0018

STATE OF UTAH
NATURAL RESOURCES
Oil, Gas & Mining

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February 4, 1987

Mr. Rick Olsen, President
Soldier Creek Coal Company
P. O. Box I
Price, Utah 84526

Dear Mr. Olsen:

Re: Five Year Permit Approval, Soldier Canyon Mine, ACT/007/018, Carbon County, Utah

Enclosed is the new Five Year Permit with stipulations for the Soldier Canyon Mine, along with the associated Decision Document, encompassing the Findings and Technical Analysis. Two original copies of the permit are enclosed. Please sign one and return it. You may keep the other one for your files.

Thank you for your cooperation during the permitting process. Feel free to contact Lowell Braxton or Susan Linner should you have questions about the permit or stipulations.

Best regards,

Dianne R. Nielson

Dianne R. Nielson
Director

SCL:jvb
cc: C. Durrett, Sunedco Coal
A. Klein
L. Braxton
S. Linner
B Team
0028R-64

CONTENTS

Soldier Creek Coal Company
Soldier Canyon Mine
ACT/007/018
Carbon County, Utah

February 4, 1987

1098R-1

Findings

Soldier Creek Coal Company
Soldier Canyon Mine
ACT/007/018
Carbon County, Utah

February 4, 1987

1. The Division of Oil, Gas and Mining (DOGM) has determined that the permit application submitted on March 26, 1986, and updated through January 6, 1987 is accurate and complete and complies with the requirements of the approved Utah State Program, the Surface Mining Control and Reclamation Act (SMCRA), and the Federal Lands Program, the Surface Mining Control and Reclamation Act (SMCRA), and the Federal Lands Program (UMC 786.19[a]).

2. The applicant proposes acceptable practices for the reclamation of disturbed lands (Mining and Reclamation Plan (MRP) Vol. 3, Part 5.0). These practices have been shown to be effective in the short-term; there are no long-term reclamation records utilizing native species in the western United States. Nevertheless, the regulatory authority has determined that reclamation, as required by the Act, can be feasibly accomplished under the MRP (see Technical Analysis [TA], Section UMC 817.111-.117) (UMC 786.19[b]).

3. The assessment of the probable cumulative impacts of all anticipated coal mining in the general area on the hydrologic balance has been made by the regulatory authority. The mining operation proposed under the application has been designed to prevent damage to the hydrologic balance in the permit area and in the associated off-site areas (UMC 786.19[c]). (See Cumulative Hydrologic Impact Analysis (CHIA) Section, attached to this Findings Document.)

4. The proposed permit area is (UMC 786.19[d]):

   A. Not included within an area designated unsuitable for underground coal mining operations;

   B. Not within an area under study for designated lands unsuitable for underground coal mining operations;

   C. Not on any lands subject to the prohibitions or limitations of 30 CFR 761.11(a) (national parks, etc.), 761.11(f) (public buildings, etc.) and 761.11(g) (cemeteries);

   D. Within 100 feet of the outside right-of-way of Utah Highway 53, a public road. The applicant has received formal permission from the Carbon County Commissioners to mine within 100 feet of the right-of-way of a public road;

   E. Not within 300 feet of any occupied dwelling (MRP, Volume 1, p. 2-28).

5. The issuance of a permit is in compliance with the National Historic Preservation Act and implementing regulations (36 CFR 800) (UMC 786.19[e]). See letters from SHPO dated April 17, 1986, and September 12, 1986 attached to TA.

6. The applicant has the legal right to enter and begin underground activities in the permit area through two Federal leases and four state leases (see MRP, Volume 1, pp. 2-17 to 2-23) (UMC 786.19[f]).

7. The applicant has shown that prior violations of applicable law and regulations have been corrected (MRP, Volume 1, pp. 2-15 to 2-16a; personal communication,Joe Helfrich, DOGM Compliance Coordinator, January 26, 1987) (UMC 786.19[g]).

8. Soldier Creek Coal Company (SCCC) is not delinquent in payment of fees for the Abandoned Mine Reclamation Fund for its active mining operation (Personal communication, Imogene McCleary, OSM Branch of Fee Collection) (UMC 786.19[h]).

9. 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 (personal communication, Joe Helfrich) (UMC 786.19[i]).

10. Underground coal mining and reclamation operations to be performed under the permit will not be inconsistent with other such operations anticipated to be performed in areas adjacent to the proposed permit area (UMC 786.19[j]). No other mines are operational in the immediate vicinity. The permittee for the adjacent proposed Sage Point-Dugout Canyon Mine has requested to relinquish the permit.

11. A bond in the amount of $522,592.00, payable to DOGM and OSMRE, has been posted. This bond is adequate to reflect costs which would be incurred by the state to reclaim areas currently disturbed. It is not adequate to allow disturbance in the proposed waste rock disposal area. A request for a self-bond, which would be in an amount sufficient to cover the waste rock disposal area, has been submitted by the Sun Company and is being reviewed by DOGM.

12. No lands designated as prime farmlands or alluvial valley floors occur on the permit area (MRP, Volume 2, Sections 3.8, 3.9) (UMC 786.19[l]). See TA, Section 822 for a discussion of alluvial valley floors pertinent to the permit area.

13. The proposed postmining land-use of the permit area has been approved by the U. S. Bureau of Land Management, the controller of some of the land surface in the permit area, OSMRE, and DOGM (See December 1984 Mining Plan Decision Document for the Soldier Canyon Mine).

14. The regulatory authority has made all specific approvals required by the Act, and the approved State Program (UMC 786.19[n]).

15. The proposed operation will not affect the continued existence of any threatened or endangered species or result in the destruction or adverse modification of their critical habitats (MRP, Volume 2, pp. 3-245 to 3-250, 3-192) (UMC 786.19[o]). The U. S. Fish & Wildlife Service has determined that the mine will have no effect on any listed Threatened or Endangered Species (see December 1984 Mining Plan Decision Document).

16. All procedures for public participation required by the Act, and the approved Utah State Program have been complied with (UMC 786.23(a)[2]).

Prior to the permit taking effect, the applicant must forward a letter stating its compliance with the special stipulations in the permit.

Susan C. Linner
Permit Supervisor

Kenneth E. May
Associate Director, Mining
Division of Oil, Gas and Mining

Lawrence P Braxton
Administrator,
Mineral Resource Development
and Reclamation Program

Dianne R. Nielson
Director
Division of Oil Gas and Mining

Barbara W. Roberts
Assistant Attorney General
Approved as to Form

1098R

Cumulative Hydrologic Impact Assessment

Soldier Creek Coal Company
Soldier Canyon Mine
ACT/007/018
Carbon County, Utah

February 4, 1987

I. Introduction

This report is a Cumulative Hydrologic Impact Assessment (CHIA) of Soldier Creek Coal Company's Soldier Canyon Mine operating in Carbon County, Utah. This assessment encompasses the probable cumulative impacts of all anticipated coal mining in the general area on the hydrologic balance and whether the operations proposed under the application have been designed to prevent damage to the hydrologic balance outside the proposed mine plan area. This report complies with federal legislation passed under the Surface Mining Control and Reclamation Act (SMCRA) and subsequent Utah and federal regulatory programs under UMC 786.19(c) and 30 CFR 784.14(f), respectively.

The Soldier Canyon Mine is located in the Book Cliffs Coal Field approximately 12 miles northeast of Price, Utah (Figure 1). The Book Cliffs form a rugged, southerly facing escarpment that delineates the Uintah Basin to the north from the San Rafael Swell to the south. Elevations along the Book Cliffs range from approximately 5,000 to 9,000 feet.

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

Precipitation varies from 20 inches at higher elevations to 5 inches at lower elevations. The Book Cliffs area may be classified as mid-latitude steppe to semi arid desert.

Vegetation varies from the sagebrush/grass community type at lower elevations to the Douglas fir/aspen community at higher elevations. Other vegetative communities include mountain brush, pinyon-juniper, pinyon-juniper/sagebrush and riparian. These communities are primarily used for wildlife habitat and livestock grazing.

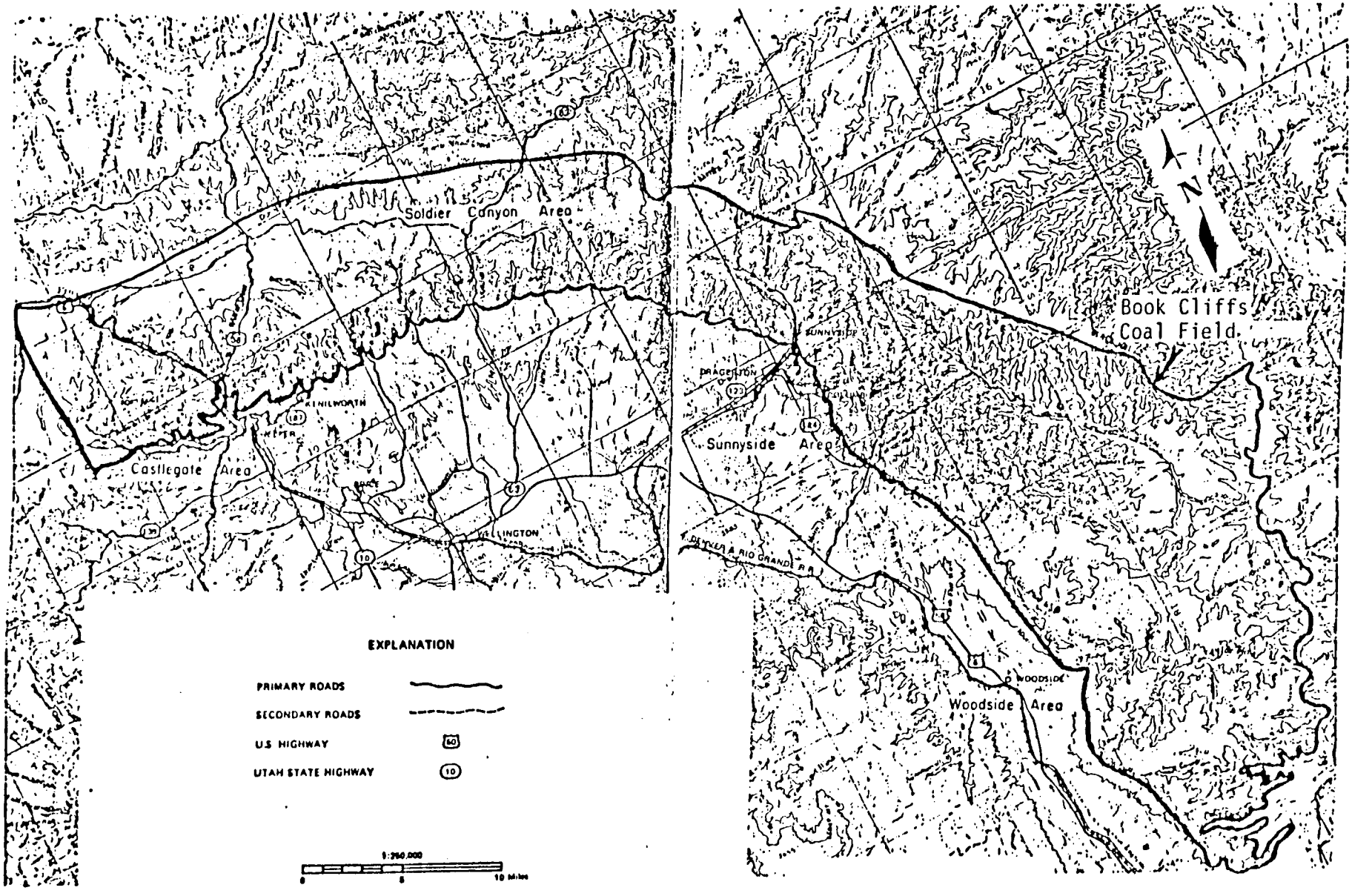


Figure 1. Book Cliffs Coal Field.

From:. Doelling 1972.

Surface runoff from the Book Cliffs area flows into the Price River drainage basin of east-central Utah. The Price River originates near Scofield Reservoir and flows southeasterly into the Green River, north of the town of Green River, Utah. Water quality is good in the mountainous headwater tributaries, but deteriorates rapidly as flow traverses the Mancos Shale. The shale lithology typically has low permeability, is easily eroded and contains large quantities of soluble salts that are a major contributor to poor water quality. Depending upon the duration of contact, water quality degrades downstream to where total dissolved solids (TDS) levels of 3,000 milligrams per liter (mg/l) are not uncommon. The predominant ion leached from the Mancos Shale is sulfate (SO_4) with values over 1,000 mg/l common in the lower reaches of the Price River.

II. Cumulative Impact Area (CIA)

The Cumulative Impact Area is shown in Plate 1, Figure 2. It encompasses approximately 21,700 acres and surrounds the Soldier Creek Mine complex. The permit area consists of 4,348 acres and includes the mine, a waste rock disposal area and a sewage lagoon site. Soldier Creek, Pine Creek and Fish Creek represent the drainages of the CIA.

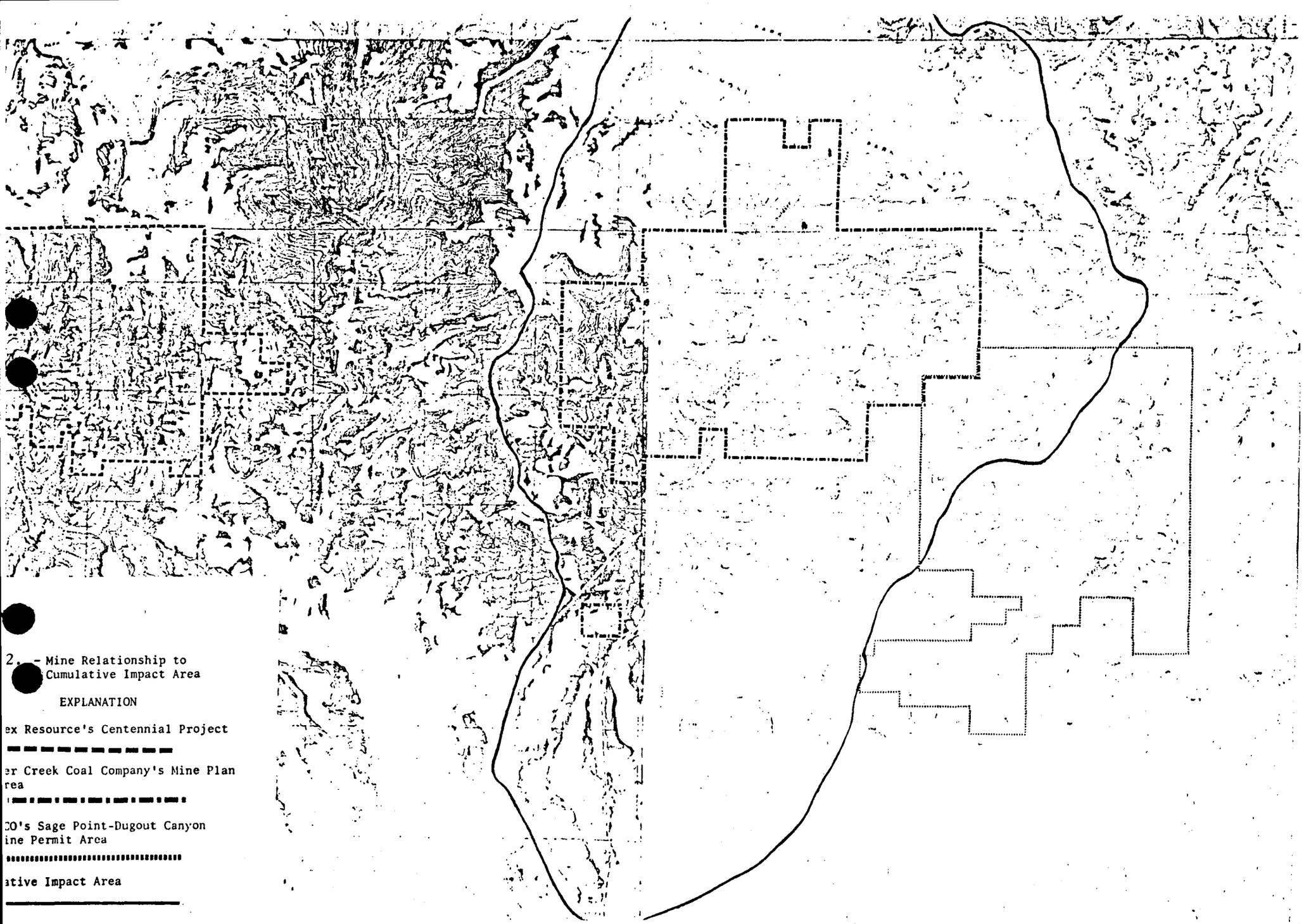
The closest minesite to the CIA is Andalex's Centennial Project, Figure 2, approximately 2 miles west of the Soldier Creek Mine Plan Area. Presently the mining effects from these two mines do not overlap and are therefore considered seperate hydrologic impact areas. Future mining may occur in the area between these mine permit areas depending on the results of an environmental assessment presently being conducted by the Bureau of Land Management (BLM).

