Denver, CO 80202

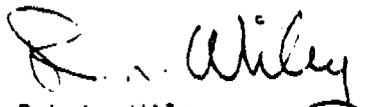
Re: Cemetery at Willow Creek and Socioeconomic Considerations

Dear Mr. Maxwell:

Please find enclosed an 8" x 10" section map which depicts the Willow Creek cemetery and existing, surrounding mining appurtences as requested during our 9-23-83 meeting in Salt Lake City. Also enclosed is an updated work force expansion schedule as requested by Buzz Hunt of Utah DCED, Richard Walker from Carbon County Planning Office and OSM's Sarah Bransom during our 9-22-83 meeting in Salt Lake City. Additionally, and again as requested, Price River Coal Company agrees and commits to comply with all state and county regulations concerning developmental impacts on the community and to work closely with Mr. Walker's and Mr. Hunt's offices, well in advance of proposed project start-up dates to develop impact mitigation strategies.

Very truly yours,

PRICE RIVER COAL COMPANY


Rob L. Wiley
Environmental Engineer

RLW:jp

Enclosures

cc: Buzz Hunt, DCED
Richard Walker, Carbon Co.
Tom Tetting, DOGM