File: ACT/007/004 #2

0033

PRICE RIVER COAL COMPANY
P.O. BOX 629 HELPER, UTAH 84526 (801) 472-3411

June 9, 1983

RECEIVED
JUN 15 1983
DIVISION OF
OIL, GAS & MINING

Mr. Tom Tetting, Engineering Geologist
and PRCC Plan Lead Review
Division of Oil, Gas and Mining
4241 State Office Building
Salt Lake City, Utah 84114

Re: PRCC's Apparent Completeness Review; Final Submittal

Dear Mr. Tetting:

We are now providing the final information required by the 12-82 joint OSM/DOGM Apparent Completeness Review, the meeting held on 1-13-83 in ODGM offices, the 2-13-83 site visit and meeting with Joe Lyons concerning hydrology, the mine site review and meeting with Bennet Young of OSM and yourself on 2-15-83, the meeting in Denver with OSM staff on 3-26-83 and subsequent 5-5-83 OSM letter clarifying permitting concepts. The following additional information is included with a re-capitulation of the information which has been submitted.

Under UMC 771.23

1. Definition and discussion of permit area. See Item 1. See new Exhibits 1.1, 3.2-1, 3.3-1, 3.4-1, 3.5-1 and 3.6-1.

2. Maps showing underground mining prior to and after 1977. Submitted 4-5-83.

Under UMC 783.14

1. Coal analyses - provided 1-13-83.

2. Roof, floor and refuse analyses and discussion of seam similarity. Submitted 4-26-83.

Under UMC 783.15

Ground Water - See Item 2.

1. Discussed in attached Vaughn Hansen report, "Ground Water Hydrology, Carbon County Mines", May 1983.

2. Long term monitoring plan - submitted to J. Lyons 5-17-83.

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Under UMC 783.16

Surface Water - See Item 3.

1. Description of flow measurement - attached.

2. Identification of water shed areas - attached.

3. Discussion of NPDES discharges - provided 1-13-83.

Under UMC 783.22

Land Use - All responses provided 1-13-83.

Under UMC 783.24

Maps - See Item 4.

1. Permit area - See attached Exhibits 1.1, 3.2-1, 3.3-1, 3.4-1, 3.5-1 and 3.6-1.

2. Sub-areas for future permits - satisfied 1-13-83.

3. Location of all buildings - satisfied 1-13-83.

Under UMC 783.25

Cross sections, Maps, Plans

1. Adequacy of Exhibit 3-1 - satisfied 1-13-83.

2. Channel cross sections and typical roads cross sections. See Item 4. See attached Exhibits 3.2-2, 3.2-3, 3.3-2, 3.3-3, 3.4-2, 3.4-3, 3.6-2 and 3.6-3.

3. Geologic cross sections. See Item 5. See new Exhibits 6.12.

Under UMC 784.11

Gravel Canyon - satisfied 1-13-83.

Under UMC 784.12

1. Dust and fills. See Item 6. See attached photos and discussions.

2. Willow Creek facilities - satisfied 1-13-83.

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Under UMC 784.13

Reclamation Plan - General

1. Closure - submitted 4-4-83.

2. Permit area. See Item 4. Attached Exhibits 1.1, 3.2-1, 3.3-1, 3.4-1, 3.5-1 and 3.6-1.

3. Bonding - submitted 4-4-83

4. Dates for reclamation - provided 1-13-83.

5. Channel cross sections. See Item 4. Attached new Exhibits 3.2-2,3; 3.3-2,3; 3.4-2,3; 3.6-2,3;

6. Portal seals - submitted 4-4-83.

7. NPDES permits - provided 1-13-83.

8. Disturbed area - provided 1-13-83.

Under UMC 784.14

Reclamation Plan - Hydrology

1. Pond sediment disposal - satisfied 1-13-83.

2. Coal fines at Hardscrabble - satisfied 1-13-83.

3. Small area exemptions - satisfied 1-13-83. Also letter of J. Lyons 1-12-83. Attached site drainage discussions.

4. Sediment - deleted

5. Chart clarifications. See Item 4. Attached site discussions.

6. Pond plans and cross sections. See Item 4. Attached Exhibits 3.2-2, 3.3-2, 3.4-2 and 3.6-2.

UMC 784.15

Reclamation Plan - Post mining land use - All items satisfied 1-13-83.

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Under UMC 784.16

Reclamation Plan - Ponds and Banks

1. Subsidence on refuse pile - deleted.

2. Inspection plan - submitted 4-4-83.

3. Refuse pile stability analysis - provided 4-4-83.

4. Maintenance schedule - deleted.

5. Pond discharge structures - required decision by R.A. - no answer to date.

6. Pond plans and cross sections - attached. See Item 4.

7. Outline of pond drainage areas. See Item 4. Attached Exhibits 3.2-1; 3.2-2; 3.3-1,2; 3.4-1,2; 3.5-1 3.6-1,2.

8. Plans for Pond 011, 012 - submitted 12-12-82.

9. (1) Sample of water from refuse pile piezometer - attached.

   (2) R.P. safety factor - provided 4-4-83.

   (3) Under drain and pile covering - satisfied 1-13-83 and 4-4-83.

   (4) Sub drain - satisfied 1-13-83.

   (5) Pile drainage - supplied 4-4-83.

   (6) Pile compaction - See inspection plan 4-4-83.

   (7) Inspection plan - provided 4-4-83.

   (8) Topsoil - satisfied 1-13-83.

   (9) Survey of springs - satisfied 1-31-83.

   (10) Subsidence - deleted.

   (11) Sub drain - R.P. - provided 4-4-83.

   (12) Plan certification - 4-4-83.

   (13) Mixing of fines - satisfied 1-13-83 and 4-4-83.

   (14) Sediment - satisfied 1-13-83 - deleted.

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Under UMC 784.17

Historic, Cultural, etc. - submitted 4-4-83.

Under UMC 784.20

Subsidence Discussion - provided 4-27-83.

Under UMC 784.22

Diversions

1. Cross section of Schoolhouse diversion. See Item 4. See attached Exhibit 3.4-2.

2. Schoolhouse diversion construction - provided 4-4-83.

3. Channel cross sections, culvert sizing and flow. See Item 4. See attached Exhibits 3.2-2, 3.3-2, 3.4-2, 3.6-2. All tables with site discussions.

4. Final channel dimensions. See Item 4. See attached Exhibits 3.2-3, 3.3-3, 3.4-3, 3.6-3. Tables with site discussions.

5. Longitudinal profiles - satisfied 1-13-83.

Under UMC 784.23

Maps and Plans

1. Pond 011 - satisfied 12-12-83.

2. Berms. See Item 4. Shown on Exhibits 3.2-1, 3.3-1, 3.4-1, 3.5-1, 3.6-1.

3. Sumps. See Item 4. See previous Exhibits and 3.2-2, 3.3-2, 3.4-2, 3.6-2.

4. Sowbelly culverts. See Exhibits 3.2-1 and 3.2-2.

5. Pond plans and cross sections. See Exhibits 3.2-2, 3.3-2 A & B, 3.4-2, 3.5-1, 3.6-2.

6. Bonding - surface permit area. See Exhibits 3.2-1, 3.3-1, 3.4-1, 3.5-1, 3.6-1.

7. Underground waste - satisfied 1-13-83 and 4-4-83.

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Under UMC 784.25

Transportation

1. Rails - deleted.

2. Conveyors - satisfied 1-31-83.

Under UMC 805.11

Bonding - provided 4-4-83.

Under 817.11

Bonding - provided 4-4-83.

Under UMC 817.11

Signs - provided 4-4-83

Under UMC 817.43

Hydrology - Outlet Schoolhouse Canyon - attached. See Item 4.

Under UMC 817.97

Fish and wildlife - deleted.

Sincerely yours,

PRICE RIVER COAL COMPANY

R. L. Wiley
Environmental Engineer

RLW:jp

Enclosures

ITEM 1

As required by comments under UMC 771.23

1. Discussion of permit area.

2. Map showing surface and underground permit area (to be included in MRP as new Exhibit 1.1.

DISCUSSION OF THE PERMIT AREA

The permit is defined horizontally as existing surface facilities and the area overlying all mineable coal from these facilities in the A, B, C, D, Sub 1, Sub 2 and Sub 3 Seams and in the vertical extent by accessibility of all seams through either the Crandall shafts (D, A, and Sub 3) or via rock tunnels (which have no surface expression) and coal passes from D, A, and Sub 3 to B, C, Sub 1 and Sub 2. See Exhibits 3.3 through 3.9. It is suggested that new Exhibit 1.1 be reviewed with (or perhaps used as an overlay on a light table) the referenced exhibits. The permit is defined in time of having a five-year duration with a right of successive renewal equal to the time required to extract the coal. The extraction period for the D and Sub 3 Seams is estimated to be 35 years if mined more or less simultaneously. The mining of the midseams (B, C, Sub 1, Sub 2) could increase this period by 15 to 65 years depending upon mining methods and market conditions.