On the southeast corner of the Soldier Creek mine plan area (Plate 1, Figure 2) is Sunedco's approved mine permit area. Mining plans for this area have been terminated by the company, and all federal leases within the approved permit area will be relinquished to the BLM.

III. Scope of Mining

Soldier Canyon Mine is owned and operated by Soldier Creek Coal Company, a third tier subsidiary of Sun Company, Inc. The mine was first opened in 1906, but little coal was produced until 1935 when Premium Coal operated the mine continuously until 1972. During those years approximately 1.2 million tons of coal were produced.

In September of 1974 California Portland Cement Company purchased the property and after making certain improvements resumed production on June 15, 1976.


2. - Mine Relationship to Cumulative Impact Area
EXPLANATION
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CO's Sage Point-Dugout Canyon ine Permit Area
ative Impact Area

On September 5, 1985 assets were transferred to Sunedco Coal Co., a subsidiary of Sun Company, Inc. Ownership of the federal and state coal leases are held by two affiliate companies, Sunedco Coal Company and Sunoco Energy Development Co. With the acquisition of the Soldier Canyon property, Sunedco Coal Company, chose to combine that acreage with certain adjacent acreage which had previously been included in a proposed project: Sage Point-Dugout Canyon.

Current mine production is estimated to be 800,000 tons for 1986. Future maximum annual production is expected to be approximately 1.75 million tons per year. Coal is being mined from the Rock Canyon seam by the room and pillar method. Future mining will include longwall mining methods and coal will be extracted from the Rock Canyon, Gilson and Sunnyside seams.

Mine workings are approximately 2 miles in width and extend 1.5 miles down dip. Mining, during the first five year permit term, will occur in the Rock Canyon and amd Sunnyside coal seams. Coal will be produced by longwall and room and pillar mining methods.

Overburden thickness ranges from approximately 100 feet under Soldier Creek Canyon to over 2,000 feet above the panels to be mined.

IV. Study Area

A. GEOLOGY

The geology of the CIA consists of stratigraphic units of consolidated rock ranging in age from Late Cretaceous to Tertiary (Eocene) as seen in Figure 3. The oldest rocks include members of the Mancos Shale. The Mesaverde Group overlies the Mancos Shale and consists of the Starpoint Sandstone, Blackhawk Formation, Castlegate Sandstone and Price River Formation. Overlying the Mesaverde Group are the North Horn Formation, Flagstaff Limestone and Colton Formation which form the Wasatch Group of Paleocene to Eocene age. The Green River Formation is Eocene in age and forms the uppermost consolidated formation in the CIA. Unconsolidated deposits formed from weathering and erosion exist as soils in Whitmore Park, terrace deposits and gravels along canyon streams and pediments at the base of escarpments.

There are no major disconformities in the area. The formations were tilted north-eastward in responce to the rise of the San Rafael Swell, and Socally, Farnam Anticlines. The strike of the area changes from N 84^{o}W on the west to N 65^{o}W on the east. The dip ranges from 6^{o} to 12^{o} and averages 8^{o} northeast.

Faulting within the CIA is minor. Only one fault with a two foot displacement was found between the right and left forks of Fish Creek. Fracturing appears to parallel the strike of the Book Cliffs

System	Series	Stratigraphic unit		Thickness (feet)	Description
TERTIARY	Eocene	Green River Formation		–	Greenish gray and white claystone and shale, also contains fine-grained and thin-bedded sandstone. Shales often dark brown containing carbonaceous matter. Full thickness not exposed.
		Colton Formation	Wasatch Formation	300-2,000 3,000	Colton consists of brown to dark red lenticular sandstone, shale and siltstone, thins westwardly and considered a tongue of the Wasatch. Wasatch predominantly sandstone with interbedded red and green shales with basal conglomerate. Found in east part of field and equivalent to Colton and Flagstaff in west.
	Paleocene	Flagstaff Limestone		0- 500	Flagstaff mainly light gray and cream colored limestones, variegated shale, and fine-grained, reddish brown, calcareous sandstone.
		North Horn Formation *MINOR COAL*		350-2,500	Gray to gray green calcareous and silty shale, tan to yellow-gray fine-grained sandstone and minor conglomerate. Unit thickens to west.
			Tuscher Formation	0- 200	Light gray to cream-white friable massive sandstone and subordinate buff to gray shale that exhibits light greenish cast. Contains minor conglomerate and probably represents lower part of North Horn, only present in east part of field.
CRETACEOUS	Danian	Mesaverde Group	Price River Formation *MINOR COAL*	500-1,500	Yellow-gray to white, medium-grained sandstone and shaley sandstone with gray to olive green shale. Contains carbonaceous shale with minor coal and thickens along east edge of field.
	Maestrichthian		Castlegate Sandstone *MINOR COAL*	100- 500	White to gray, fine- to medium-grained, argillaceous massive resistant sandstone thinning eastwardly with subordinate shale. Carbonaceous east of Horse Canyon but coal is thin and lignitic.
	Campanian		Blackhawk Formation *MAJOR COAL SEAMS*	600-1,100	Cyclical littoral and lagoonal deposits with six major cycles. Littoral deposits mainly thick-bedded to massive cliff-forming yellow-gray fine- to medium-grained sandstone, individual beds separated by gray shale. Lagoonal facies consist of thin- to thick-bedded yellow-gray sandstones, shaley sandstones, shale and coal. Coal beds form basis of Book Cliffs coal field. Unit thins eastward grading into the Mancos Shale.
			Star Point Sandstone	0- 580	Yellow-gray massive medium- to fine-grained littoral sandstone tongues projecting easterly separated by gray marine shale tongues projecting westerly.
	Santonian	Masuk Tongue Emery Sandstone	Mancos Shale	4,300-5,050	Gray marine shale, locally heavily charged with carbonaceous material, slightly calcareous and gypsiferous, nonresistant forming flat desert surfaces and rounded hills and badlands. Separated mainly to the west into tongues by westward projecting littoral sandstone which eventually grade into shale. Sandstones are fine- to medium-grained, yellow-gray to tan and medium-bedded to massive and cliff forming.
	Coniacian	Garley Canyon Sandstone Blue Gate Shale			
	Turonian	Ferron Sandstone *MINOR COAL*			
	Cenomanian	Tununk Shale			
		Dakota Sandstone		2- 126	Heterogeneous sandstone, conglomerate and shale, thin resistant cuesta former.

Figure 3. Generalized Stratigraphy of the Soldier Canyon Mine Area (After Doelling, 1972).

escarpment, and hence the strike of the strata itself. It appears to be the result of isostatic adjustment and general upwarping associated with the San Rafael Swell and subsequent erosional, tectonic and orogenic events. Clear measurements taken in the currently operating mine show face cleat direction is within a few degrees of the strike of the coal bed.

Mining operations are restricted to the Blackhawk Formation. Data indicates five coal zones that show lateral consistancy: from top to bottom they are the Sunnyside, Rock Canyon, Fish Creek, Gilson, and Kenilworth. The Sunnyside, Rock Canyon and Gilson Seams contain minable reserves and will be mined by Soldier Creek Coal Company.

B. TOPOGRAPHY AND PRECIPITATION

Topography ranges from less than 6,000 feet to approximately 8,500 feet in the CIA. Predominant features that exist in the CIA are cliffs, narrow canyons, valleys and pediments. Drainage in the CIA is characterized by a southerly draining system of perennial and ephemeral streams. Both Pine Creek and Soldier Creek are perennial streams and have headwaters that originate between 7500 and 8000 feet. Fish Creek, located near the eastern boundary of the CIA is ephemeral and flows only in response to rainfall and snowmelt. Additionally, a small unnamed ephemeral drainage exists near the western boundary of the CIA, south of the proposed waste rock disposal area.

Average annual precipitation ranges from approximately 10 inches in the vicinity of the waste rock disposal area to 16 inches in the headwater regions of Soldier Creek.

V. Hydrologic Resources

A. Groundwater

Groundwater in the CIA like groundwater in other parts of the Price River basin, occurs under both confined and unconfined conditions.

Snowmelt at higher elevations provides most of the groundwater recharge, particularly where permeable lithologies such as fractured or solution limestone are exposed at the surface. Vertical migration of groundwater occurs through permeable rock units and/or along zones of faulting and fracturing. Lateral migration initiates when groundwater encounters impermeable rock and flows laterally until either the land surface is intersected creating a perched spring or until vertical movement can continue.

Recharge has been estimated to be 3 to 8 percent (Danielson and Sylla 1983), 9 percent (Waddell et al 1983) and 12 percent (Simons, Li & Associates 1984) of the average annual precipitation for areas in the Wasatch Plateau and Book Cliffs coal fields.

The Blackhawk Formation, Castlegate Sandstone, Price River Formation, North Horn Formation, Flagstaff Limestone and Quaternary deposits all contain potential reservoirs or conduits for groundwater in the CIA. Reservoir lithologies are predominately sandstone and limestone. Sandstone reservcoirs occur as channel and overbank, lenticular and tabular deposits. whereas limestone reservoirs have developed through dissolution and fracturing. Shale, siltstone and cemented ssandstone beds act as aquatards or aquacludes to impede groundwater movement. The Mancos Shale is a regional aquaclude that limits downward flow within the CIA. Localized aquatards include the North Horn Formation and thin lithologies occuring within overlying units of the Price River, Castlegate and Blackhawk Formations.

Twenty-two springs (Table 1) or areas of multiple springs occur within the CIA (Plate 1). Twelve springs are located within the five-year permit area. The majority of springs flow from the contact zone between the Flagstaff Limestone and the North Horn Formation. No springs flow from the Blackhawk Formation within the CIA. All the springs on the escarpment are perched whereas those on the dip slope come from a ground water that has reached the surface through solution fractures or gradient levels.

Five wells are shown on Plate 1. Two wells were drilled within the mine to rock units above and below the Rock Canyon coal seam to help in defining the regional water table. Two wells were drilled by Eureka Energy in the early stages of exploration. The other well, as marked, is the shaft for the exaust fan along Soldier Creek drilled to a depth of 80 feet. Other exploration wells drilled by Eureka Energy lie outside the CIA. A comprehensive study has been made of the water depths, quality, transmisivities of strata and flow directions adjacent to the Soldier Mine properties (Sage Point-Dugout Canyon Mine Permit).

Total mine discharge is approximately 130 gpm. The majority of inflow occurs from a fire area that has been sealed for over a year. SCCC is currently dewatering that area to continue mining operations. Mine discharge should be reduced when pumping is complete.

Groundwater quality varies greatly, depending on geology, physiography, and elevation. The best quality occurs in or near mountain recharge areas and the poorest quality in lowland areas. Waddell et al (1983) indicate that the concentrations of dissolved solids range from 250 to 2,000 mg/l in the Book Cliffs area. The

HYDROLOGIC DATA COLLECTION SITES
SPRINGS

MAP NUMBER	LOCATION	GEOLOGIC UNIT	LAND SURFACE ELEVATION	SPRING NAME	OTHER DESIGNATIONS*
1	(D-12-11) 36aad	Flagstaff	7890		52[1]
2	(D-12-12) 30dcc	Flagstaff	7560		53[1]
3	" 33bcc	Flagstaff	7400		54[1]
4	" 34ccd	Flagstaff	7605		3[1]
5	(D-13-11) 1dab	Flagstaff	7930		55[1], S31-12
6	" 13acc	Aberdeen Tongue	6720	Drink	56[1]
7	(D-13-12) 4acd	Flagstaff	7480		57[1], G-87[2]
8	" 4bdc	North Horn	7410		2[1], G-88[2]
9	" 4cdd	Flagstaff	7910		33[1]
10	" 5cbc	North Horn	6980	Sulfur	8[1], G-89[2]
11	" 5cbc	North Horn	6980		24[1]
12	" 5ccb	North Horn	6970		9[1]
13	" 7aad	Price River	6880		10[1]
14	" 7cbb	North Horn	7600		S7-1[2]
15	" 8daa	Flagstaff	7900	Lower Little Pine	39[1]
16	" 8dad	North Horn	7840	Timber Road	38[1]
17	" 9cbb	Flagstaff	7940	Upper Little Pine	40[1], G-90/S8-1[2]
18	" 9dcc	Flagstaff	8120		31[1], G-91[2]
19	" 9dcc	North Horn	8090		32[1]
20	" 9ddc	Flagstaff	8090		30[1], G-92[2]
21	" 10abb	Flagstaff	7740	Water Hole	4[1]
22	" 10adb	Flagstaff	7870	Pine Canyon	42[1]

*1. Sage Point/Dugout Canyon Permit Application; 2. Soldier Canyon Permit Application; 3. U.S. Geological Survey.

Table 1.

chemical characteristics of the groundwater vary with the formation and areally within formations. The concentration of dissolved solids in water from the Flagstaff Limestone ranges from 250 to 500 mg/l, wheras the concentrations of dissolved solids in the Blackhawk and North Horn Formations range from 500 to 2,000 mg/l. The principal chemical constituents in Flagstaff water are calcium and bicarbonate. Water from the Blackhawk is of variable chemical composition with no single dominant cation or anion. Where dissolved solids concentrations from water in the Blackhawk are affected by the Mancos Shale, sulfates of sodium and magnesium increase significantly. Waters from springs which issue near the Blackhawk/Mancos Shale contact have dissolved solids concentrations of 1,600 and 2,000 mg/l, respectively (Mundorff, 1972; Waddell et al, 1981).

B. Surface Water

The CIA is situated in the Book Cliffs near the headwaters of the Price River Basin. The entire lease area drains toward Soldier Creek, a perennial tributary of the Price River. The Price River meets the Green River about 40 miles east of the mine. The Green River flows southward from its confluence with the Price River approximately 75 miles until it discharges into the Colorado River.

The Price River drainage area contains 1,540 mile^2 above a USGS streamflow gauging station at Woodside, Utah, which is about 24 miles below the inflow from Soldier Creek. The period of record for this station is 1909-1911 and 1945 to present. The extreme flows recorded include a maximum of 9,720 cfs on September 11, 1980 and a minimum of zero which has occurred at various times. The average annual flow volume is given as 83,320 ac-ft, or 155 cfs.

The flow of the Green River has been measured at Green River, Utah, about 12 miles below the confluence of the Price and Green Rivers. Between October, 1894 to October, 1899 and October, 1904 to the present, the flow ranged from a minimum of 255 cfs on November 26, 1931 to a maximum of 68,100 cfs on June 27, 1917. The average discharge over the 83 years is 6,305 cfs.