ITEM 2

As required by comments under UMC 783.15

Ground Water Hydrology Report -

Filed in MRP as Appendix 7-C

ITEM 3

As required by comments under UMC 783.16

1. Additional drainage area discussions.

2. Map showing major drainage areas (to be designated Exhibit 7.2).

UMC 783.16 SURFACE WATER INFORMATION

"The applicant should provide a description of the design and construction of surface water monitoring stations, including the type of flow gages in use."

There has been no design or construction of surface water monitoring stations. Flow measurements on intermittent streams are obtained by measuring the stream cross sectional area and determining an average velocity by the float method.

The USGS has maintained stream flow gaging stations (from which daily flow records are available) on all perennial streams located within the mine plan area. The locations of these gaging stations are illustrated on Exhibit 7.2. Two gaging stations have been maintained on Willow Creek, one upstream from the mine plan areas (Willow Creek near Castle Gate) and one near the confluence of Willow Creek with the Price River (Willow Creek at Castle Gate). The gaging station on the Price River (Price River near Heiner) is located near the downstream limit of the mine plan area.

"The applicant should identify the watershed area for all the principal drainages which are located in the mine plan area. For example, the drainage areas for the Price River (above the downstream limit of the mine complex), Willow Creek, Hardscrabble Canyon, Sowbelly Gulch, Spring Canyon, Bear Canyon, Crandall Canyon, Sulphur Canyon Creek and Ford Creek should be provided."

"At a minimum long term mean annual yield for Willow Creek, Spring Canyon Creek, and the Price River (the three perennial streams in the study area) should be provided. If such information is available for nonperennial tributary drainages, it also should be provided."

The watershed boundaries for the Price River (above the downstream limit of the mine complex), Willow Creek, Hardscrabble Canyon, Sowbelly Gulch, Spring Canyon, Bear Canyon, Crandall Canyon, Sulphur Canyon Creek, and Ford Creek are outlined on Exhibit 7.2. Tributary areas for the above indicated creeks are presented in the following table.

Tributary Areas of Principal Watersheds within the Mine Plan Area as designated on Exhibit 7.2

Watershed	Area Acres
Price River	265,600
Willow Creek	49,540
Spring Canyon Creek	14,130
Sowbelly Gulch	1,980
Hardscrabble Canyon Creek	1,800
Crandall Canyon Creek	2,670
Bear Canyon Creek	1,060
Sulphur Canyon Creek	3,800
Ford Creek	2,430

The mean annual discharge of the Price River near Heiner from 37 years of records is 112 cfs (81,140 ac-ft/yr). Only two years of records are available for Willow Creek near its mouth (at Castle Gate). However, 19 years of available records for Willow Creek at the USGS gage near Castle Gate (see Exhibit 7.2) indicate the mean annual discharge to be on the order of 8.2 cfs (5,900 ac-ft/year). A comparison of the two years of overlapping records from the two gaging stations on Willow Creek indicates that at 8.1 cfs (5,900 ac-ft/year) at the upper site, an average discharge of approximately 9 cfs (6,500 ac-ft/year) can be expected at the mouth of Willow Creek (an increase of approximately 10 percent between the two sites). Only three years of stream flow records are available at the USGS gage on Spring Canyon Creek. However, as indicated by these records, the yield from over 14,000 acres of drainage area is extremely low, averaging only 0.3 cfs (214 ac-ft/year). Stream flow records are not available for the nonperennial tributary drainages in the area.

ITEM 4. 6-1-83

Under 771.23 - Prior Mining Activities (Surface)

783.24 - Maps, Permit Area

783.24 - Cross Sections - Stream Channels and Diversions

784.14 - Small Area Exceptions

- Pond Sizing Calculation
- Explanation of Structures
- Pond Plans and Cross Sections

784.22 - Diversion Cross Sections

- Relating Peak Flow

  Calculations to Diversion Structure Sizing
- Berm Location

817.43 - Discussion of Outlet of Schoolhouse Canyon Diversion

The foregoing items have been addressed by the following discussion and revised or new exhibits. The following exhibits are included with this section:

3.2-1
3.2-2
3.2-3
3.3-1
3.3-2A
3.3-2B
3.3-3
3.4-1
3.4-2
3.4-3
3.6-1
3.6-2
3.6-3

Each surface facility is depicted on at least three exhibits. The first is an overall site plan showing:

1. general layout
2. permit boundary
3. all buildings, structures, power lines
4. areas disturbed by mining prior to 1977 and not reaffected by PRCC

5. pond locations and drainage areas

6. elevations via contours

7. significant fill, cut or bank locations

8. berm locations

The second concentrates on existing drainage patterns and control structures showing:

1. pond locations, on and off site drainage flow patterns

2. all straw dike sumps and nondischarge basins*

3. culvert locations and sizes

4. average channel cross section details showing dimensions, cross sectional area and average gradient

5. culverts and diversions are enumerated so that they can be related to peak flow calculations

6. pond plans and cross sections

The third site exhibit depicts final reclamation configuration, showing:

1. final drainage configuration

2. reconstructed channel dimensions

3. areas of significant cut or fill that will remain or that will be back filled

4. any permanent structures

The flow or containment characteristics of each structure (pond, culvert, diversion) are arranged in tabular form.

Some specific responses are provided to ACR comments as they relate to various site specific situations.

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*Nondischarging basins (NDB) intercept some site drainage to reduce sediment load on ponds or are for small areas that do not readily drain to ponds. They may or may not actually discharge, but in no case do they discharge off site directly.

TABLES

There have been included with discussions on each facility, a set of tables which list various drainage control structure characteristics.

The first table is a summation of pond volume and retention characteristics as relates to both the 10-year, 24-hour and 25-year, 24-hour design storms and sediment storage considerations. The existing pond capacity is compared to the theoretical storage requirements. A table is included for each pond or group of interconnected ponds for each facility. These tables are referenced primarily to exhibits showing existing drainage control configurations which depict pond plans and cross sections.

The second table lists diversions (ditches and channels) which direct undisturbed area flow around the sites. The average cross-sectional area and gradient are listed along with the peak flow capacity derived by the Manning equation. So that adequacy can be readily determined, the theoretical peak flow for each channel is also listed. This table is referenced to exhibits showing existing drainage configuration and to Exhibit 7-1.

The third table lists information similar to the second except that it is for culverts. The same exhibits are referenced. Culvert capacities have been derived using Utah Highway Department nomographs found in the Manual of Instruction, Part 4; Road Drainage, SLC, 1965.

The fourth table lists the characteristics of channels to be constructed during reclamation. These channels are designed for the 100-year, 24-hour storm. The final channel dimensions are similar to the natural channel dimensions above or below the mine sites, within the constraints of the theoretical peak flow design needed. This table is referenced to exhibits showing reclamation configurations and ultimately to Exhibit 7.1.

NO. 5 MINE - SOWBELLY CANYON

DIVERSIONS AND CULVERTS

Diversions and culverts in Sowbelly Canyon were, for the most part, installed prior to the enactment of SMCRA regulations. Some were installed as part of interim compliance measures. The flow characteristics of these structures are described in Tables 3.2-4(C) and 3.2-4(D). Exhibits 3.2-1 and 3.2-2 show the locations and the dimensions of all diversions and culverts. Exhibit 3.2-2 depicts average channel geometry for all diversions. Tables and exhibits, reviewed together, should adequately address the present drainage control plan.

Watershed characteristics and peak flow requirements are listed in Chapter VII, Table 7.5. Drainage areas are delineated on Exhibit 7.1.

DRAINAGE CONTROL FUNCTIONING

Three interconnected ponds (003, 004, 005) collect runoff from about 11.4 acres of mine area and 2.3 acres of undisturbed area. Table 3.2-3(B) assessed the adequacy of these structures and Exhibit 3.2-2 depicts location, plan and cross section. These ponds have no final discharge structure since they have the combined capacity to retain, without discharge, the 25-year, 24-hour storm. A variance for the no discharge configuration was granted by DOGM on 4-20-82, designating these structures as "evaporation cells".

About 1/2 acre at the south end of the permit area bypasses all ponds and is treated by a series of straw dike sumps. Drainage from the site is contained within perimeter berms and directed to sediment control structure (see Exhibit 3.2-1, 3.2-2). Undisturbed area runoff (with exception of about 2.0 acres near the water tanks) is directed around the site through a number of diversions and culverts.

The access road is drained by a series of culverts at the outlets of major side canyons. An open ditch carries any excess runoff along the west side of the road to Spring Canyon. As requested by the ACR, a typical road cross section is included on Exhibit 3.2-3.

VARIANCE REQUESTS

Small Area Exceptions - Drainage Controls

Two small areas have been shown as part of the permit area that were not previously included (due to clarification of "permit area" by OSM during 3-24-83 meeting).

The first is the substation south of the mine site. The access road and gravel pad are about 0.2 acres. The area is infrequently used and not subject to any present mining activities. The second site is the pump house/clorination facility near the mouth of Sowbelly Canyon. The area occupied by the building and required access is about 1,200 ft.^{2}. The site is infrequently used and not subject to mining activities.

Culvert Sizing Variance

Table 3.2-3(D) indicates that, using the rational method for runoff calculations, two culverts are inadequate for the 10-year, 24-hour storm peak flow. These culverts have been in place since 1974 and they have yet to pass more than a few inches of water depth. Even in this wettest of recorded years, no runoff has threatened to exceed their capacities. Either the rational method is extremely conservative or the infiltration capability in the canyon bottom is much greater than assumed.

In any event, a variance is requested based on the rational method calculations, due to the short life of this site (2-4 years). As was stated in the Crandall modification both the Sowbelly and Hardscrabble facilities will be phased out when Crandall goes on line. We would hope that we may be allowed to retain the present structures until reclamation activities can rectify the situation. At that time the 36" culvert (C-1) will be removed and an open channel installed. The 72" (C-3) will remain but with a crossable rip-rapped emergency overflow installed on the downstream side (see Exhibit 3.2-3).

TABLE: 3.2-3(B)

POND VOLUME SUMMATION: No. 5 Mine Site - 003, 004, 005

		(A) STORM RUNOFF*				(B) SEDIMENT STORAGE
		10-year, 24-hour Storm		25-year, 24-hour Storm		(0.035 Ac Ft/Ac of Disturbed Area)
		(1) CN 65 (508 Ft^3/Ac)	(2) CN 85 (2,723 Ft^3/Ac	(3) CN 65 (908 Ft^3/Ac	(4) CN 85 (3,630 Ft^3/Ac	
SUB-BASIN	AREA (Ac)	(Ft^3 X Acres)	(Ft^3 X Acres)	(Ft^3 X Acres)	(Ft^3 X Acres)	(Ac Ft X Acres)
Disturbed Area	11.9	--	32,404	--	43,197	18,143
Vegetated Area	2.5	1,168	--	2,088	--	--
TOTAL		(1) 1,168	(2) 32,404	(3) 2,088	(4) 43,197	(B) 18,143

POND CAPACITY NEEDED: 10 yr, 24 hr Storm [A1 + A2 + B] 51,709 Ft^3

25 yr, 24 hr Storm [A3 + A4 + B] 63,428 Ft^3

EXISTING CAPACITY:** 68,490 Ft^3

* A curve number (CN) of 65 is used for vegetated area; CN 85 is used for disturbed areas.

** Ref. Exhibit 3.2-1, 3.2-2

Replaces Table 3.2-4(B) on Page 117

TABLE 3.2-3(C)

DRAINAGE CONTROL FEATURES IN SOWBELLY CANYON:

DIVERSIONS [See Exhibits: 3.2-2]

Assigned No.	Cross Section Area (ft.^{2})	Overall Slope (ft./ft)	Peak Flow Capacity (CFS)	Drainage Area (acres) & No.*	10 yr., 24-hr. Storm Peak Flow (CFS)
D-1	77	0.06	1746	1006.7; SB-3	825.5
D-2	17.5	0.13	293	65; 1/2 SB-2	83
D-3	10.5	0.12	144	65; 1/2 SB-2	83
D-4	32	0.08	489	16.1; SB-4A	16.2
D-5	4	0.14	10.5	4.3; SB-5	5
D-6	9	0.15	135	1.5; SB-7	2

* See Exhibit 7-1

TABLE 3.2-3(D)

CULVERTS

SITE: Sowbelly Canyon

Assigned No.	Diameter (inches)	Headwater Depth (ft.)	Peak Flow* Capacity (CFS)	Drainage Area (acres) & No.**	10 yr., 24-hr. Storm Peak Flow (CFS)
C-1	36	5	75	135.7 - SB-4 & SB-5	170
C-2	30	3	25	4.3 - SB-5	4.3
C-3	72	13.5	500	1006.7 - SB-3	825
C-4	30	4.8	45	65 - 1/2 SB-2	82
C-5	24	5	32	65 - Overflow from C-4, 1/2 SB-2	82
C-6	54	10	210	147 - Overflow from C-4, C-3, SB-2	180
C-7	24	4.3	28	8 - 1/2 SB-1	8.2
C-8	24	4.7	30	8 - 1/2 SB-1	8.2
C-9	36	5	75	86 - Road and Hillside	87

* See nomograph, p. 416, MRP
** See Exhibit 7-1

TABLE 3.2-2(E)

DRAINAGE CONTROL FEATURES IN Sowbelly Canyon:

RECLAMATION CHANNEL DIMENSIONS [See Exhibits: 3.2-3]

Assigned No.	Cross Section Area (ft.^{2})	Overall Slope (ft/ft)	Peak Flow Capacity (CFS)	Drainage Area (acres) & No.*	100 yr., 24-hr. Storm Peak Flow (CFS)
RC-1	30.18	0.04	269	131.3; SB-4	261
RC-2(1)	112	0.02	862	1006.7; SB-3	829
RC-3	21.1	0.12	269	120.2, SB-2	258

* See Exhibit 7-1

(1) Emergency overflow for culvert C-3 - Peak flow is that which is in excess of culvert capacity: 500 cfs

NO. 3 AND NO. 4 MINES - HARDSCRABBLE CANYON

The Hardscrabble Canyon mine site has been used by numerous coal companies since the 1880's. It was only in 1977-78 that an attempt was made to install drainage controls. Installation included three ponds and various berms and diversions. Steep-sided canyons prevented the ideal, total separation of disturbed and undisturbed drainage. As a result, a significant area of the undisturbed hillsides drain onto the mine site. Drainage controls, though difficult to install and maintain, have functioned satisfactorily reducing suspended solids contamination of stream channels.

Functioning of Drainage Controls

To the extent possible undisturbed drainage has been directed around the site. Starting at the north end (see Exhibit 3.3-2A, B and 3.3-1) about 350 acres (HC-5) are diverted around "Goose Island" in channel D-1, which flows to D-4. D-4 also collects HC-4 and drains through a culvert C-1 which discharges into the main channel; D-5 and D-6 runoff from HC-9 would also flow through C-1. Runoff from undisturbed area HC-8 flows into the main channel just south of Pond 006. Drainage from HC-3 is diverted along the south side of the No. 4 loadout area, through culvert C-3 and discharges to the main channel near the maintenance bathhouse. The main channel flows through two culverts C-2 and C-4 and under three old bridges. Side canyon drainages HC-13, HC-2 (discharging near Dog Flat), HC-16 and HC-1 (from Magazine Canyon) flow into the main channel between the maintenance area and the guard shack. The overall gradient of the main channel is 4-5%.

Runoff from the mine site is directed through ponds or straw dikes via on site berms and ditches. Pond 006, at the north end collects runoff from the substation area, Goose Island and undisturbed drainages HC-6 and HC-7 (see Table 3.3-B). Pond 007 catches drainage from the No. 4 loadout area, HC-10 and HC-18. Pond 008 contains water from the maintenance area, the warehouse, HC-12 and HC-15 flow through a series of straw dikes and sumps along the access road.