Snowmelt is the major source of water for the perennial streams of the Price River Basin. Ephemeral streams are abundant in the basins, existing primarily at lower elevations where potential evapotranspiration exceeds precipitation. Summer precipitation in the form of intense thunderstorms may cause short-term flooding but not large volumes of runoff.

Water use in the higher elevations of the Price River Basin is primarily for wildlife and stockwatering purposes . Within the lower valley area, agricultural activities utilize some of the water (Mundorff, 1972). Minimum flows in the gauged streams and rivers in the basin occasionally reach zero. Storage reservoirs are common at higher elevations.

In general, the quality of water in the headwaters of the Price River Basin is excellent, with the upper watershed providing most of the domestic water needs of the people in the lower valley. However, the quality rapidly deteriorates down gradient as the streams cross the Mancos Shale Formation and receive irrigation return flows from lands situated on Mancos-derived soils (Price and Waddell, 1973). Waddell et al (1981) report that Price River and its tributaries generally have a dissolved solids concentration of between 250 to 500 mg/l upstream from Helper. The water in this area is of calcium bicarbonate type. Between Helper and the confluence with Soldier Creek, most of the flows originate on Mancos Shale or are irrigation return flows which pass through Mancos Shale derived soils. The Price River near the confluence with Soldier Creek has an average dissolved solids content of about 1,700 mg/l, including sulfates of calcium, magnesium and sodium. At Woodside, the weighted average dissolved solids content is between 2,000 and 4,000 mg/l, with the water type being strongly sodium sulfate (Mundroff, 1972).

Sediment yields from the upper portion of the Price River Basin are small, with erosion rates varying from 0.1 to 0.5 ac-ft/miles^2/yr. The bulk of the sediment yield at the mouth of the Price River comes from limited areas covered by highly erodible shales. Annual sediment yields of 0.5 to 3.0 ac-ft/miles^2 are reported by Waddell et al (1981).

Surface Water Hydrology of the CIA

The CIA shown in Plate 1 is 21,700 ac of the Soldier Creek watershed. Topography in the area is rugged, with elevations varying from 6,600 ft to approximately 8,300 feet above sea level. Slopes vary from vertical cliffs to less than 2% along the ridges.

Water resources within or adjacent to the CIA include a few low yielding springs and streams. There are no major water bodies located within or adjacent to the CIA.

Soil cover varies with slope, with bare sandstone cliffs along the upper portions of the canyons, shallow silty soils on the milder slopes, and shallow sand-gravel alluvium in the channel bottoms. The soils classify as hydrologic soils group C and D. The infiltration rates of the soil results in moderately low infiltration capacity. Similar sub-basins within the Price River system indicate that runoff is approximately 16% of precipitation (UDWR, 1975).

The average annual sediment yield is approximately 0.2 to 1.0 ac-ft/miles^2 at the site (Waddell et al, 1981). Thus, the average annual sediment yield of the CIA is estimated to be 6.7 to 33.9 ac-ft for undisturbed conditions.

Soldier Creek

The headwaters of Soldier Creek are located in the Roan Cliffs and Whitmore Park as shown on Plate 1. The creek flows for 13.5 miles generally southward to the Anderson Reservoir diversion. The Anderson Reservoir stores water for irrigated fields. Soldier Creek discharges into the Price River about 10 miles south of the reservoir diversion. The lower 19 miles of Soldier Creek flows over Mancos Shale.

A USGS stream gauging station is located on Soldier Creek just downstream from the mine. The station is identified as "Soldier Creek Below Mine, Near Wellington, Utah, No 09313975," and is identified on Figure 4 as Surface Water Sampling Location G-5. The altitude of the gauge is 6,650 ft. The drainage area above the gauge includes sub-basins I through V and is 17.5 miles^2 (Plate 1 and Table 2). The period of record is from September of 1978 to September, 1984, and measurements are seasonal with no records kept during the winter months from December to February.

The maximum and minimum discharges are 472 and 0.08 cfs, respectively. The average elevation of the basin is 7,599 ft. The stream channel is 5.9 miles long and 10 to 20 ft wide near the gauge station. The creek bottom is on rocky alluvium and occasional outcrops of bedrock. The average stream channel gradient is 6%, and the average gradient of the land surface is 30%. For the entire basin, the average stream and land gradients are 4 and 23%, respectively.

Soldier Creek is a perennial stream between Sampling Location G-1, and the Anderson Reservoir diversion. The reach above G-1 is intermittent, with springs contributing small quantities of water that maintain portions of the stream before the water is consumed by evaporation and infiltration. The reach between the diversion and confluence with Price River would be perennial if the water were not diverted for irrigation during the low-flow period.

Pine Creek

The headwaters of Pine Creek are located in the area between the Book Cliffs and the Roan Cliffs near the northeastern part of the CIA. The creek flows in a generally westward direction for 4.1 miles until it discharges into Soldier Creek, 120 ft below Surface Water Sampling Location G-3 (Plate 1). The combined streams continue to Price River in the same manner as described for Soldier Creek.

The drainage area above contains 3.5 miles^2, with an average altitude of 7,943 ft. The stream channel is narrow, 2 to 6 ft, for most of its length, and is on alluvium, except for occasional outcrops of bedrock. The average gradient of the stream channel is 9%, and the average gradient of the land surface is 21%.

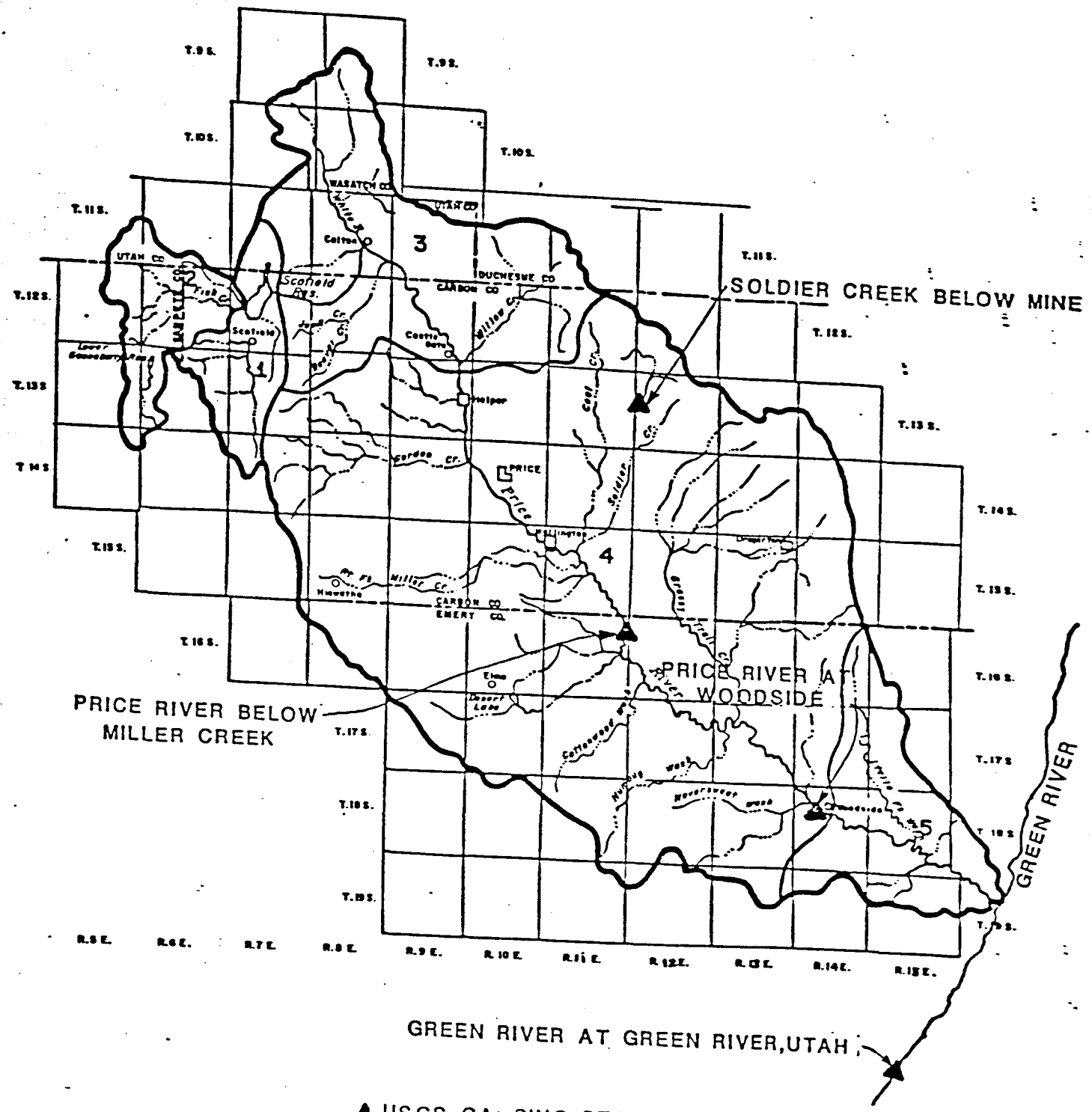
DRAINAGE SUB-BASINS WITHIN LIFE OF MINE AREA
AND ADJACENT AREAS

SUB-BASIN	AREA (mi^2)	AREA (ac)	MEAN ANNUAL PRECIP. (in.)	(ft)	ACRE/ ft
I	6.0	3,867	15	1.25	4,834
II	5.4	3,422	15	1.25	4,278
III	1.6	1,044	16	1.33	1,389
IV	1.9	1,235	16	1.33	1,643
V	2.6	1,689	14	1.17	1,976
VI	5.5	3,540	14	1.17	4,142
VII	1.3	821	16	1.33	1,092
					19,354

Total Precipitation on sub-basins within proposed LOM area and adjacent areas = 19,354 ac/ft.

19,354 ac/ft x 5% (estimated recharge) = 967.7 ac/ft.

TABLE 2 .



Source: Utah Division of Water Resources, 1975

Figure 4

Pine Creek contains water throughout its length most of the time. However, during periods of unusually low precipitation, there are dry reaches between the springs that feed the stream. Such a dry period occurred in the summer of 1977 when there was no flow at G-3 observed during three visits.

Water quality in Pine Creek, is good to excellent at G-3, with specific conductance varying from 420 to 720 mmhos/cm at 25°C. Values for most samples are on the over of 530 mmhos/cm. The water is predominantly a calcium bicarbonate type but a couple of samples showed high levels of sodium sulfate. The pH varied from 7.9 to 8.5. Suspended solid levels were generally low, except during spring snowmelt when concentrations were greater than 450 mg/l.

Water quality in Soldier Creek just below its confluence with Pine Creek (Surface Water Sampling Location G-4) is similar to that in Pine Creek. The watershed upstream of G-4 includes sub-basins I-IV, which contain an area of about 14.9 miles^2. TDS concentrations vary from 338 mg/l to 860 mg/l with most being between 500 and 600 mg/l. The dominant constituents are calcium and bicarbonates. The pH varied from 7.7 to 8.7 with most measurements being greater than 8.0. High levels of suspended solids occur annually during snowmelt events, but typical levels are less than 70 mg/l.

Water quality was measured at Surface Water Sampling Location G-5 by both Soldier Creek Coal Company and USGS. The USGS data do not reflect as much variability as the data obtained by Soldier Creek Coal Company. TDS varied from 220 to 1,566 mg/l, with the higher concentrations generally occurring during summer months when flows were low. Most TDS concentrations were between 400 and 700 mg/l. The dominant constituents were calcium bicarbonates; however, the poorer quality samples showed increases of bicarbonates of sodium and calcium with some increase in sulfates. The pH level varies from 7.5 to 8.7 with most levels being between 7.8 and 8.2. Suspended solid concentrations were generally less than 60 mg/l, with higher levels occurring during spring and early summer.

Water in the vicinity of the Soldier Canyon Mine is typical of the regional environment. A comparison of these data with Table 3 indicates that the quality of Soldier Creek water near the mine is much better than the quality of Price River water.

VI. Potential Hydrologic Impacts

A. Groundwater

Dewatering and subsidence related to mining have the greatest potential for impacting groundwater resources in the CIA.

SUMMARY OF SELECT WATER QUALITY DATA FROM USGS STATIONS
PRICE RIVER AT WOODSIDE AND GREEN RIVER AT GREEN RIVER, UTAH

STATION NUMBER	STATION NAME	WATER YEAR	SPECIFIC CONDUCTANCE (micromhos)	pH (units)	TEMPERATURE (deg. C)	DISSOLVED SOLIDS RESIDUE at 180 (deg. C)	CALCIUM Ca	MAGNESIUM Mg	SODIUM Na	POTASSIUM K	CHLORIDE Cl	SULFATE SO_4	BICARBONATE HCO_3	IRON TOTAL Fe	IRON DISSOLVED Fe	MANGANESE TOTAL Mn	MANGANESE DISSOLVED Mn	SUSPENDED SEDIMENTS
09311500	Price River at Woodside	1975-76	Min. 2,200	8.2	.0	1,070	170	85	230	7.0	31	1,000	260	-	-	-	-	[redacted]
			Max. 4,950	8.0	26.5	4,830	310	250	730	12.0	78	2,000	530	-	-	-	-	[redacted]
		1976-77	Min. 1,370	7.4	.0	1,150	220	16	77	7.0	15	600	170	440	10	-	8	17
			Max. 6,950	8.7	29.0	6,770	400	350	1,100	15.0	130	4,300	570	510,000	70	16,000	110	69,400
		1977-78	Min. 1,140	7.6	.0	1,290	110	79	190	4.0	22	640	40	10	10	90	10	27
			Max. 6,090	8.7	26.0	4,990	330	280	760	13.0	100	3,100	450	18,000	20	860	60	4,420
		1978-79	Min. 1,110	8.0	-	822	83	51	110	3.4	17	390	240	280	-	10	-	16
			Max. 6,540	8.6	21.5	6,240	250	320	990	17.0	110	3,700	500	46,000	-	1,300	20	5,560
		1979-80	Min. 1,090	8.0	.0	761	-	-	-	-	-	-	270	-	0	-	-	93
			Max. 5,510	8.7	23.0	5,660	-	-	-	-	-	-	520	63,000	-	2,600	10	12,200
		1980-81	Min. 2,720	8.0	.0	2,070	150	130	300	7.2	52	1,300	160	-	-	-	-	8
			Max. 4,480	8.3	24.0	3,860	250	230	640	12.0	96	2,500	330	-	-	180	-	5,200
		1981-82	Min. 1,170	8.0	.0	830	82	53	97	2.9	16	360	194	9,600	-	240	-	158
			Max. 4,080	8.3	23.5	2,880	240	210	530	8.3	90	2,100	350	24,000	-	820	-	23,800
		1982-83	Min. 830	8.2	.0	830	82	53	97	2.3	17	210	210	-	-	-	-	[redacted]
			Max. 3,920	8.4	20.0	3,580	260	220	520	8.9	79	2,200	340	36,000	-	960	-	12,[redacted]
09315000	Green River at Green River	1975-76	Min. 450	8.1	.0	276	41	15	30	1.0	7.7	110	150	570	0	30	0	32
			Max. 1,030	8.7	26.0	704	82	35	110	3.3	35	300	270	32,000	60	1,000	20	3,403
		1976-77	Min. 530	7.7	.0	335	49	19	44	2.1	15	150	160	1,300	0	30	0	[redacted]
			Max. 1,520	8.7	29.0	1,210	190	43	110	7.0	33	670	300	330,000	190	7,600	20	18,300
		1977-78	Min. 300	7.9	.0	212	33	12	23	1.0	7.1	69	190	1,700	10	50	0	95
			Max. 1,070	8.5	28.5	756	81	39	120	3.5	38	350	270	21,000	40	630	10	13,400
		1978-79	Min. 300	8.0	.0	273	35	15	29	-	8	86	-	830	0	40	0	49
			Max. 1,240	8.5	28.0	852	87	42	110	9.5	41	390	330	19,000	120	500	8	47,500
		1979-80	Min. 320	7.6	.0	214	29	12	21	1.5	7.4	70	130	2,000	<10	50	1	60
			Max. 1,310	8.5	27.0	798	85	37	110	5.0	38	410	260	39,000	40	1,100	10	11,600
		1980-81	Min. 320	7.8	.0	273	47	19	50	1.8	14	160	110	1,200	<10	40	1	19
			Max. 1,200	8.3	26.0	852	82	41	110	3.7	40	350	190	27,000	30	880	10	5,780
		1981-82	Min. 290	8.0	.0	196	29	10	19	0.6	6	60	90	10,000	5	210	<1	134
			Max. 1,060	8.4	27.5	749	82	40	100	3.3	37	320	180	31,000	20	840	6	16,700
		1982-83	Min. 400	8.0	.0	494	38	15	29	-	9.3	98	111	-	6	-	3	64
			Max. 960	8.4	25.0	584	69	32	76	-	25	270	184	-	31	-	130	5,650

Notes:
Station location: see Figure 3.2-6 (Price River Drainage Basin). Constituents: in mg/l except manganese and iron, which are in micrograms/l. Specific conductance: field determination. pH: field determination.