Variance Requests

Review of the various tables and exhibits would indicate that several structures are undersized. We would only submit that these structures have functioned without failure for 5-6 years and that the best solution to the situation would be to reclaim the area. Reclamation is scheduled to begin in the fall of this year for the Goose Island area. Other areas will be reclaimed as Crandall Canyon comes on line, in two to three years.

The worst cases; culvert C-1, diversions D-1 and D-4 will be rectified by reconstruction of the main channel this fall. Pond 007 will be cleaned more often than required by rules so as to maintain maximum storm retention capacity. Should the pond overflow (it never has), discharge would pass through straw dikes and through Pond 008 before discharging from the permit area.

We request that we be granted an exemption so as to retain the present drainage control system until we pull out of this facility and properly address the situation by reclamation.

TABLE: 3.3 (B)

POND VOLUME SUMMATION: No. 3 Mine - Pond 006

		(A) STORM RUNOFF*				(B) SEDIMENT STORAGE
		10-year, 24-hour Storm		25-year, 24-hour Storm		(0.035 Ac Ft/Ac of Disturbed Area)
		(1) CN 65 (508 Ft^3/Ac)	(2) CN 85 (2,723 Ft^3/Ac)	(3) CN 65 (908 Ft^3/Ac)	(4) CN 85 (3,630 Ft^3/Ac)	
SUB-BASIN	AREA (Ac)	(Ft^3 X Acres)	(Ft^3 X Acres)	(Ft^3 X Acres)	(Ft^3 X Acres)	(Ac Ft X Acres)
Old Refuse Pile (Goose Island)	3.5	--	9,530.5	--	12,705	5,336
Substation and Access Road	0.4	--	1,089.2	--	1,452	610
HC-7	5.6	2,845	--	5,085	--	--
HC-6	29.4	14,935	--	26,695	--	--
TOTAL		(1) 17,780	(2) 10,619.7	(3) 31,780	(4) 14,157	(B) 5,946

POND CAPACITY NEEDED: 10 yr, 24 hr Storm [A1 + A2 + B] 34,346 Ft^3

25 yr, 24 hr Storm [A3 + A4 + B] 51,883 Ft^3

EXISTING CAPACITY:** 137,980 Ft^3

* A curve number (CN) of 65 is used for vegetated area; CN 85 is used for disturbed areas.

** Ref. Exhibit 3.3-2A, 3.3-2B

Replaces Table 3.3-3(B) on Page 128

TABLE: 3.3 (C)

POND VOLUME SUMMATION: No. 3 Mine - Pond 007

		(A) STORM RUNOFF*				(B) SEDIMENT STORAGE
		10-year, 24-hour Storm		25-year, 24-hour Storm		(0.035 Ac Ft/Ac of Disturbed Area)
		(1) CN 65 (508 Ft^3/Ac)	(2) CN 85 (2,723 Ft^3/Ac)	(3) CN 65 (908 Ft^3/Ac)	(4) CN 85 (3,630 Ft^3/Ac)	
SUB-BASIN	AREA (Ac)	(Ft^3 X Acres)	(Ft^3 X Acres)	(Ft^3 X Acres)	(Ft^3 X Acres)	(Ac Ft X Acres)
Disturbed Area	7.0	--	19,061	--	25,410	10,672
HC-10	6.2	3,140	--	5,630	--	--
HC-18	1.5	762	--	1,362	--	--
TOTAL		(1) 3,902	(2) 19,061	(3) 6,992	(4) 25,410	(B) 10,672

POND CAPACITY NEEDED: 10 yr, 24 hr Storm [A1 + A2 + B] 33,635 Ft^3

25 yr, 24 hr Storm [A3 + A4 + B] 43,074 Ft^3

EXISTING CAPACITY:** 21,500 Ft^3

* A curve number (CN) of 65 is used for vegetated area; CN 85 is used for disturbed areas.

** Ref. Exhibit 3.3-2A

Replaces Table 3.3-3(C) on Page 129

TABLE: 3.3 (D)

POND VOLUME SUMMATION: No. 3 Mine - Pond 008

2.2-2.4" 8pt from NOAA

		(A) STORM RUNOFF*				(B) SEDIMENT STORAGE
		10-year, 24-hour Storm		25-year, 24-hour Storm		(0.035 Ac·Ft/Ac of Disturbed Area)
		(1) CN 65 (508 Ft^3/Ac)	(2) CN 85 (2,723 Ft^3/Ac)	(3) CN 65 (908 Ft^3/Ac)	(4) CN 85 (3,630 Ft^3/Ac)	
SUB-BASIN	AREA (Ac)	(Ft^3 X Acres)	(Ft^3 X Acres)	(Ft^3 X Acres)	(Ft^3 X Acres)	(Ac Ft X Acres)
Disturbed Area	6.5	--	17,700	--	23,595	9,910
HC-12	9.5	4,826	--	8,626	--	--
HC-13	2.4	1,219	--	2,179	--	--
TOTAL		(1) 6,045	(2) 17,700	(3) 10,805	(4) 23,595	(B) 9,910

POND CAPACITY NEEDED: 10 yr, 24 hr Storm [A1 + A2 + B] 33,655 Ft^3

25 yr, 24 hr Storm [A3 + A4 + B] 44,310 Ft^3

EXISTING CAPACITY:** 47,850 Ft^3

* A curve number (CN) of 65 is used for vegetated area; CN 85 is used for disturbed areas.

** Ref. Exhibit 3.3-2A, 3.3-2B

Replaces Table 3.3-3(D) on Page 131

TABLE 3.3 (E)

DRAINAGE CONTROL FEATURES IN Hardscrabble Canyon:

DIVERSIONS [See Exhibits: 3.3-2]

Assigned No.	Cross Section Area (ft.^{2})	Overall Slope (ft./ft)	Peak Flow Capacity (CFS)	Drainage Area (acres) & No.*	10 yr., 24-hr. Storm Peak Flow (CFS)
D-1	28	0.05	345	359.2; HC-5	452
D-2	14.9	0.15	257	12.3; HC-9	13
D-3	16.8	0.15	308	61.3; HC-3	62
D-4	13	0.07	143	540.2; HC-4, 5	681
D-5	80.5	0.06	1,783	554.5; HC-4, 5, 9, 13	341
D-6	22.8	0.06	296	575; HC-2,3,4, 9,5,13,16	440

* See Exhibit 7-1

TABLE 3.3(F)

CULVERTS

SITE: Hardscrabble Canyon

Assigned No.	Diameter (inches)	Headwater Depth (ft.)	Peak Flow* Capacity (CFS)	Drainage Area (acres) & No.**	10 yr., 24-hr. Storm Peak Flow (CFS)
C-1	24"	5.5	35	551; HC-9,4,5	694
C-2	54"	7.0	160	11.1; HC-8	11.2
C-3	48"	5	100	61.3; HC-3	62
C-4	60"	15	350	623.4; HC-9,4,5, 3,8	773.4

* See nomograph, p. 416, MRP
** See Exhibit 7-1

TABLE 3.3(G)

DRAINAGE CONTROL FEATURES IN Hardscrabble Canyon:

RECLAMATION CHANNEL DIMENSIONS [See Exhibits: 3.3-3]

Assigned No.	Cross Section Area (ft.^{2})	Overall Slope (ft/ft)	Peak Flow Capacity (CFS)	Drainage Area (acres) & No.*	100 yr., 24-hr. Storm Peak Flow (CFS)
RC-1	11	0.15	134	80; HC-3, 9, 10	126
RC-2	18.75	0.35		181; HC-4	358
RC-3	57	0.12	1,171	577; HC-4, 5, 6, 7	1,125
RC-4	16	0.10	87	53; HC-11	83
RC-5	96.25	0.06	1,832	762	920

* See Exhibit 7-1

CASTLE GATE AREA - COAL PREPARATION PLANT AND REFUSE DISPOSAL SITE

The coal processing plant at Castle Gate is designed for an eventual peak production of 6 X 10^6 tons per year. The plant was constructed in 1975-77 on the site of the old town of Castle Gate, the Utah Fuel No. 3 Mine and the Utah Fuel coal tipple. The life of the facility is equal to time required to extract the coal reserve - 35 to 100 years.

The Schoolhouse Canyon refuse disposal site was developed in 1976 along the old tailings track from the Utah Fuel tiple. About 13% of raw coal mined ends up as refuse disposed in this area. The original design life of this disposal site was 7 years based upon a rapid build-up in production. Today's market forecasts indicate that a build-up to maximum production may not be necessary for 5-10 years. The estimated life of this disposal site is now 10-15 years.