TABLE 3.

Dewatering

Underground mining removes the support to overlying rock causing caving and fracturing of the overburden. In areas where fracturing is extensive subsidence of the overburden becomes greater. Subsidence induced caving and fracturing can expose ground water sources to lower pressures creating conduits of less resistance that allow groundwater to flow into the mine. Dewatering from fracturing may decrease aquifer storage and flow to streams and springs (Figure 5).

Currently, the volume of water being discharged from the mine (130 gpm) does not reflect the amount of water that is currently being withdrawn from the groundwater system. The withdrawal value may be somewhat less since SCCC is dewatering an area that has been sealed off. At the rate of 130 gpm an annual volume of 210 ac-ft would be discharged. This figure is significantly larger than the the 15 ac-ft per year reported by Waddel 1986 for the year 1980.

Average groundwater recharge is estimated to be 967.7 ac-ft using 5% as the average infiltration factor. Total groundwater storage was estimated by SCCC to be 490,00 ac-ft.

Future monitoring will indicate the total groundwater discharge due to mining. Even at the current rate of 130 gpm only a small portion of the annual groundwater recharge source will be intercepted.

It is not anticipated that the rate of discharge will exceed the recharge rate during this permit term. However, as mine operations expand in the future to encompass the proposed expansion area an increase in discharge is anticipated. At present, data are not available to precisely document increases in mine discharge. An estimate of discharge increase may be derived by multiplying the discharge per acre of present mine workings times the projected area of mine working.

Upon termination of mining operations, groundwater discharge to Soldier Creek will be discontinued and the mine will begin to flood. The potential reduction in surface flow that is associated with the cessation of operations may be evaluated in terms of the lag time required for reestablishment of base flow recharge.

The impact associated with the reduction in surface flow is considered temporary. Mine flooding will conceivably reestablish a system of base flow recharge that was operational prior to mining. The time span required for reestablishing base flow recharge may be estimated by dividing the final mine workings volume by the final estimated values for mine discharge.

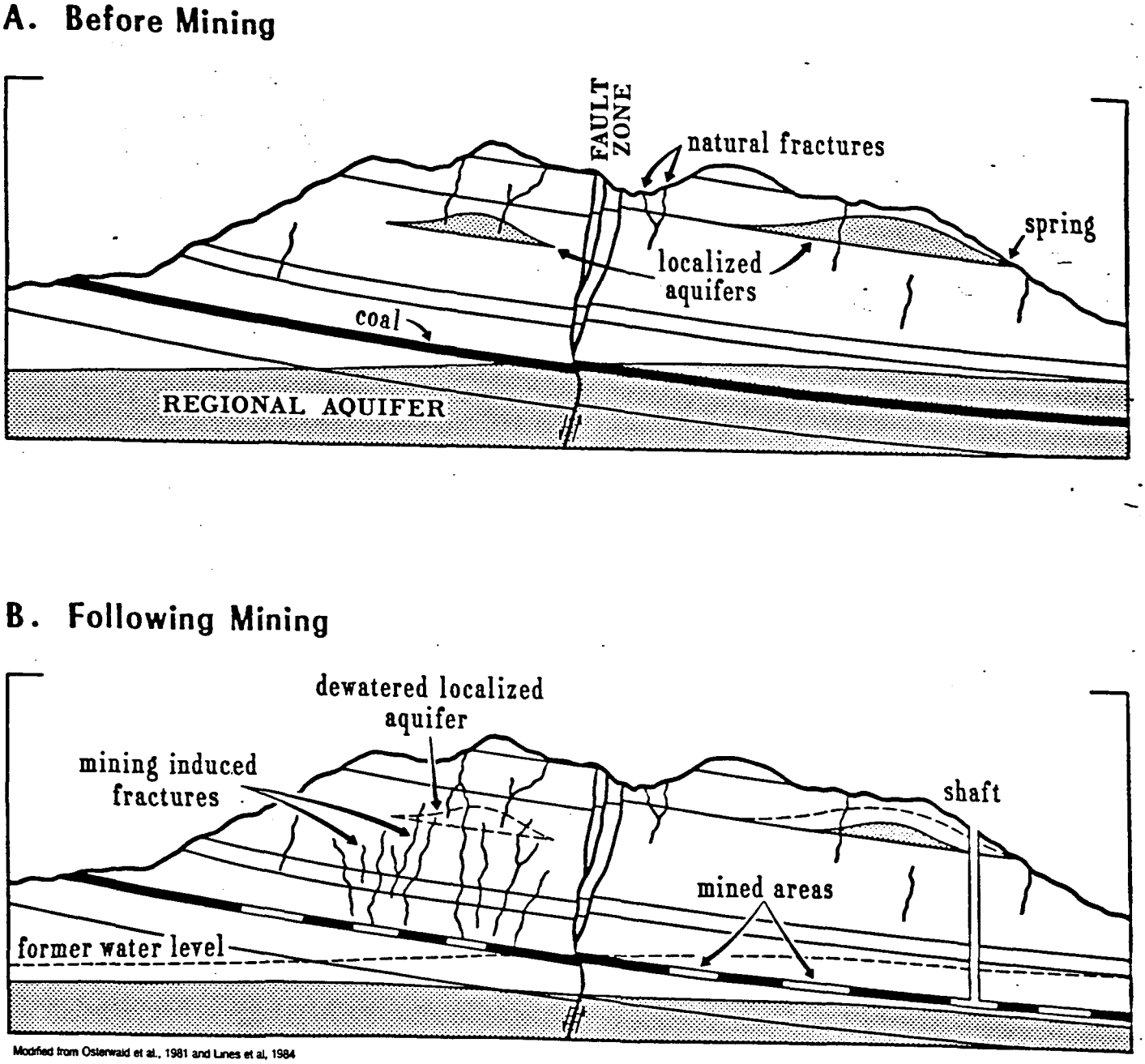


Figure 5. Potential effects of mining to overlying aquifers and strata.

The maximum lag time for mine flooding will depend on the amount of caving and the void space created from caving. Estimates can be made by making certain assumptions however, without more information the estimates would be confussing. It should be noted that complete flooding may never be achieved because the hydraulic head generated as flooding expands will also increase until the hydraulic properties of the roof, floor and rib are exceeded and flow through the rocks is initiated.

In most mining areas it is unlikely that fractures will reach perched aquifers do to the thickness of the overburden. Dewatering of any aquifers will result in inmine flow which is discharged to Soldier Creek. Water quality downstream from the mine could improve since water being discharged is of better quality than natural streamflow.

SCCC has proposed an inmine water monitoring plan that will be dynamic in nature to allow for monitoring new sites as mining progresses. The proposed groundwater monitoring program for SCCC will, in the future, allow increasing discharge rates to be more precisely characterized and thereby, achieve a more accurate assessment of mining related dewatering impacts.

Subsidence

Subsidence impacts are largely related to extension and expansion of the existing fracture system and upward propagation of new fractures (Figure 6). Inasmuch as vertical and lateral migration of water appears to be partially controlled by fracture conduits, readjustment or realignment in the conduit system will inevitably produce changes in the configuration of ground-water flow. Potential changes include increased flow rates along fractures that have "opened" and diverting flow along new fractures or within permeable lithologies. Subsurface flow diversion may cause the depletion of water in certain localized aquifers and potential loss of flow to springs that will be undermined . Increased flow rates along fractures would reduce groundwater residence time and potentially improve water quality.

No subsidence has been recorded over the current mine permit area. The presence of the Castlegate Sandstone in conjunction with overburden thickness is apparently responsible for reduced surface subsidence. Additional mining during the five-year permit term will occur beneath 500-2,000 feet of overburden. The potential for subsidence related surface impacts (e.g., ponding) to the subsurface and surface hydrologic regimes are not considered significant. The operator is currently drafting plans to implement an aereal subsidence survey on an annual basis using the photogrammetric method. Annual subsidence reports will be generated and provided to the regualtory authority.

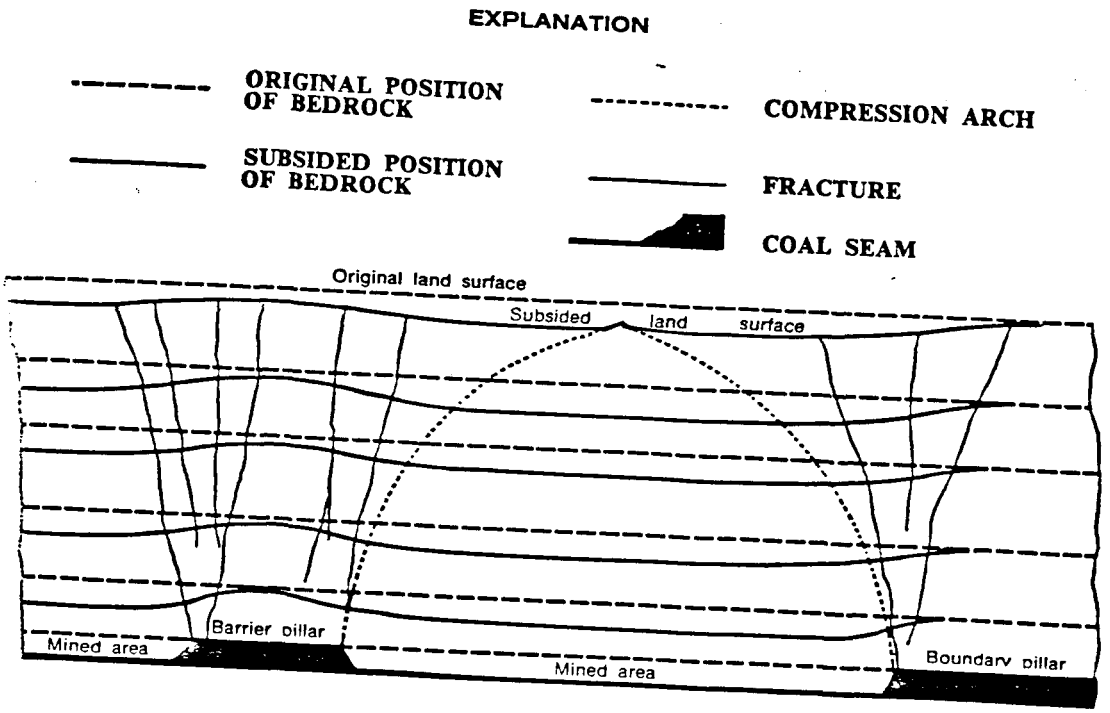


Figure 6. Generalized cross section showing subsidence and and fracturing that occurs above an underground coal mine (From Dunrud, 1976)

Mine water is presently directed to a sediment pond and then released to Soldier Creek at NPDES discharge point #003. The treatment associated with these ponds improves suspended solids and oil and grease parameter values, but overall total dissolved solids (TDS) values remain in the range of 1500 mg/l at the discharge point. Future impacts from mine water discharge is not anticipated to increase from present levels. The quantity of mine water may increase, causing increased TDS levels downstream and suspended solid values will decrease as sediment controls are implemented in problem areas.

B. Surface Water

An NPDES permit issued by EPA presently allows for one ton of dissolved solids per day to be discharged from the mine into Soldier Creek. Continuation of Soldier Creek Coal Company's monitoring program will verify water consumption and discharge estimates.

The quality of the local surface waters can be changed by two basic processes. First, the runoff from the operator's disturbed lands and waste piles could increase sediment concentrations and alter the distribution and concentration of dissolved solids in the receiving streams. This potential for inducing water quality changes has been fully recognized, and the runoff control plan established for the mine is adequate in anticipating, mitigating and monitoring the potential impacts. The second potential cause of surface water quality changes is related to the location and water chemistry of groundwater discharges, both natural and planned by the operator.

As discussed by Waddell et al (1986), the perennial flow of Soldier Creek is sustained by spring or seepage discharges from the various sedimentary formations. This perennial flow is dominated by the high volume of spring discharges from the Flagstaff Limestone during spring and early summer snowmelt. At other times of the year, the discharge contributions from the Flagstaff Limestone is greatly reduced and seepage from the underlying formations sustains the base flow of the stream. Generally, the total dissolved solids (TDS) concentration of spring water emanating from the Flagstaff Limestone is lower than the TDS of the underlying groundwater in the North Horn and Blackhawk Formations. As presented by Waddell et al (1986), the upper segment of the stream flow in Pine Creek contains water which emanates from the Flagstaff Limestone, possesses a TDS of 300 to 400 mg/l, and is dominated by the ions of magnesium, calcium and bicarbonate. In contrast, the lower reaches of Soldier Creek, which receives seepage contributions from the North Horn, Price River, Castlegate and Blackhawk Formations, has a TDS ranging from about 500 to 600 mg/l and is dominated by the ions of sodium, magnesium and sulfate.

To qualitatively address the possible consequences of mining upon the quality of the surface flows of Soldier Creek is both a spatial and temporal problem. During periods of high discharge caused by summer thunderstorm precipitation or snowmelt, the effects of redistributing seepage contributions and direct mine discharge to the stream are negligible in respect to the natural processes of sediment transport and controlling water chemistry. During other periods, however, the lessening of seepage contributions caused by the redistribution of flow by the underground workings will cause the water quality of the upper reaches of the drainage network to become more dominant farther downstream, even though the baseflow would be less.

At and below the point of mine discharge, the overall effect of constantly disposing groundwater from the mine workings is one of adjusting the water chemistry to one dominated by the groundwater quality of the Blackhawk Formation. At periods of low base flow, there would appear to be little variation between the water quality of the natural stream flow and the mine discharge. Obviously, the mine discharge would result in a higher rate of flow in the stream than normally experienced during dry periods when the stream is normally sustained by limited spring contributions.

Waddell et al (1986) describe the stream bed characteristics of Soldier Creek in some detail. Due to the apparent saturation of the natural waters with respect to calcite, the bed of Soldier Creek downstream from Pine Canyon contains alluvium which is cemented with carbonate precipitates. It is possible that the degree of this cementation may increase as a result of mining due to the possible dominance of the calcium bicarbonate waters in the stream flow should the waters of the formations underlying the Flagstaff Limestone be redistributed and diverted downstream. Wadedell et al (1986) suggested that the diversity of benthic invertebrates may be affected by the cementation process.

C. Alluvial Valley Floors

A negative determination has been made based on the studies of conducted by Sunedco Coal Company to the approved Sage Pint-Dugout Canyon mine plan on the existance of unconsolidated streamlaid deposits holding streams and sufficient water to support agricultural activities within the mine plan area. A potential AVF exists downstream along Soldier Creek.

VII. Summary

The probable hydrologic impacts are summarized below under the headings entitled First Five Year Permit Term and Future Mining.