Drainage Control Functions

On site runoff is directed to various ponds and sumps by berm and on site diversions as shown on Exhibit 3.4-2. Undisturbed drainage is directed around the site in both permanent and temporary diversions and culverts. Permanent compliance drainage controls were discussed in the 12-12-82 revision and constructed in April 1983.

Drainage control structures for the refuse pile were designed under MSHA requirements and greatly exceed SMCRA regulation by use of design criteria based on 1/2 the probably maximum thunder storm.

The outlet for the Schoolhouse Canyon diversion was a point of concern in the ACR. The constructed channel terminates at the upper end of a natural channel on the Barn Canyon side which flows to Barn Canyon near the old Barn. The ACR question raised had to do with the impacts upon this channel of the potential added flow from upper Schoolhouse Canyon; would excessive erosion occur?

Some additional erosion will occur but we feel that any attempt to operate on the 50% slope, over which the natural channel is carved would disturb several acres of the thin colluvium and create a far greater potential for erosion and sloughage than any storm runoff could cause. A close inspection of the channel and hillside revals that the existing channel is cut for most of its length, into the rock of the canyon wall. Thin colluvial soils along the channel support sparse vegetation. The lower end of the channel has accumulations of large boulders capable of withstanding and reducing the velocity of excessive flows. Although it is generally anathema to those who regulate, the best action from both an engineering and an environmental protection standpoint is no action. PRCC requests that the existing condition be approved.

TABLE: 3.4(B)

POND VOLUME SUMMATION: Oil - Castle Gate

		(A) STORM RUNOFF*				(B) SEDIMENT STORAGE
		10-year, 24-hour Storm		25-year, 24-hour Storm		(0.035 Ac Ft/Ac of Disturbed Area)
		(1) CN 65 (508 Ft^3/Ac)	(2) CN 85 (2,723 Ft^3/Ac)	(3) CN 65 (908 Ft^3/Ac)	(4) CN 85 (3,630 Ft^3/Ac)	
SUB-BASIN	AREA (Ac)	(Ft^3 X Acres)	(Ft^3 X Acres)	(Ft^3 X Acres)	(Ft^3 X Acres)	(Ac Ft X Acres)
Disturbed Area	13.3	--	36,216	--	48,279	20,277
TOTAL		(1) --	(2) 36,216	(3) --	(4) 48,279	(B) 20,277

POND CAPACITY NEEDED: 10 yr, 24 hr Storm [A1 + A2 + B] 56,493 Ft^3

25 yr, 24 hr Storm [A3 + A4 + B] 68,556 Ft^3

EXISTING CAPACITY:** 65,000 Ft^3

* A curve number (CN) of 65 is used for vegetated area; CN 85 is used for disturbed areas.

** Ref. Exhibit 3.4-2, 12-9-83 Submittal CGE-103

Replaces Table NA on Page NA

TABLE: 3.4(C)

POND VOLUME SUMMATION: Refuse Pile Pond at Castle Gate

		(A) STORM RUNOFF*				(B) SEDIMENT STORAGE
		10-year, 24-hour Storm		25-year, 24-hour Storm		(0.035 Ac Ft/Ac of Disturbed Area)
		(1) CN 65 (508 Ft^3/Ac)	(2) CN 85 (2,723 Ft^3/Ac)	(3) CN 65 (908 Ft^3/Ac)	(4) CN 85 (3,630 Ft^3/Ac)	
SUB-BASIN	AREA (Ac)	(Ft^3 X Acres)	(Ft^3 X Acres)	(Ft^3 X Acres)	(Ft^3 X Acres)	(Ac Ft X Acres)
Refuse Pile & Hillside	63	--	171,549	--	228,690	96,050
TOTAL		(1) --	(2) 171,549	(3) --	(4) 228,690	(B) 96,050

POND CAPACITY NEEDED: 10 yr, 24 hr Storm [A1 + A2 + B] 267,599 Ft^3

25 yr, 24 hr Storm [A3 + A4 + B] 324,740 Ft^3

EXISTING CAPACITY:** 496,584 Ft^3

* A curve number (CN) of 65 is used for vegetated area; CN 85 is used for disturbed areas.

** Ref. Exhibit 3.4-1, Appendix 3.4A, Exh. 6.1 B,C

Replaces Table NA on Page NA

TABLE: 3.4(D)

POND VOLUME SUMMATION: 012 A & B - Castle Gate

		(A) STORM RUNOFF*				(B) SEDIMENT STORAGE
		10-year, 24-hour Storm		25-year, 24-hour Storm		(0.035 Ac Ft/Ac of Disturbed Area)
		(1) CN 65 (508 Ft^3/Ac)	(2) CN 85 (2,723 Ft^3/Ac)	(3) CN 65 (908 Ft^3/Ac)	(4) CN 85 (3,630 Ft^3/Ac)	
SUB-BASIN	AREA (Ac)	(Ft^3 X Acres)	(Ft^3 X Acres)	(Ft^3 X Acres)	(Ft^3 X Acres)	(Ac Ft X Acres)
Disturbed Area	20.7	--	56,366	--	75,141	31,559
TOTAL		(1) --	(2) 56,366	(3)	(4) 75,141	(B) 31,559

POND CAPACITY NEEDED: 10 yr, 24 hr Storm [A1 + A2 + B] 87,925 Ft^3

25 yr, 24 hr Storm [A3 + A4 + B] 106,700 Ft^3

EXISTING CAPACITY:** 113,860 Ft^3

* A curve number (CN) of 65 is used for vegetated area; CN 85 is used for disturbed areas.

** Ref. Exhibit 3.4-2, 12-9-83 Submittal CGE-104

Replaces Table NA on Page NA

TABLE 3.4(E)

DRAINAGE CONTROL FEATURES IN Castle Gate/Utah Fuel:

DIVERSIONS [See Exhibits: 3.4-1, 3.4-2]

Assigned No.	Cross Section Area (ft.^{2})	Overall Slope (ft./ft)	Peak Flow Capacity (CFS)	Drainage Area (acres) & No.*	10 yr., 24-hr. Storm Peak Flow (CFS)
D-1	31.5	0.08	541	4; CG-8	4
D-2	682	0.06	37,373	1,238; CG-9A 9B	786
D-3	9.5	0.06	93	8.4; CG-7	8.5
D-4	10	0.10	124	6.4; CG-6	7
D-5	156	0.02	2,840	188.2; CG-9B	294 (100 yr.stm)
D-6	10	0.16	157	5.7; CG-10	5.7
D-7	12	0.09	143	56; Part CG-4	65.4
D-8	21	0.12	363	27; CG-3	27

* See Exhibit 7-1

TABLE 3.4(F)

CULVERTS

SITE: Castle Gate Area

Assigned No.	Diameter (inches)	Headwater Depth (ft.)	Peak Flow* Capacity (CFS)	Drainage Area (acres) & No.**	10 yr., 24-hr. Storm Peak Flow (CFS)
C-1	18"	6	22	1.9; ½ CG-8	2
C-2	8'2"X5'9"(1)	14	1,100	1,255; CG-9A,9B,7, 6, ½ 8	802
C-3	24"	5	33	14.8; CG-7, 6	15
C-4	12"	3	7	6.4; CG-6	6.4
C-5	60"	20	375	69; CG-10, Refuse Pile	25 yr. stm: 80
C-6	5' X 10' box	12	166(2)	101; CG-4	127.3

* See nomograph, p. 416, MRP
** See Exhibit 7-1

(1) Two arch pipe culverts

(2) From $Q = a\sqrt{\frac{2gH}{1+Km+KpL}}$

TABLE 3.4(G)

DRAINAGE CONTROL FEATURES IN Castle Gate:

RECLAMATION CHANNEL DIMENSIONS [See Exhibits: 3.4-3]

Assigned No.	Cross Section Area (ft.^{2})	Overall Slope (ft/ft)	Peak Flow Capacity (CFS)	Drainage Area (acres) & No.*	100 yr., 24-hr. Storm Peak Flow (CFS)
RC-1	5	0.10	42	20; CG-6, 7	30
RC-2	15.75	0.05	130	70; CG-5 CG-10	110
RC-3	10.2	0.09	97	56; Part CG-4	89
RC-4	5	0.15	51	27; CG-3	42

* See Exhibit 7-1

UTAH FUEL NO. 1

Utah Fuel No. 1 is the loadout portal for coal from No. 3 Mine. Eventually through interseam coal passes it will carry all coal mined from all seams on the western half of the property. A transfer building drops coal to a conveyor which runs through a concrete tunnel under U. S. Route 6 to a steel tube over the Price River and on to the preparation plant.

Functioning of Drainage Controls

Drainage from 0.8 acres of disturbed area and 0.7 acres of undisturbed, vegetated hillside flow to pond 010 (see Table 3.5(A). About 0.1 acres east of pond 010 has a straw dike to control runoff.

Undisturbed runoff is diverted around the site, as shown on Exhibit 3.5-1, to the highway road ditch.

Variance Requests

Although pond 010 is covered by an NPDES permit, it has no discharge structure. PRCC requests a variance similar to that granted by DOGM for pond 003, 004 and 005 since pond 010 is of sufficient capacity to contain the 25-year, 24-hour storm.

A small area exception is requested for the 0.1 acres east of pond 010 to continue drainage control with a straw dike. Portions of this dike are intermittently removed to gain access for pond cleaning.

TABLE: 3.5(A)

POND VOLUME SUMMATION: 010 Castle Gate Area - Utah Fuel

		(A) STORM RUNOFF*				(B) SEDIMENT STORAGE
		10-year, 24-hour Storm		25-year, 24-hour Storm		(0.035 Ac Ft/Ac of Disturbed Area)
		(1) CN 65 (508 Ft^3/Ac)	(2) CN 85 (2,723 Ft^3/Ac)	(3) CN 65 (908 Ft^3/Ac)	(4) CN 85 (3,630 Ft^3/Ac)	
SUB-BASIN	AREA (Ac)	(Ft^3 X Acres)	(Ft^3 X Acres)	(Ft^3 X Acres)	(Ft^3 X Acres)	(Ac Ft X Acres)
Disturbed Area	0.8	--	2,178	--	2,904	1,220
Undisturbed Well Veg. Area	0.7	356	--	636	--	--
TOTAL		(1) 356	(2) 2,178	(3) 636	(4) 2,904	(B) 1,220

POND CAPACITY NEEDED: 10 yr, 24 hr Storm [A1 + A2 + B] 3,754 Ft^3

25 yr, 24 hr Storm [A3 + A4 + B] 4,760 Ft^3

EXISTING CAPACITY:** 5,400 Ft^3

* A curve number (CN) of 65 is used for vegetated area; CN 85 is used for disturbed areas.

** Ref. Exhibit 3.4-1, 3.5-1

Replaces Table NA on Page NA

WILLOW CREEK STORAGE AREA

The Willow Creek storage area, as depected on Exhibit 3.6-1, is about 11 acres of fairly low gradient surface (2-4$) developed during the operation of the Castle Gate No. 4 and No. 2 Mines (from the 1920's to 1971). Some expansion was made in 1975-76 by McCulloch Oil Company, achieving the present configuration, with the intent of re-opening the Castle Gate No. 2 Mine. The Castle Gate No. 2 Mine is variously known as the Utah Fuel No. 2 and the Kenilworth Mine (since the two were connected in the sixties).

PRCC intends continued use of Willow Creek as a limited storage area until market conditions allow the development of a new facility through the old Castle Gate No. 2 Mine portals. Any re-opening and development of the significant coal reserves remaining requires continued operation of the ventilation system.

The ventilation system now includes the fan shown as No. 4 on Exhibit 3.6-1 and the two Kenilworth intake portals shown on Exhibit 1.1. PRCC has made no modification to this system, however routine inspection is made to ensure operation. We must be allowed to continue the operation of the ventilation system, although we are aware that it cannot be considered part of the permit area at this time.

Functioning of the Drainage Controls

On site runoff is directed to two ponds 018 and 019 and a sump at the south end of the access road (see Tables 3.6(A) and 3.6(B). Runoff from the north end flows to a large non-discharging depression at the base of the old highwall.

Drainage from undisturbed hillsides flows via diversions to culverts C-1 and C-2. Runoff from Jap Canyon on the south end flows along the side of the access road to Willow Creek. Access to the site over Willow Creek is through two existing 60" culverts.

Variance Requests

Although ponds 018 and 019 have NPDES discharge permits, their capacities are sufficient to contain the 25-year, 24-hour storm without discharge. We would request that these structures be granted variance from discharge pipe installation and designation as "evaporation cells" similar to the variance granted for ponds 003, 004 and 005 in April of 1982 by DOGM.

PRCC also requests that small area exceptions be granted to continue draining the 1.1 acres below pond 018 to the access road sump and the 3.6 acres north of pond 019 to the depression at the north end. The access road sump is approximately 30' x 40' x 2.5' deep with an approximate capacity of 3,000 $ft.^3$.

The north depression is about 200' x 100' and could contain 4-5 feet of water depth.

TABLE: 3.6(A)

POND VOLUME SUMMATION: Willow Creek - Pond 018

		(A) STORM RUNOFF*				(B) SEDIMENT STORAGE
		10-year, 24-hour Storm		25-year, 24-hour Storm		(0.035 Ac Ft/Ac of Disturbed Area)
		(1) CN 65 (508 Ft^3/Ac)	(2) CN 85 (2,723 Ft^3/Ac)	(3) CN 65 (908 Ft^3/Ac)	(4) CN 85 (3,630 Ft^3/Ac)	
SUB-BASIN	AREA (Ac)	(Ft^3 X Acres)	(Ft^3 X Acres)	(Ft^3 X Acres)	(Ft^3 X Acres)	(Ac Ft X Acres)
Disturbed Area (1)	2.8	1,422	--	2,542	--	4,269
TOTAL		(1) 1,422	(2) --	(3) 2,542	(4) --	(B) 4,269

POND CAPACITY NEEDED: 10 yr, 24 hr Storm [A1 + A2 + B] 5,691 Ft^3

25 yr, 24 hr Storm [A3 + A4 + B] 6,811 Ft^3

EXISTING CAPACITY:** 12,800 Ft^3

(1) Willow Creek facility is a low use area which is moderately vegetated, of low overall gradient (1-2%) and is fairly permeable.

* A curve number (CN) of 65 is used for vegetated area; CN 85 is used for disturbed areas.

** Ref. Exhibit 3.6-2

Replaces Table NA on Page NA

TABLE: 3.6(B)

POND VOLUME SUMMATION: Willow Creek - Pond 019

		(A) STORM RUNOFF*				(B) SEDIMENT STORAGE
		10-year, 24-hour Storm		25-year, 24-hour Storm		(0.035 Ac Ft/Ac of Disturbed Area)
		(1) CN 65 (508 Ft^3/Ac)	(2) CN 85 (2,723 Ft^3/Ac)	(3) CN 65 (908 Ft^3/Ac)	(4) CN 85 (3,630 Ft^3/Ac)	
SUB-BASIN	AREA (Ac)	(Ft^3 X Acres)	(Ft^3 X Acres)	(Ft^3 X Acres)	(Ft^3 X Acres)	(Ac Ft X Acres)
Disturbed Area (1)	4.6	2,337	--	3,814	--	7,013
TOTAL		(1) 2,337	(2) --	(3) 3,814	(4) --	(B) 7,013

POND CAPACITY NEEDED: 10 yr, 24 hr Storm [A1 + A2 + B] 9,350 Ft^3

25 yr, 24 hr Storm [A3 + A4 + B] 10,827 Ft^3

EXISTING CAPACITY:** 10,628 Ft^3

(1) Willow Creek facility is a low use area which is mostly vegetated, of low overall gradient (1-2%) and is fairly permeable.

* A curve number (CN) of 65 is used for vegetated area; CN 85 is used for disturbed areas.