First Five Year Permit Term

The rate of dewatering will remain significantly less than the estimated recharge rate during the first five year permit term. Overburden thickness will be sufficient (500-2,000 feet) to restrict surface manifestations of subsidence. The subsurface propagation of fractures may produce changes in groundwater flow that could affect localized aquifers and springs. Future monitoring will provide data applicable to documenting changes in the groundwater system.

Surface disturbance and the addition of mine water have not significantly degraded water quality in Soldier Creek. Sediment control measures have served to reduce contaminants and stabilize water quality at acceptable levels.

NO AVF will be impacted during the first five year permit term by additional flow from increased mine water discharge.

Future Mining

Increased rates of dewatering may, in the future, result in depletion of groundwater storage. Depletion of storage may terminate certain spring flow and base flow recharge to streams. Upon cessation of mining, mine water discharge to Soldier Creek will be discontinued. However, this affect is considered temporary because mine flooding will probably result in reestablishment of the preexisting groundwater system that, most likely, provided base flow recharge.

Drainage from future surface disturbance will be managed through appropriate sediment controls. Future mine discharge will be directed through the existing sediment pond.

At the termination of mining, the downstream AVF will experience decreased flow. The duration and extent of this impact cannot be accurately assessed at this time. However, flow rates may be partially to fully restored when the groundwater system is reestablished.

The operational design proposed for the Soldier Canyon Mine is herein determined to be consistent with preventing damage to the hydrologic balance outside the mine plan area based on the accracy of the information submitted in the mine plan and referenced literature.

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1098R

Stipulation Document

Soldier Creek Coal Company
Soldier Canyon Mine
ACT/007/018
Carbon County, Utah

February 4, 1986

Stipulation UMC 817.42-(1)-DC

1. The applicant must submit the following information on the two disturbed areas that do not have runoff reporting to the sedimentation pond within 60 days from the date of permit issuance.

   a. The exact size of each area in acres;

   b. The volume of expected runoff from the design precipitation event (i.e. 10-yr, 24-hr);

   c. The alternative sediment control method with a demonstration that the method has potential to treat drainage to meet limitations;

   d. The location of and depiction of the alternative sediment control method on a map;

   e. Maintenance methods and schedule and a monitoring plan to demonstrate compliance with limitation standards.

Stipulation 817.43-(1-2)-DC

1. The applicant must demonstrate that the diversions comply with the design events of the proposed DOGM regulations. Specifically the applicant must demonstrate that the diversions are capable of safely passing the peak flow from a 10-year, 6-hour precipitation event. If the proposed regulations have not been adopted by the Mid Permit Term Review the applicant must comply with the regulations that are in effect at that time.

2. The applicant must submit designs for the disturbed diversions that demonstrate they are in compliance with this regulation within 60 days from the date of permit issuance. Specifically, the applicant must submit designs that show the diversions have been sized to convey the 10-year, 6-hour precipitation event runoff with at least 0.3 foot free board. Additionally, the applicant must submit calculations showing the maximum expected velocity in each diversion and a demonstration of channel stability at the design velocities for each diversion.

Stipulation UMC 817.46-(1-2)-DC

1. Within 60 days from the date of permit issuance the applicant must demonstrate that the sediment pond complies with the design events as specified in the TA section UMC 817.46 to satisfy this regulation. Division review will be performed using the proposed regulations which is contingent upon these proposed regulations being adopted. If the proposed regulations have not been adopted by the Mid Permit Term Review the applicant must comply with the regulations that are in effect at that time.

2. Detailed designs for the rock waste disposal sediment pond must be submitted to the Division 120 days prior to construction. All applicable permits and approvals from federal, state, and local agencies must be obtained prior to construction.

Stipulation: UMC 817.113-(1)-LK

1. Within 60 days of permit issuance the applicant will revise the fall revegetation schedule (page 5-48) to show that seeding will not begin prior to October 1, and clarify that cutting and seedling planting is the April after seeding has been completed.

Stipulation UMC 817.116-(1)-LK

1. The applicant will have a competent range biologist evaluate the range condition of all reference areas to assure that they are in fair or better range condition. This evaluation is to be done during the field season prior to submitting the permit application for the next permit term.

Stipulations UMC 817.160-.166-(1)-JRH

1. The applicant shall provide specific plans and details of the access road to Exhaust Fan No. 1 within 60 days from the date of permit issuance, demonstrating compliance with these regulations.

1090R

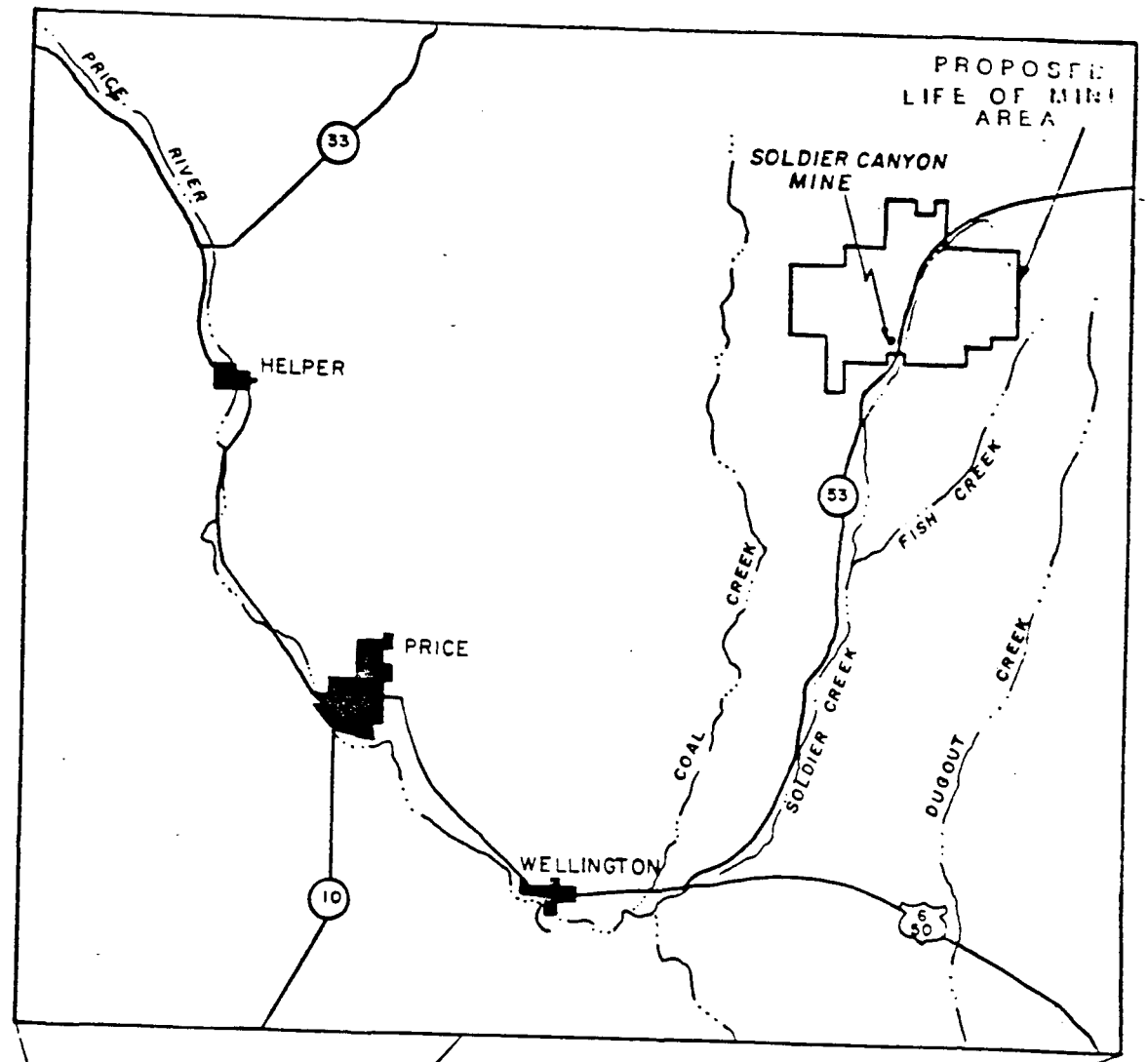
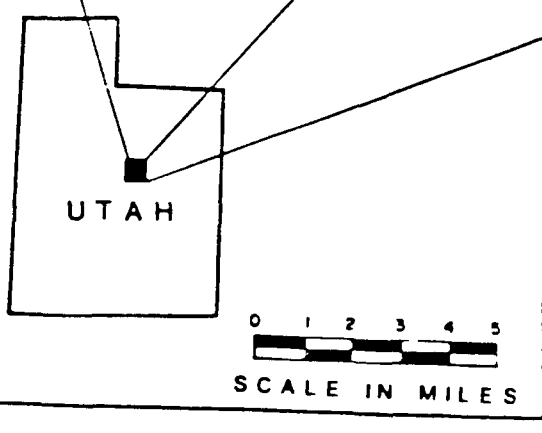


FIGURE 1.1-1



Soldier Creek Coal Company

SOLDIER CANYON MINE

TITLE

MINE LOCATION

CARBON COUNTY, UTAH

DRAWING NO.

REVISIONS

NO. DATE BY

1

2

3

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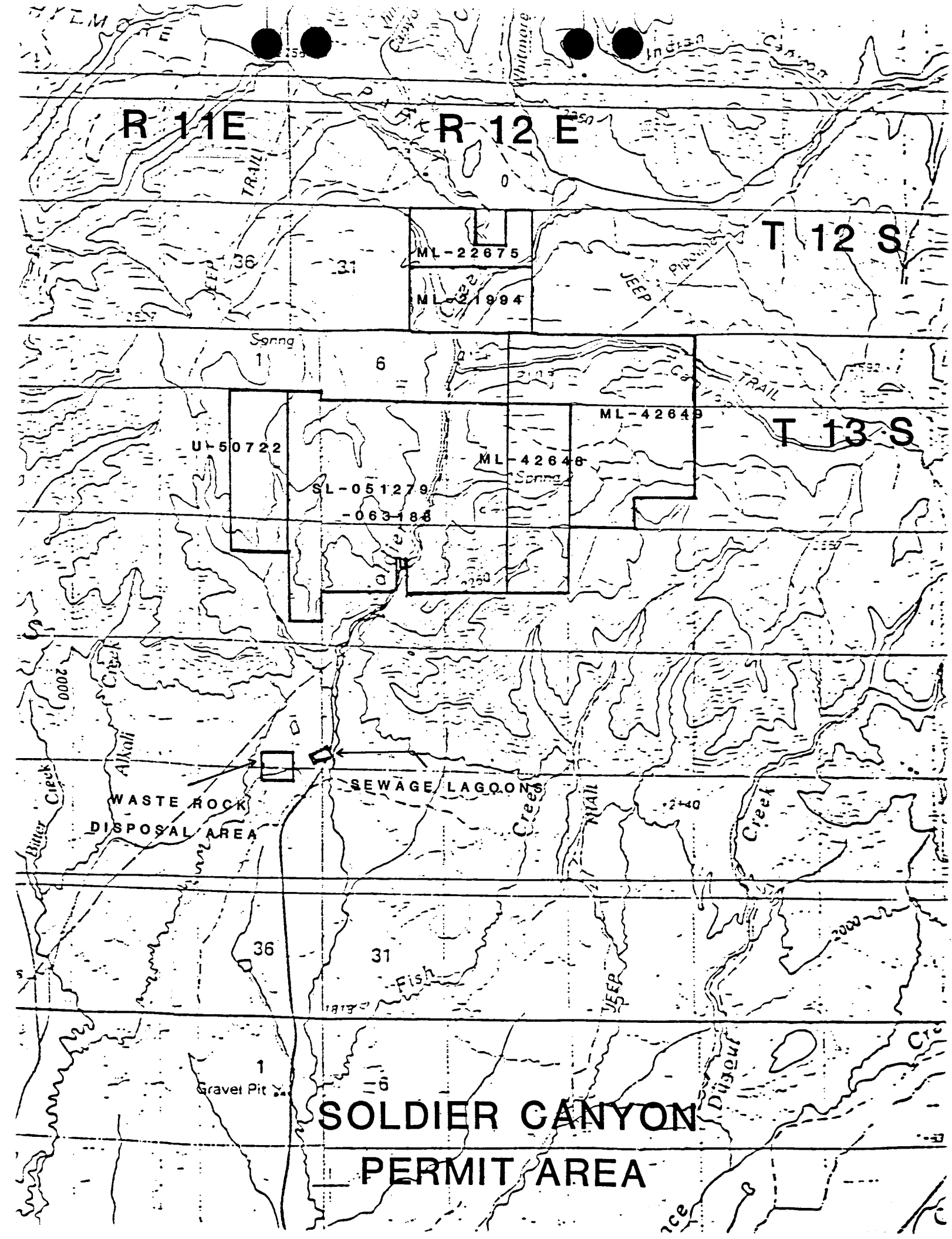
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SEWAGE LAGOONS
WASTE ROCK
DISPOSAL AREA
Gravel Pit
SOLDIER CANYON
PERMIT AREA
Spring
TRAIL
JEEP
Alkali Creek
Fish Creek
Dugout Creek
36
31
1
6

Technical Analysis

Soldier Creek Coal Company
Soldier Canyon Mine
ACT/007/018
Carbon County, Utah

February 4, 1987

Background

On June 10, 1985, Soldier Creek Coal Company (SCCC) was granted a five year Permanent Program Mining Permit from the Division of Oil, Gas and Mining (DOGM) and the Office of Surface Mining Reclamation and Enforcement (OSMRE). At the time the approved permit area consisted of two federal coal leases, SL-051279-063188 and U-50722, encompassing 2,143.81 acres. Of these, 583.81 acres are administered by the Bureau of Land Management (BLM) and the remainder is privately owned.

On June 5, 1986, ownership of SCCC was transferred to the Sun Company. On March 26, 1986, in anticipation of approval of the permit transfer, a complete new Mining and Reclamation Plan (MRP) was filed with DOGM and OSMRE for the Soldier Canyon Mine. The new MRP incorporates two state coal leases (ML-21994 and ML-22675), and portions of two other state coal leases (ML-42648 and ML-42649), held by two affiliate companies, Sunedco Coal Company and Sunoco Energy Development Company, into the permit area. The new permit boundary encompasses 4,347.99 acres (see attached map). No additional surface disturbance is planned at this time.

On April 30, 1986, DOGM received a letter from OSMRE (attached to TA in correspondence section) stating that no Secretarial Mining Plan Approval for the new MRP was required. Therefore, DOGM has processed the application without federal input beyond that contained in the December 1984 Mining Plan Decision Document for the mine. Upon approval, a new five-year permit will be issued to SCCC by DOGM.

The MRP was determined to be complete on November 19, 1986. Notice was published as required. No comments were received. This Technical Analysis is based on the MRP as updated through January 6, 1987.

Introduction

The Soldier Canyon Mine is located at the mouth of Nine Mile Canyon on the southern edge of the Book Cliffs, approximately 12 miles northeast of Price, Utah (see mine location map). Carbon County road 53 is paved to the mine site and serves as the mine access and haul road.

Surface disturbance at the Soldier Canyon Mine is currently 12 acres, including the mine surface facilities and sewage lagoons two miles southwest of the mine site. Provision for a 20.2 acre waste rock disposal site is included in the MRP. Currently there is no bond to cover disturbance to this area; however the waste rock disposal site will be included in a self-bond currently being pursued by the Sun Company. No additional surface disturbance will be needed to mine the newly incorporated leases.

Current projections are for mining operations to continue through 2016, with a maximum annual coal production of 1,740,000 tons. Current production is estimated at 800,000 tons with a work force of 120. Coal is currently being mined from the Rock Canyon seam by room and pillar methods. In the future coal will be mined from the Gilson and Sunnyside seams as well, and longwall mining methods will be used in some areas.

UMC 817.11 Signs and Markers (SCL)

Existing Environment and Applicant's Proposal

Signs and markers are placed at each point of access to the permit area. Perimeter signs delineate disturbed areas (Section 4.2.1.). Topsoil stockpiles are marked with appropriate signs (Section 5.2.2). No buffer zone or blasting markers are required.

All signs and markers conform to the requirements of this regulation and will be maintained until after bond release.

Compliance

The applicant complies with the requirements of this section.

Stipulations

None.

UMC 817.13 Casing and Sealing of Exposed Underground Openings: General Requirements - JRH

Existing Environment and Applicant's Proposal

The cross reference provided in the plan does not correctly reference the location of this information in the application. The reference to 4.3.3 should be revised to 5.2 in the cross reference.

In part 5.2 of the Mining and Reclamation Plan (MRP), the operator has committed to the requirements of this section. General plans for the closure of monitoring wells, water wells and mine openings are included and a commitment to provide detailed designs in compliance with applicable regulations by other federal and state agencies is given.

Compliance

This section is considered to be in compliance with the regulations. However the cross reference should be corrected as indicated above.

Stipulations

None.

UMC 817.14 Casing and Sealing of Exposed Underground Openings: Temporary - JRH

Existing Environment and Applicant's Proposal

The operator has committed in part 5.2 of the MRP, to protect and prevent access to mine openings in the event that the mine becomes temporarily inactive. Barricades, signs and other such requirements will be provided and maintained in the event that the operation does become inactive.

The operator does not intend to use any mine openings to return underground development waste, coal processing waste or water to underground workings. This section of the regulations does not apply to the operator's MRP and is not applicable.

Compliance

This section is considered to be in compliance with the regulations.

Stipulations

None.

UMC 817.15 Casing and Sealing of Exposed Underground Openings: Permanent - JRH

Existing Environment and Applicant's Proposal

The operator has provided general plans for the permanent closure of mine openings in part 5.2 of the MRP. The operator has further committed to comply with other applicable requirements of MSHA and other agencies during permanent closure of these mine openings. The operator has committed to submit detailed designs of the closures for approval at the time of reclamation.

Compliance

This section is considered to be in compliance with the regulations.

Stipulations

None.

UMC 817.21. - .25 Topsoil - JSL

Existing Environment and Applicant's Proposal

The soils of the Soldier Canyon Mine area are formed primarily from sandstone, colluvium and bedrock. This material is a weathered product of Mancos shale and Flagstaff formation. These soils are gravelly, stony and bouldery in the interbedded sandstone and channery and flaggy where they develop over interbedded sandstone and shale. The soils in the low drainages are finer and more sorted.

A ustic moisture regime with a frigid temperature prevail. Average annual precipitation is between 8 and 18 inches, with average soil temperature lower than eight degrees centigrade. The topography of the area is gently sloping to steep with slopes ranging from one to 80 percent. The capability subclass ranges from VIe to VIIIs with the greatest portion of soil in the VIIIe non-irrigated subclass.

Under vegetation, the erosion hazard associated with the soil is moderate. These soils are generally well drained and range in texture from sandy loam to clay loam. Nutritional supplying power is fair and no soil relative reclamation problems are anticipated.

The soil resources of the Soldier Canyon Mine area are discussed in the 1986 submittal, chapter three, section six, pages 3-93 through 3-160. The soil surveys were conducted on the Order II and Order III scale.

The soils at Soldier Canyon Mine are very cobbly to stony, medium textured and neutral to moderate alkalinity. Soils within the portal facilities area include: rock outcrop, rubbleland, loamy, mixed (calcareous) mesic Lithic Ustic Torriorthent, with small inclusions of Loamy-skeletal, mixed, mesic Ustollic Calciorthid and loamy, mixed (calcareous), mesic shallow Ustic Torriorthents (page 5-18, 19, Section 3.6, Volume 2). Seven soil series were identified at the proposed waste rock disposal area: Haverdad, Gerst-Badland, Gerst Stony, Gerst Cobbly, Gerst, Strych Very Stony Loam and Badland (Page 5-18, Section 5.5, Volume 3). Depths generally range from one to six feet. These soils are well drained with rapid runoff. Soil textures at the mine area are silt loam and loam while the texture of the rock waste disposal area range from sandy loam to silty clay loam, with loam being the most predominant. The pH ranges from 7.8 to 8.3, electroconductivity ranges from 0.2 to 5.2 mmhos/cm and sodium adsorption ratios range from 0.3 to 6.2 (page 5-16, 5-23, section 5.5, volume 3).

Removal

The development of the portal area and most of the support facilities occurred prior to the enactment of SMCRA in 1977 (Public Law 95-87). The fan portal site was developed after the enactment of SMCRA. During the pre-SMCRA development, approximately 11.65 acres were disturbed. No topsoil was salvaged for final reclamation. Topsoil, approximately 310 cubic yards (0.38 acres), was salvaged at the fan portal site and stockpiled. Existing disturbance at the waste rock disposal area will include 20.2 acres of disturbances and 44,006 cubic yard of salvaged topsoil (page 5-18, Section 5.5 volume 3). Total surface disturbance at the Soldier Canyon Mine will be 32.23 acres.

Soldier Creek Coal Company has proposed to use the soil material in the parking lot and pads as a substitute topsoil material. Samples of the proposed topsoil substitute material were taken for physiochemical analysis. Results from these analysis (page 5-23, Table 5.5-3. Ford, Bacon and Davis Report, section 5.5, Volume 3) indicate favorable soil characteristics to test the effectiveness of the substitute soil materials. Test plot data will continue to be evaluated.

Compliance

The applicant's proposal adequately addresses the requirements of this section.

Stipulations

None.

Storage

Approximately 310 cubic yards of topsoil has been removed and stockpiled on the southern portion of the sediment pond area (page 5-26, section 5.5, Volume 3). The stockpile has been seeded and a perennial vegetation cover was established.

Compliance

The applicant's proposal adequately addresses the requirements of this section.

Stipulation

None.

Redistribution

At the time of final reclamation, approximately 29,300 cubic yards (page 5-40, table 5.5-4, Section 5.5 volume 3) of substitute topsoil and topsoil will be redistributed over the backfilled portal and facilities area. The applicant provides a plan which details soil redistribution procedures on page 5-30 through 5-32 of section 5.5. The regraded surfaces will be left in a roughened condition to increase water infiltration. The 44,006 cubic yards of topsoil to be salvaged at the waste rock area will be redistributed at a depth of 16 inches after final grading and compacting (page 5.30, Section 5.5, Volume 3).

Compliance

The applicant's proposal adequately addresses the requirement of this section.

Stipulation

None.

Nutrients and Amendments

The applicant commits to sample at the time of redistribution (page 5-32, Section 5.5, Volume 3). Parameters and sampling methodology are described on pages 5.33 through 5-34.

Compliance

The applicant's proposal adequately addresses the requirements of this section.

Stipulation

None.

UMC 817.41 Hydrologic Balance: General Requirements - DC, DD

Existing Environment and Applicant's Proposal

The applicant plans to minimize changes to the prevailing hydrologic balance within the mine plan and adjacent areas by maintaining water quality standards and meeting effluent limitations through the use of acceptable water pollution control practices. These proposals have been reviewed for completeness and technical adequacy with respect to the established mining regulations throughout this section and the following sections, UMC 817.41 - .57. A more detailed discussion of the proposals will be presented in the following hydrologic sections along with a summary of how the proposal complies with the regulation.

The applicant proposes to control surface runoff from disturbed and undisturbed areas by using a combination of diversions, berms, channels, culverts and a sedimentation pond as discussed under Sections UMC 817.43 - .46 and 817.49. Most of the undisturbed area drainage will be separated from disturbed area drainage, except for 19.6 acres on the west slope of the canyon where it is impractical to utilize diversion structures. Here, the undisturbed area drainage will be routed along with the disturbed area drainage through the sedimentation pond prior to being discharged from the mine plan area as discussed in Section UMC 817.43 and 817.46.

The applicant has submitted plans to stabilize disturbed areas by implementing revegetation and mulching practices to achieve the quickest germination and growing standards.

Surface water monitoring has been conducted since 1980 and will continue to operate to detect any impacts from mining operations on the surface water system as discussed under UMC 817.52.

Impacts to the ground water systems have been and will continue to be analyzed through on-going monitoring. Monitoring and sampling will help the applicant keep impacts to a minimum by detecting changes in water quality and quantity that could result from mining.

Changes in water quality and quantity will be minimized so that post mining land use will not be adversely affected. The applicant proposes to control subsidence and prevent acid mine drainage.

Compliance

The applicant has proposed designs utilizing best technology control practices to minimize changes to the prevailing hydrologic balance in both the permit and adjacent areas. The following sections (UMC 817.42 - .57) describe specific design details for the hydrologic facilities proposed.

Stipulations

None

UMC 817.42 Water Quality Standards and Effluent Limitation - DC

Existing Environment and Applicant's Proposal

The applicant proposes to meet water quality standards and effluent limitations by routing and treating in approved treatment facilities (sedimentation ponds, underground sump, silt fences and straw bales), all drainage from the disturbed area and from the underground workings prior to discharge off the permit area. A sedimentation pond will treat drainage from 8.1 of the estimated 9.1 acres of disturbed area. Approximately 1 acre of disturbed area is not draining to the sedimentation pond. This 1 acre is comprised of approximately 0.5 acres at the No. 2 Exhaust Fan and Substation site and 0.5 acres at the storage yard below the sediment pond.

Drainage from underground workings is treated prior to discharge using an underground collection and sump system and does not flow to the sediment pond. The mine water is discharged directly into Soldier Creek and is monitored monthly under NPDES Permit Number 0023680.

Drainage from the undisturbed watersheds WS-3, WS-4, and WS-5 as depicted on drawing E030 is not diverted from the disturbed area due to site constraints and results in mixing of undisturbed and disturbed area drainage. Drainage from watersheds WS-3, WS-4 and WS-5 is therefore treated and monitored at the sedimentation pond with quarterly reports submitted to the Division to insure compliance with the limitations set forth in NPDES Permit number 0023680 and UMC 817.42(a)(7).

Compliance

The applicant has not addressed the two areas, the No. 2 Exhaust Fan and the storage area below the sediment pond, that do not have drainage reporting to the sediment pond. These areas can only be considered exempt from UMC 817.42(a)(1) if it is determined by the Division that adequate alternative sediment control measures are in place to treat the runoff from these areas. The applicant's proposal will be in compliance with this section when the stipulation of this section has been met.

Stipulation UMC 817.42-(1)-DC

1. The applicant must submit the following information on the two disturbed areas that do not have runoff reporting to the sedimentation pond within 60 days from the date of permit issuance.

   a. The exact size of each area in acres;

   b. The volume of expected runoff from the design precipitation event (i.e. 10-yr, 24-hr);

   c. The alternative sediment control method with a demonstration that the method has potential to treat drainage to meet limitations;

   d. The location of and depiction of the alternative sediment control method on a map;

   e. Maintenance methods and schedule and a monitoring plan to demonstrate compliance with limitation standards.

UMC 817.43 Diversions and Conveyance of Overland Flow, Shallow Ground Water Flow and Ephemeral Streams - DC

Existing Environment and Applicant's Proposal

The control of the drainage at the mine site is achieved using a system of diversions and culverts to divert undisturbed drainage from the disturbed area and a mine yard drainage system which collects surface runoff from disturbed areas and routes it to the sedimentation pond. The drainage control system is best depicted on Exhibit 4.2-2 and Drawing E030.

The peak flow value for watersheds #1 and 2, Figure 8, Runoff Control Plan, was calculated to be 20.2 cubic feet per second (cfs) using a 50-year, 6-hour precipitation event and the SCS curve number methodology. Other pertinent input parameters are a drainage area of 127.4 acres and a curve number of 75. From the computation a 30 inch bypass culvert without a headwall at the inlet was designed to pass the 20.2 cfs design peak.

The drainage system used to convey runoff water through the yard into the sedimentation pond consists of 24 inch CMP, grate covered concrete ditches, berms, and cobblestone lined open channels. Peak flow values for watershed numbers 3, 4, 5, 6 , & 7 have been calculated and are located in the Runoff Control Plan. Peak flow values were calculated using a 25-year, 6-hour precipitation event. No designs were submitted that demonstrate the capacity and design velocity for the diversions.

Runoff from the undisturbed watershed on the west side of the canyon directly east and adjacent to watershed #5 is collected in a road ditch at the base of the slope. This ditch is maintained as part of the county road by Carbon County.

Compliance

The 30 inch bypass culvert that routes undisturbed drainage from watersheds #1 and 2 under the pad area into Soldier Creek was designed based on a 50-year, 6-hour precipitation event. Proposed DOGM regulations require that undisturbed diversions are capable of safely passing runoff from a 10-year, 6-hour precipitation event. The peak flow from this design storm is 10.38 cfs using a curve number of 75 and an SCS Type I storm distribution. The 30 inch bypass culvert is therefore adequate to pass the design event.

The applicant has not demonstrated that the disturbed diversions reporting to the sediment pond are in compliance with this section. The applicant's proposal will be in compliance with this section when the stipulation of this section has been met.

Stipulation 817.43-(1-2)-DC

1. The applicant must demonstrate that the diversions comply with the design events of the proposed DOGM regulations. Specifically the applicant must demonstrate that the diversions are capable of safely passing the peak flow from a 10-year, 6-hour precipitation event. If the proposed regulations have not been adopted by the Mid Permit Term Review the applicant must comply with the regulations that are in effect at that time.

2. The applicant must submit designs for the disturbed diversions that demonstrate they are in compliance with this regulation within 60 days from the date of permit issuance. Specifically, the applicant must submit designs that show the diversions have been sized to convey the 10-year, 6-hour precipitation event runoff with at least 0.3 foot free board. Additionally, the applicant must submit calculations showing the maximum expected velocity in each diversion and a demonstration of channel stability at the design velocities for each diversion.

UMC 817.44 Stream Channel Diversions - DC

Existing Environment and Applicant's Proposal

The Soldier Canyon Mine facilities are located adjacent to Soldier Creek, however, Soldier Creek has not been diverted due to mine facilities. The sediment pond has been constructed

immediately adjacent to Soldier Creek and the embankment could potentially be affected by high flows. Section UMC 817.46 discusses Soldier Creek flows in relation to the sediment pond embankment.

Compliance

The applicant is in compliance with this section.

Stipulations

None.

UMC 817.45 Sediment Control Measures - DC

Existing Environment and Applicant's Proposal

The disturbed area will be controlled and treated using a sedimentation pond system, berms, diversions and straw bales. Erosion of ditches and exit points of culverts will be minimized as channel linings have been constructed for all diversions and rip-rap has been placed at all culvert outlets. Undisturbed drainage from watersheds 1 and 2 will be diverted from the disturbed area. All other undisturbed drainage (watersheds 3, 4, 5) will be routed through the sediment pond along with all disturbed area drainage. Gravel has been placed on the No. 2 Exhaust Fan and Substation site and the storage area below the sediment pond. Additionally, straw bales have been placed around the perimeters of these two sites.

Compliance

The applicant is utilizing the best technology currently available to meet effluent limitations with the requirements of this section. The applicant will be in compliance with this section when Stipulation UMC 817.43-(1)-DC is met.

Stipulations

None.

UMC 817.46 Hydrologic Balance: Sedimentation Ponds - JRH

Existing Environment and Applicant's Proposal

The operator has incorrectly referenced the following sections in the regulation cross reference. The cross reference should be changed to state that location of the information in the application is found in part 4.2.8 of the MRP rather than in part 4.2.7. Further the cross reference does not indicate the revised pond design and runoff control plan that is included in the MRP in the appendicies. This information is found on page I-161 of the appendices and should be included in the cross reference.