** Ref. Exhibit 3.6-2

Replaces Table NA on Page NA

TABLE 3.6(C)

DRAINAGE CONTROL FEATURES IN Willow Creek:

DIVERSIONS [See Exhibits: 3.6-1, 3.6-2]

Assigned No.	Cross Section Area (ft.^{2})	Overall Slope (ft./ft)	Peak Flow Capacity (CFS)	Drainage Area (acres) & No.*	10 yr., 24-hr. Storm Peak Flow (CFS)
D-1	11	0.05	104	75.5; ½ WC-2 WC-3	81
D-2	16.5	0.06	162	7.5; ½ WC-2	8
D-3	10.6	0.05	95	26; WC-1	27

* See Exhibit 7-1

TABLE 3.6(D)

CULVERTS

SITE: Willow Creek

Assigned No.	Diameter (inches)	Headwater Depth (ft.)	Peak Flow* Capacity (CFS)	Drainage Area (acres) & No.**	10 yr., 24-hr. Storm Peak Flow (CFS)
C-1	36	5.5	90	84; WC-2, WC-3	85
C-2	24	3	30	26; WC-1	26.2

* See nomograph, p. 416, MRP
** See Exhibit 7-1

TABLE 3.6(E)

DRAINAGE CONTROL FEATURES IN Willow Creek:

RECLAMATION CHANNEL DIMENSIONS [See Exhibits: 3.6-3]

Assigned No.	Cross Section Area (ft.^{2})	Overall Slope (ft/ft)	Peak Flow Capacity (CFS)	Drainage Area (acres) & No.*	100 yr., 24-hr. Storm Peak Flow (CFS)
RC-1	24	0.02	148	84; WC-2, 3	131
RC-2	24	0.06	257	95; WC-1, Jap Canyon	147

* See Exhibit 7-1

ITEM 5

A. R. B. C. U. UMC 783.25 and meeting with R.A.

Geologic cross sections (to be included in MRP as Exhibit 6.12)

ITEM 6

As required by comments under UMC 784.11

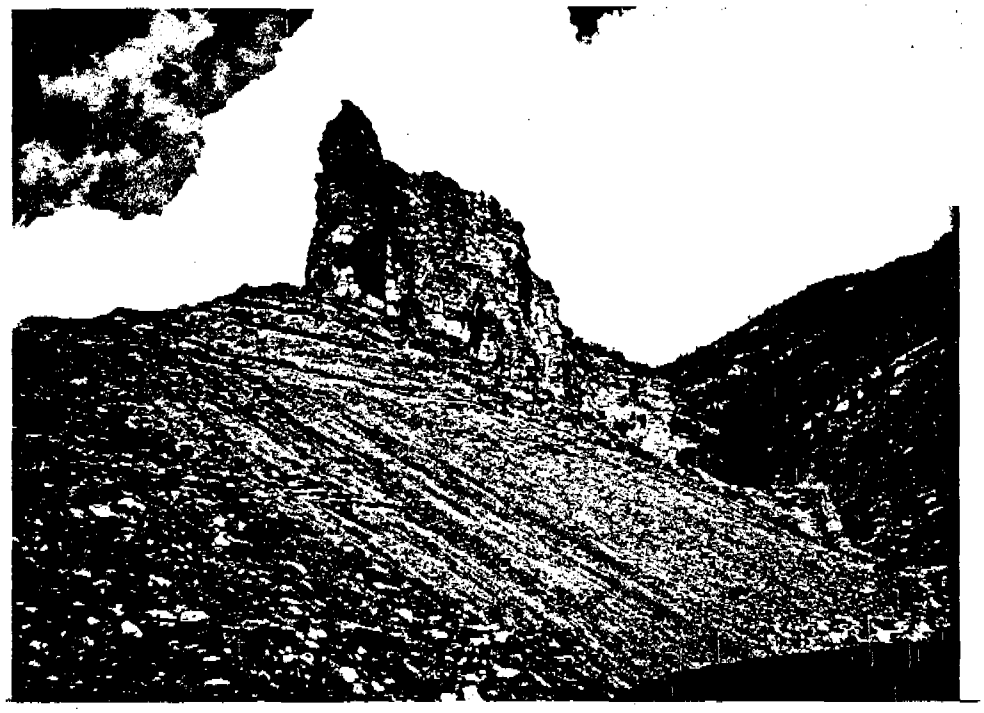
Discussion of cuts and fills with photos.

The accompanying pictures show specific slopes in the mine areas.

Slopes in the Schoolhouse Canyon area have been in place since 1976. The slopes in the mine areas (No. 3, No. 4 and No. 5) have been in place since the early 1970's and in some cases, much longer.

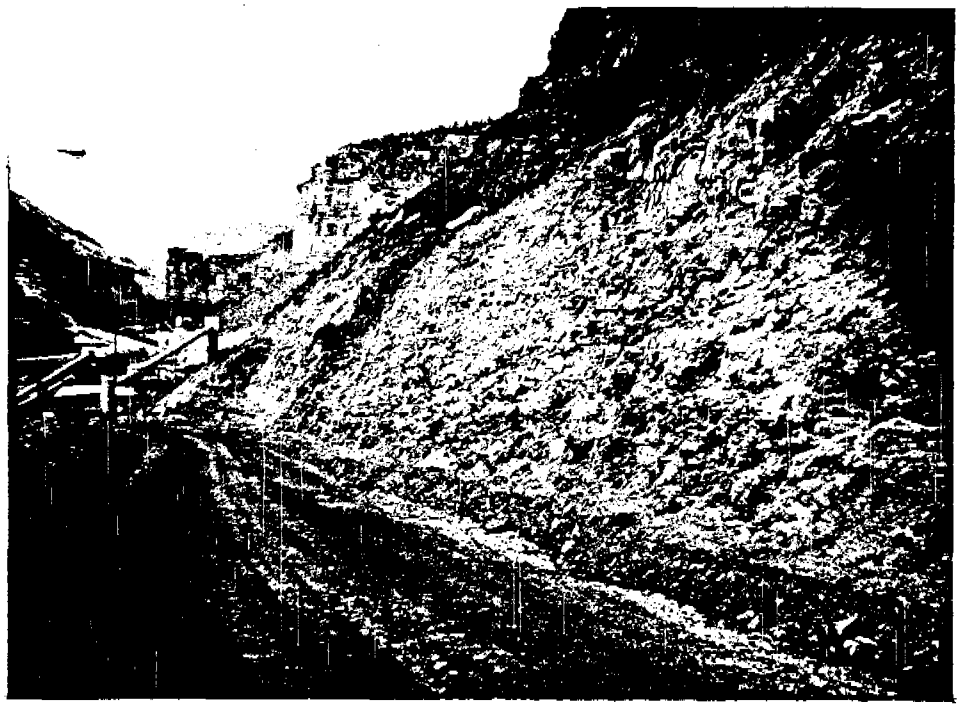
As can be seen from the pictures, minor sloughage has occurred over the years, but no event of any magnitude has been noted.

Since the youngest slopes on the property are at least seven years old and no failures have been noted, it is our opinion that these slopes are structurally stable.



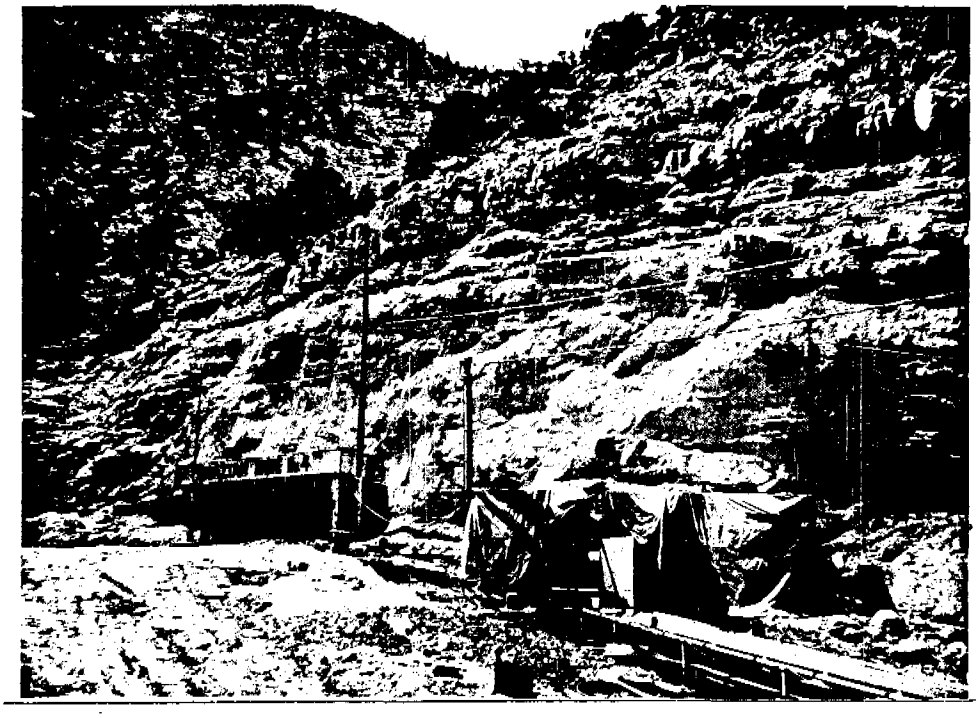
Above present refuse pile in Schoolhouse Canyon, rock slope - 70° - 90°. Refuse will occupy most of this area - topsoil will be placed on refuse and revegetated. An attempt will be made to revegetate the steep slopes by tackifying the area.