The embankment construction is slightly over the required height and sufficient compaction was employed during construction to meet the requirements of this section.

The constructed width of the embankment of the sediment pond is 12 feet. By calculation, the embankment height (H) is 12 feet, thus (H+35)/5 = 9.5 feet, therefore the mine facilities sediment pond is in compliance with this section. The proposed sediment pond for the coal refuse storage area is not constructed and may be subject to revision upon final design of the area. Considerations with regard to the refuse area pond will be made upon the submittal of the finalized designs if and when the refuse area becomes active.

As indicated in the as-built construction of the sediment pond and in the proposed reconstruction of the pond, the combined upstream and downstream side slopes of the embankment are greater than 1v:5h. Also the requirement of this section is such that in all cases, the slopes shall be designed to be stable.

The operator has requested a variance from this section and has provided engineering analysis and design criteria such that the pond has a developed factor of safety in excess of 1.5. The registered engineer's report on the as-built submittal and report indicates that the construction of the embankment was sufficient to exceed the criteria used in the design and therefore, the pond as is constructed maintains a factor of safety in excess of 1.5. Factors of safety calculated indicate 2.6 for the inslope under rapid drawdown conditions and 5.2 under full pond conditions. The factor of safety for the outslope of the pond was determined to be 1.79 under these conditions. Additional materials placed at the toe of the embankment as riprap protection have some effect to increase the stability of the outslope of the pond. With regard to these data submitted by the operator in the plan and in the engineer's as-built report, the design is considered sufficient to meet the intent of this section.

Preparation for the foundation of the sediment pond was in accordance with this section.

Fill materials used for the construction were well graded uniform materials suitable for construction of the embankment. Soils analysis of the materials can be found in the as-buit submittal provided by the operator.

Procedures for the construction and compaction of the embankment were accomplished in accordance with this section.

No embankments or impoundments meet the criteria of having an embankment height greater than 20 feet or having a storage capacity greater than 20 acre-feet or more. Such requirements made under this section with regard to these criteria do not apply.

Construction of the embankment was accomplished under the supervision of Registered Professional Engineer, J. Thomas Paluso, No. 4028, state of Utah.

The operator has recently reconstructed the embankment and has applied approved revegetation treatments to the embankment and has committed to maintain and repair any erosion that may occur on the embankment.

The operator has committed to examine and report on a quarterly basis, any signs of weakness or other hazardous conditions that may occur.

Information regarding reclamation of sediment ponds is found in part 5.3.1 of the MRP. The operator indicates that all dams, embankments, and other impoundments will be completely removed and reclaimed after the termination of mining activities. Sedimentation ponds will not be removed until the affected area serviced by the pond has been restored, vegetation requirements met, and the quality of the drainage entering the ponds meets the applicable Federal and State water quality requirements. Ponds and embankments will be regraded and revegetated as outlined in the revegetation section of the MRP.

Compliance

The above section is considered to be in compliance with the regulations. However the cross reference should be corrected as indicated above.

Stipulations

None.

UMC 817.46 Hydrologic Balance: Sedimentation Ponds - DC

Existing Environment and Applicant's Proposal

The sedimentation pond system at the Soldier Canyon Mine consists of a single sediment pond with a drop inlet dewatering device and a drop inlet emergency spillway. The sedimentation system designed by Vaughn Hansen Associates and SCCC engineers presented in Volume 3 has been constructed at the site.

The drainage from 8.1 acres of disturbed area and 19.8 acres of undisturbed area is routed to the sediment pond located below the parking area and directly adjacent to Soldier Creek. The drainage is collected using a system of ditches, culverts, drop drains, and berms and routed through a 24 inch culvert into the sedimentation pond. Drainage from the road adjacent to the R.E.I. trailers is collected in a cobbelstone-lined ditch and routed into the pond via an 18 inch culvert.

The sediment pond was reconstructed in August of 1986 as a result of an NOV issued on May 2, 1985 because embankment widths and side slopes on one portion of the pond did not conform to the approved plan. The design and reconstruction of the pond was performed by SCCC. The pond is incised adjacent to the Soldier Creek channel and due to its close proximity to the channel, the area between the pond and the stream channel is treated as an embankment with the embankment height 11 feet to the top and 9 feet to the crest of the emergency spillway. The pond was resurveyed and as-built drawings were prepared in October of 1986. From these drawings, a stage-storage curve was developed for the pond.

The pond is equipped with an 18 inch drop inlet decant structure and an 18 inch drop inlet emergency spillway. SCCC has not surveyed in the elevations of either of these structures so volumes to the structures cannot be accurately determined. Additionally, the ability of these structures to pass peak flows from the 10-year, 6-hour and 25-year, 6-hour precipitation events cannot be determined.

The top width of the embankment is 12 feet and an interior slope of two horizontal to one vertical. Stability analysis of the constructed embankment indicates a factor of safety for the inslope of the pond at 2.6 and the outslope at 2.4. The pond has been certified by a registered professional engineer (T. Paluso #4028, Utah). Properly designed anti-seep collars are installed on the decant pipe and the emergency spillway pipe which both extend through the embankment.

The applicant has also proposed a sediment pond at the rock waste disposal area. Designs have been submitted and are located on pages 4-15 through 4-19. At this time the applicant is not sure whether the disposal area will be constructed. The applicant has committed to submit adequate pond designs 120 days prior to construction.

Compliance

The designs submitted by SCCC are not adequate to determine compliance with this section. The applicant has not supplied necessary cross-sections with surveyed elevations of the decant and spillway structures to determine if the pond can safely contain and pass the design events. Proposed DOGM regulations require that the pond be capable of containing or treating runoff from the 10-year, 24-hour precipitation event and that the spillway system be capable of safely passing the peak flow from a 25-year, 6-hour precipitation event. The applicant must comply with the following stipulations before the sediment pond can be found in compliance with this section.

The designs for the rock disposal area will be reviewed if and when the operator decides to put this area into use. The applicant will be in compliance with this section when the conditions of the following stipulation are met.

Stipulation UMC 817.46-(1-2)-DC

1. Within 60 days from the date of permit issuance the applicant must demonstrate that the sediment pond complies with the design events as specified in the TA section UMC 817.46 to satisfy this regulation. Division review will be performed using the proposed regulations which is contingent upon these proposed regulations being adopted. If the proposed regulations have not been adopted by the Mid Permit Term Review the applicant must comply with the regulations that are in effect at that time.

2. Detailed designs for the rock waste disposal sediment pond must be submitted to the Division 120 days prior to construction. All applicable permits and approvals from federal, state, and local agencies must be obtained prior to construction.

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

Existing Environment and Applicant's Proposal

It is not anticipated that any acid, alkaline or toxic forming material will be encountered. Illustrations 3.1-1 through 4 and section 3.1-4 show the results of laboratory analyses on samples from the coal, and from the materials above and below the coal seam. The applicant's discussions on acid- and toxic-forming materials occur in sections 3.1.4, 3.1.5 and 4.3.3 pages 3-7 through 3-12 , and page 4-47, Volume 2.

Compliance

The information presented by the applicant is sufficient to determine that acid-forming and toxic-forming material will not form or occur.

Stipulation

None

UMC 817.49 Permanent and Temporary Impoundments - DC

Existing Environment and Applicant's Proposal

The sedimentation pond at the site is considered a temporary impoundment and will be removed after the disturbed area serviced by the pond has met state and federal vegetation and water quality requirements. Upon removal of the embankment the affected land will be regraded and revegetated. The sediment pond has been discussed under UMC 817.46 for compliance.

Compliance

The applicant is in compliance with this section.

Stipulation

None

UMC 817.50 Hydrologic Balance: Underground Mine Entry and Access Discharge - DD

Existing Environment and Applicant's Proposal

No gravity discharge of water from the mine should occur. All entries and accesses are up dip of the coal seams to be mined. The direction of groundwater movement of the regional aquifer is north to northwest (page 3-40), the same direction as the dip of the geologic formations.

During operation water seeping into the mine will be collected in sumps for mine water supply. It is anticipated that mining conditions will be similar to that of the current Soldier Creek Mine, which are nearly dry (page 3-42), and discharges will not take place. If water is discharged from the mine it will be treated to meet effluent limitations under the National Pollutant Discharge Elimination System Program conducted by the EPA (Section 3.4, Page 3-66 and Section 4.2, Table 4.2-3, Page 4-13).

Compliance

The applicant has submitted sufficient information to show that they can comply with this section.

Stipulations

None.

UMC 817.52 Surface and Ground Water Monitoring - DC, DD

Existing Environment and Applicant's Proposal

Surface Water

The applicant has baseline surface water quantity and quality for Soldier Creek from September of 1978 to September of 1984. This data was collected and recorded at USGS gaging station 09313975 Soldier Creek Below Mine, Near Wellington, Utah, which was located immediately downstream of the sediment pond area.

Operational monitoring of surface water was initiated in 1979 and data collected from this program has been sent to the Division since that time. SCCC proposes to modify the surface water monitoring program as a result of proposed expansion of the mine plan area. Surface water will be monitored above and below the facilities area on Soldier Creek and also monitoring will be conducted on Pine Creek. The locations of these monitoring stations are depicted on Exhibit 3.2-1. These three sites will be monitored quarterly for the operational parameters as outlined in the Water Monitoring Guidelines as established by the Division. Data will be submitted to the Division quarterly.

A NPDES Permit has been issued to the Soldier Creek Coal Company, #0023680, for the discharge from the sediment pond and mine discharge. The NPDES Permit allows for one ton of dissolved solids per day to be discharged from the mine into Soldier Creek.

Groundwater

Groundwater information is presented in Section 3.2 of the mine plan. Data has been collected to describe the existence and movement (page 3-37) of groundwater in the geologic formations that comprise the stratigraphic section within and adjacent to the mine plan area. Groundwater quality and quantity data has been compiled from current literature sources and field surveys that portray groundwater levels (p. 3-41), infiltration rates (p. 3-31, p. 3-37, and p. 3.47), subsurface flow (p. 3-44) storage characteristics (p. 3-47) and the quality of groundwater, (p. 3-32 to p. 3-35).

The applicant has collected baseline and operational groundwater information to date and has established continued plans to monitor wells, springs and in-mine flows to detect any changes in groundwater quality or quantity resulting from mining activities.

Compliance

The applicant has presented sufficient surface and groundwater information and data to establish baseline characteristics. Models have been generated to help predict cumulative hydrologic impacts from mining. A continued monitoring program will be conducted to verify any changes to the hydrologic regime.

Stipulations

None.

UMC 817.53 Hydrologic Balance Transfer of Wells - DD

Existing Environment and Applicant's Proposal

The applicant does not presently anticipate the transfer of any wells on the mine plan property. Current plans are to seal all exploration, boreholes, wells and other exposed underground openings, Section 51, page 5.4.

Compliance

The applicant complies with this section.

Stipulations

None.

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

Existing Environment and Applicant's Proposal

The applicant does not anticipate diverting water into the mine. Mining equipment will operate from water seeping into the mine from groundwater percolation. This water will be stored in sumps to be used as needed.

Compliance

All information presented in the mine plan indicates that sufficient water is produced in the mine to operate equipment so no water will be needed to be diverted into the mine. The applicant also intends to control overland runoff (Section 8.0) by directing it away from mine entries.

Stipulations

None.

UMC 817.56 Postmining Rehabilitation of Sedimentation Ponds, Diversions, Impoundments and Treatment Facilities - DC

Existing Environment and Applicant's Proposal

The applicant has not proposed to leave any permanent ponds or diversions after reclamation of the minesite. The applicant has committed to reclaiming all surface structures after cessation of mining and during reclamation construction. Therefore, no rehabilitation of permanent hydrologic structures will occur.

Compliance

The applicant is in compliance with this section.

Stipulation

None.

UMC 817.57 Hydrologic Balance: Stream Buffer Zones - DD

Existing Environment and Applicant's Proposal

The applicant has designated land areas along Soldier and Pine Creeks as stream buffer zones. Baseline information has been collected to characterize these streams.

A variance was granted to SCCC by the Regulatory Authority to allow installation of a ventilation fan and facilities adjacent to Soldier Creek for the mine. Restoration plans have been submitted and approved.

No secondary mining practices will be conducted beneath these perennial streams.

Compliance

The applicant has complied with this section.

Stipulations

None.

UMC 817.59 Coal Recovery - JRH

Existing Environment and Applicant's Proposal

Resource recovery information is found in part 4.3 of the MRP. Table 4.3-1 provides a detailed breakdown of the recoverable state and federal coal reserves by lease. The operator has indicated the

limitations of coal mining methodology and nature and location of the deposit with regard to coal recovery. Coal will only be partially recovered in those areas of the Soldier Creek drainage in order to protect those areas from subsidence. Barrier and safety pillars will be left in accordance with MSHA requirements and general safety orders of the state and Bureau of Land Management. Maximization of coal recovery will be achieved by utilizing a combination of longwall and room and pillar mining methods to meet differing mining conditions. Due to multiple seam mining and the close proximity of seams to each other and limited cover in some areas the total percent recovery (tons mined/tons in place) is estimated at 38.5%.

Compliance

The above section is considered to be in compliance with the regulations.

Stipulations

None.

UMC 817.61-68 Use of Explosives - JRH

Existing Environment and Applicant's Proposal

Information found in the plan regarding the use of explosives is contained in part 4.3.4 of the MRP. The nature of the mining operations provides for only minimal underground blasting during the construction of overcasts, use in faulted area access or rock spars. No surface blasting is expected to occur within the permit term. Surface storage of explosives is provided in steel magazines which are located on the surface facilities map, Exhibit 4.1-1. The operator has committed to handle and use explosives in compliance with applicable federal, state and local laws.

Compliance

The above sections are considered to be in compliance with the regulations.

Stipulations

None.

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

Existing Environment and Applicant's Proposal

Information regarding this section is found in part 4.2.9 of the MRP. The operator has provided a rock waste disposal facility approximately 2 miles from the portal areas. This proposed area has addressed the regulations as follows:

Soil and waste analysis regarding the waste disposal site is located in part 5.5 of the MRP. There is no serious acid- or toxic-forming potential for the material to be placed in the waste site. The material is to be covered with 16 inches of topsoil to promote revegetative growth.

Drawings and designs were supervised under Registered Professional Engineer, Thomas J. Paluso, No. 4028, Utah.

The operator has provided an adequate plan for clearing and grubbing of the vegatative cover, removal and storage of the topsoil and has provided for adequate protection of the topsoil materials during storage.

Slope protection and terracing has been proposed in order to protect the site from erosion. Diversion ditches are to be riprapped.

The waste disposal site is located on a moderately sloping hillside out of a main drainage area. Slopes of the base of the waste piles are not in excess of 36% and no buttress or keyway is required for the pile.

Fill material is to be placed and compacted in successive lifts. Outslopes of the waste dump shall be 2:1 and shall rise 30 feet with 20 feet wide benches. The benches will be back sloped 5% to help prevent surface erosion (part 4.2.9 of the MRP).

Benches and slopes will be rounded and contoured upon completion of mining operations in a manner that is suitable for the post mining land use.

Terracing is utilized to maintain stability and prevent erosion.

The operator has committed to the submittal of inspection reports in accordance with this section as presented in part 4.2.9 of the MRP.

The operator has no head-of-hollow fills as defined in the regulations. This section does not apply.

A review of maps, exhibits 3.2-7 and 3.2-1, and information submitted in the mine plan shows that the Rock Waste Disposal site is located on Mancos Shale and no springs or seeps exist in the area.

Sufficient foundation investigation information is provided in the MRP to prove stability. This information is found in part 5.5 of the MRP.

The operator does not intend to return excess spoil and underground development waste to the mine workings. This section does not apply.

Compliance

The above sections are considered to be in compliance with the regulations.

Stipulations

None.