Diversion ditch from Schoolhouse to Barn Canyon - rock slope - 70° - 90°. Ditch will be left for permanent drainage - area will be revegetated.



Road from preparation plant to refuse disposal area, rock slope - 75°. Ditch will be left for permanent drainage - road and bank of ditch will be revegetated.

Preparation plant refuse disposal area, rock slope - 60° - 70°, Schoolhouse Canyon - will be topsoiled and contoured as much as possible - area will be revegetated.

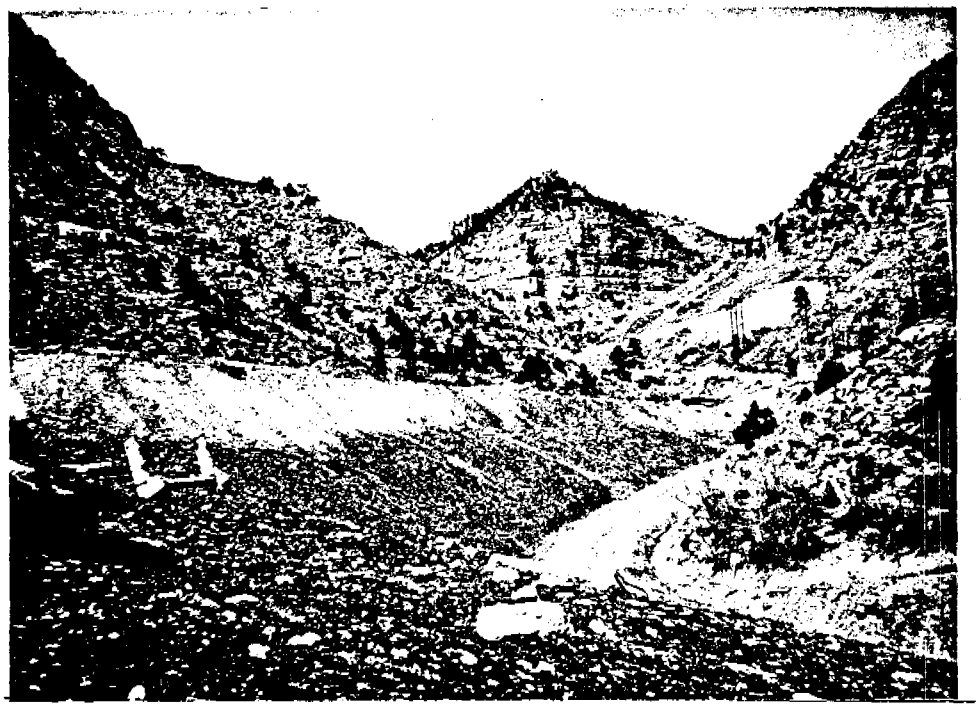


No. 4 Mine portal rock slope - 75° - 90°. Portal will be sealed. Area will be backfilled to drain away from seal, and revegetated.

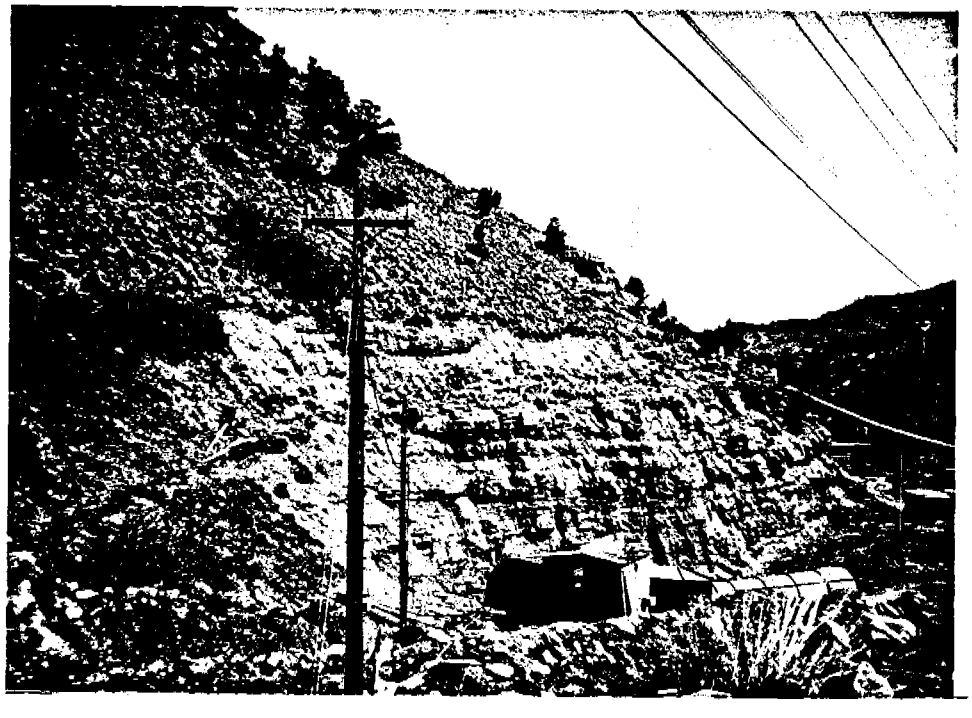
Near No. 4 Mine portal rock slope - 75° - 90°. Fan and structure will be removed, portal sealed, backfilled to drain away from seals, and revegetated.

Vertical dip in drainage near No. 4 Mine portal (Rock Face - 90°). Stilling basin at foot of drop-off will be riprapped to minimize erosion. Ditch on left will be left for permanent drainage - revegetated along banks.

Slope at No. 5 Mine (colluvium - 40°). Fans and structures will be removed, portals sealed and graded to drain away from seals; areas will be graded to as near natural slope as possible, and revegetated.



No. 3 Mine refuse pile to be regraded. Road and drainage will be relocated. Refuse will be covered with topsoil and revegetated. Present slope 25° - 30°.



No. 3 Mine fan rock slope - 65° - 90°. Fan and structure will be removed. Portal will be sealed. Area will be backfilled to drain away from seal, and revegetated.

ITEM 7

As required by comments under UMC 784.o6

Lab analysis of water sample from refuse pile piezometers.

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.
P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 3723
Date Rec'd 3-15-83
Date Sampled 3-15-83
Time Sampled

Client: Price River Coal co.
P. O. Box 629
Helper, Utah 84526

Sample ID: Refuse Pile

Acidity	< 1.0	mg/l $CaCO_3$
Alkalinity, Total	747	mg/l $CaCO_3$
Alkalinity, Bicarbonate		mg/l $CaCO_3$
Alkalinity, Carbonate		mg/l $CaCO_3$
Chloride		mg/l
Coliform, Fecal		MPN/100 ml
Coliform, Total		MPN/100 ml
Conductivity		umhos/cm
Fluoride		mg/l
Hardness, Total		mg/l $CaCO_3$
Nitrogen, Ammonia		mg/l
Nitrogen, Nitrate		mg/l
Nitrogen, Nitrite		mg/l
Oil & Grease	< 0.5	mg/l
pH	8.3	Units
Phosphorus, Ortho		mg/l
Phosphorus, Total		mg/l
Solids, Total Dissolved	6426	mg/l
Solids, Total Suspended	350	mg/l
Sulfate		mg/l
Sulfide		mg/l
Turbidity		NTU

Aluminum		mg/l
Arsenic		mg/l
Barium		mg/l
Beryllium		mg/l
Boron		mg/l
Cadmium		mg/l
Calcium		mg/l
Chromium		mg/l
Copper		mg/l
Iron	1.30	mg/l
Lead		mg/l
Magnesium		mg/l
Manganese	0.13	mg/l
Mercury		ug/l
Nickel		mg/l
Potassium		mg/l
Selenium		mg/l
Silica		mg/l
Sodium		mg/l
Vanadium		mg/l
Zinc		mg/l

Respectfully submitted

Certified Environmental Laboratory