UMC 817.72 Disposal of Underground Development Waste and Excess Spoil: Valley Fills - JRH
UMC 817.73 Disposal of Underground Development Waste and Excess Spoil: Head-of-Hollow Fills - JRH
UMC 817.74 Disposal of Underground Development Waste and Excess Spoil: Durable Rock Fills - JRH
UMC 817.81 Coal Processing Waste Banks: General Requirements - JRH
UMC 817.82 Coal Processing Waste Banks: Site Inspection - JRH
UMC 817.83 Coal Processing Waste Banks: Water Control Measures - JRH
UMC 817.85 Coal Processing Waste Banks: Construction Requirements - JRH
UMC 817.86 Coal Processing Waste: Burning - JRH
UMC 817.87 Coal Processing Waste: Burned Waste Utilization - JRH
UMC 817.88 Coal Processing Waste: Return to Underground Workings - JRH

Existing Environment and Applicant's Proposal

The above sections of the regulations do not apply to the operator's MRP.

Compliance

The above sections are considered to be in compliance with the regulations.

Stipulations

None.

UMC 817.89 Disposal of Non-Coal Wastes - JRH

Existing Environment and Applicant's Proposal

Information pertaining to this section is found in part 4.2.9 of the MRP. Non-coal waste materials, garbage, oil and grease, etc. are approved to be disposed of in a landfill. A.K.I. Sanitation Systems is contracted with the operator to collect and remove these materials from dumpsters located at the mine site. Oil and grease wastes are collected in sumps and returned to distributors for re-cycling. A plan for spill control has been developed by the operator and is found in part 4.4.4 of the MRP.

Compliance

The above section is considered to be in compliance with the regulations.

Stipulations

None.

UMC 817.91 Coal Processing Waste: Dams and Embankments: General Requirements - JRH
UMC 817.92 Coal Processing Waste: Dams and Embankments: Site Preparation - JRH
UMC 817.93 Coal Processing Waste: Dams and Embankments: Design and Construction - JRH

Existing Environment and Applicant's Proposal

The above sections of the regulations do not apply to the operator's MRP.

Compliance

The above sections are considered to be in compliance with the regulations.

Stipulations

None.

UMC 817.95 Air Resources Protection - SCL

Existing Environment and Applicant's Proposal

The applicant proposes to control fugitive dust through the following measures: a covered conveyor belt to transfer coal from the mine to the loadout; limiting the amount of open coal storage to 10,000 tons; and keeping vehicle speeds to 5 mph or less in the yard area (Section 4.4.5).

The applicant has received an Air Quality Approval Order from the Bureau of Air Quality, which allows them to produce up to 1,750,000 tons per year, and requires the applicant to water spray all unpaved roads.

Compliance

The applicant is in compliance with this section.

Stipulations

None.

UMC 817.97 Protection of Fish, Wildlife, and Related Environmental Values - LK

Existing Environmental and Applicant's Proposal

The applicant has performed literature searches and on-site studies to document the presence of, and the potential wildlife species in the mine plan area. The environs within and adjacent to the mine plan area have the potential of supporting ca. 337 species, including 77 mammal species, 234 bird species, 19 amphibian and reptile species and 7 fish species (the fish would occur in Soldier Creek only during years of abnormally high flows) (section 3-10 and Appendix III). Wildlife use areas have been correlated with the vegetation types, listing those species that are most likely to occur in each vegetation type (pages 3-210 through 3-218).

The mine facilities are located in vegetation types that are important wintering areas for deer and to a lesser extent, elk, and in the riparian deciduous streambank community which is classified as critical wildlife habitat.

The mine plan area potentially provides habitat for 23 raptor species, 16 of which were documented during site studies (page 3-226).

The area was also searched for threatened and endangered species of plants and animals, with none being found (pages 3-245 through 3-250 and 3-192).

The applicant has provided an analysis of potential impacts to wildlife during operations (pages 3-250 through 3-252) and has proposed plans to mitigate the expected impacts (pages 4-74 through 4-76).

Compliance

The applicant has minimized the aerial extent of disturbance. Currently, 12.0 acres have been disturbed with an additional 20.2 acres of disturbance proposed for the life of the mine. The revegetation plan for the mine site was designed to enhance wildlife use by providing quality forage and cover and a diverse vegetation community. No known listed threatened or endangered species (plant or animal) exists on the permit area. The applicant has committed to reporting to state and federal authorities the presence of any threatened or endangered species should they be observed in the future.

The applicant has provided designs of power lines which demonstrate they are in concert with current technology for raptor safety.

The highly valuable deciduous streambank community that was disturbed (1 acre) will be restored during reclamation. In addition, a portion of this community was fenced to limit use by livestock, which has resulted in an improved condition of this community.

The 20.2 acres of proposed disturbance is for a waste rock facility which will be used intermittently with only the amount needed disturbed at any one time and reclamation taking place as soon as practical after disposal. Prior to disturbance, portions of this tract will be improved by removing old Pinyon-Juniper and decadent shrubs - this will increase productivity of browse species with the intended result being no net loss of productivity for the site.

Major disturbances such as blasting and massive earthwork will be timed to avoid critical times during the breeding season.

No pesticides will be used without first obtaining approval from the Division as to the type and rate of application.

In addition to the above plans, the applicant will conduct an education program in conjunction with the MSHA training program to minimize the impact to wildlife by mine employees.

The applicant is in compliance with this section.

Stipulations

None.

UMC 817.99 Slides and Other Damage - JRH

Existing Environment and Applicant's Proposal

The operator has committed to notify the regulatory authority in the event of a slide or other surface failure during mining operations. This information is found in part 4.4.1 of the MRP.

Compliance

The above section is considered to be in compliance with the regulations.

Stipulations

None.

UMC 817.100 Contemporaneous Reclamation - LK

Existing Environment and Applicant's Proposal

The applicant proposes to use two types of contemporaneous reclamation; interim stabilization of areas that will be redisturbed during reclamation activities, and final reclamation of areas no longer needed for operations (Section 5.1). The applicant intends to perform all seeding work in the fall (page 5-47). Seed mixes are provided on pages 5-50 and 5-51.

Compliance

Areas of disturbance that are not needed for current operations will be reclaimed during the first normal season when revegetation success is likely. The applicant is in compliance with this section.

Stipulations

None.

UMC 817.101 Backfilling and Grading: General Requirements - JSL, JRH

Existing Environment and Applicant's Proposal

Backfilling and grading of areas within the permit boundary for reclamation are shown on Exhibits E019, D143, C147, E010, E014, E016, C143, C144, D155, C148, C149, D171, D178 and EO54. Backfilled material will be used to reduce highwalls and to flatten out slopes of the reclaimed areas as described in Section 5.4 and 5.5 of Volume 3. Grading will take place along the contours as safety considerations and areal conditions permit. The final surface

configuration will approximate the premining topography. This configuration will conform to the drainage pattern of the surrounding area (Exhibit E014). Regraded slopes will approximate 59% (1.7H:1V). Results of stability analysis for the proposed materials and calculations indicate a safety factor at 1.3 (Figures 5.5-1 through 5.5-4, Section 5.5, Volume 3). Slope terracing will be used as a means to reduce the highwalls within the central facilities area. Terraces will be less than 20 feet in width and the outslope will have a safety factor exceeding 1.3. The sediment pond will be backfilled and regraded upon successful revegetation and upon meeting federal and state water quality standards.

Compliance

The above section is considered to be in compliance with the regulations.

Stipulations

None.

UMC 817.103 Backfilling and Grading: Covering Coal and Acid- or Toxic-Forming Materials - JSL, JRH

Existing Environment and Applicant's Proposal

It is not anticipated that any acid, alkaline or toxic-forming material will be encountered. Illustrations 3.1-1 through -4 and Section 3.1.4 present results of laboratory analysis of samples from the coal, and from the material above and below the coal seam. Soldier Creek will notify the Division if an acid- or toxic-forming material is encountered (page 4-47, Section 4.3.3, Volume 2) and a plan will be developed and submitted for approval.

Compliance

The above section is considered to be in compliance with the regulations.

Stipulations

None.

UMC 817.106 Regrading and Stabilizing of Rills & Gullies - JSL, JRH

Existing Environment and Applicant's Proposal

The applicant has committed to fill or regrade, stabilize and revegetate all rills and gullies deeper than nine inches (page 5-42, Section 5.5, Volume 3). Smaller size rills or gullies shall also be

stabilized in the event that they are disruptive to the approved post mining land use or may result in additional erosion and sedimentation.

Compliance

The applicant's proposal adequately addresses the requirements of this section.

Stipulation

None.

UMC 817.111 - 817.117 Revegetation - LK

Existing Environment and Applicant's Proposal

The permit area encompasses ca. 4,905 acres of Douglas Fir, Ponderosa Pine, Mixed Conifer, Mixed Conifer-Mountain Brush, Aspen, Pinyon-Juniper, Greasewood-Sagebrush, Sagebrush, Shrub-Grass-Juniper, Deciduous Streambank and Mountain Brush communities. These communities are described on page 3-172 through 3-192.

The proposed facilities will disturb a total of 32.2 acres in the Deciduous Streambank (1 acre), Mountain Brush (7.6 acres) and Shrub-Grass-Juniper (23.6 acres) communities (page 3-171).

Reference areas were established for the 3 community types that have been disturbed according to acceptable methodology (page 3-162 through 3-170). Reference areas are described on page 3-187 through 3-192a, including data on cover, woody plant density, productivity, statistical evaluations including sample adequacy and range condition. The Mountain Brush and Shrub-Grass-Juniper reference areas were determined to be in good range condition by the Soil Conservation Service (page 3-190a). The Deciduous Streambank reference area was in poor condition when established in 1984. This area was fenced to control livestock grazing, the apparent cause of its poor condition. By July 1986 significant improvement was made resulting in a fair rating (page 191c).

Revegetation plans are discussed in detail in Section 5.6, including a schedule (pages 5-47 and 5-48), species and rates of seeding/planting (page 5-50 and 5-51), methodologies for seeding (pages 5-52 through 5-60), mulching techniques (5-54 through 5-56) and monitoring (pages 5-60 through 5-70).

Compliance

Revegetation: General Requirements

The applicant has provided plans to establish a diverse, effective and permanent vegetative cover on all disturbed areas except the surface of roads approved for postmining land use or water ways. Post reclamation monitoring will assure productivity and cover levels are restored. The applicant is in compliance with this section.

Stipulations

None.

Revegetation: Use of Introduced Species

Yellow sweetclover (Melilotus officionalis) and alfalfa (Medicago sativa) are the only introduced species proposed for final revegetation. These species are included, based on their soil stabilizing/building ability during early reclamation. They are compatible with the plants and animals of the region, and are recommended for reclamation and enhancement of wildlife habitat. The applicant is in compliance with this section.

Stipulations

None.

Revegetation: Timing

The applicant has proposed to seed all areas in the fall (September-October) and plant transplants and cuttings in the early spring as soon as conditions permit. The proposed timing is generally acceptable except that seeding should be done as late in the year as possible. With acceptance of condition UMC 817.113-(1)-LK, the applicant is in compliance with this section.

Stipulation: UMC 817.113-(1)-LK

1. Within 60 days of permit issuance the applicant will revise the fall revegetation schedule (page 5-48) to show that seeding will not begin prior to October 1, and clarify that cutting and seedling planting is the April after seeding has been completed.

Revegetation: Mulching and Other Soil Stabilizing Practices

The applicant has proposed to use 2 tons/acre of straw or hay mulch and to anchor the mulch by crimping (on gentle slopes) or with polypropylene netting (on steep slopes). Straw and hay are both acceptable, with hay being the preferred alternative. The rate and methods of anchoring are also acceptable. The applicant is in compliance with this section.

Stipulations

None.

Revegetation: Grazing

The applicant has provided a plan to control grazing during the liability period in such a way that revegetation sites will not be negatively impacted by the livestock. The applicant is in compliance with this section.

Stipulations

None.

Revegetation: Standards for Success

The applicant has established reference areas for use in determining the success of revegetation, according to acceptable procedures. At the present time, all reference areas are in fair or better range condition by SCS range condition analysis. However, when first established in 1984, the Deciduous Streambank reference area was in poor range condition. Appropriate management has resulted in an improved condition. Due to the changes in conditions which may occur, the applicant needs to reevaluate the range condition of the reference areas at least once during each permit term.

Post revegetation monitoring as proposed will assure revegetation is progressing in an acceptable manner and proposed sampling for bond release during the last 2 years of the liability period (10 years) per UMC 817.116(b)(1)(ii) meets the requisite statistical adequacy and will assure cover and productivity of revegetated areas equivalent to the cover and productivity of the appropriate reference area.

With acceptance of Condition UMC 817.116-(1)-LK, the applicant will be in compliance with this section.

Stipulation UMC 817.116-(1)-LK

1. The applicant will have a competent range biologist evaluate the range condition of all reference areas to assure that they are in fair or better range condition. This evaluation is to be done during the field season prior to submitting the permit application for the next permit term.

Revegetation: Tree and Shrub Stocking

The applicant has provided a shrub and tree seeding and planting plan which should provide a stocking density on reclaimed lands. that is equivalent to the reference area densities. The shrub species selected are known for their preference by the wildlife species in the area for food and/or cover. The applicant is in compliance with this section.

Stipulations

None.

Finding of Reclamation Feasibility

The applicant has provided a reclamation plan which is in concert with standard reclamation practices. The climate at the site is favorable for revegetation establishment and the soils for reclamation have been determined to be suitable for revegetation. The species selected for revegetation are adapted to the soils and environmental conditions found at the site and have been selected based on their qualities for supporting the primary postmining land uses of grazing and wildlife habitat. In addition, four separate field trials have been established at the mine site to demonstrate the feasibility of the proposed plan. Therefore, a finding is made that reclamation is feasible under the proposed plan.

UMC 817.121 Subsidence Control: General Requirements - DD

Existing Environment and Applicant's Proposal

The applicant has provided plans to prevent subsidence from doing damage to the surface. In designated areas where subsidence is planned, it will be conducted in a controlled and predictable manner.

Compliance

The applicant reflects his intention to carry out controlled subsidence activities in Section 4.4 of the mine permit application.

Stipulations

None.

UMC 817.122 Subsidence Control: Public Notice - DD

Existing Environment and Applicant's Proposal

The applicant has committed to notifying (Section 4.4, p. 4-54) owners of property above the underground workings and adjacent areas of potential subsidence activities at least 6 months prior to mining.

Compliance

The applicant complies with this section.

Stipulations

None.

UMC 817.124 Subsidence Control: Surface Owner Protection - DD

Existing Environment and Applicant's Proposal

The applicant has identified areas and structures that could be affected by subsidence, Section 4.4 p. 4-54.

Although mining has been planned to prevent damage (section 4.4, p. 4-57) to structures and renewable resources, measures have been established by SCCC to mitigate any adverse effects, section 4.4, p. 4-61.

The applicant has also proposed to conduct subsidence monitoring surveys using aerial photogrammetic methods on an annual basis and visual surveys quarterly in conjunction with water monitoring surveys. Information gathered from these surveys will be presented to the Regulatory Authority each year. The report will include; all times and dates of surveys, person or persons involved, methodology used, results obtained and any mitigative action taken to correct subsidence caused effects.

Compliance

The applicant complies with this section.

Stipulations

None.

UMC 817.126 Subsidence Control: Buffer Zones - DD

Existing Environment and Applicant's Proposal

The applicant has established buffer zones along a natural gas pipeline that extends across the property and two perennial streams, Solier Creek and Pine Creek. No subsidence should affect these areas.

Compliance

The applicant complies with this section.

Stipulations

None.

UMC 817.131 -.132 Cessation of Operations - SCL

Existing Environment and Applicant's Proposal

The applicant will support and maintain all surface access openings to underground operations and secure surface facilities in areas that are not currently utilized, but will be used in the future. The applicant will notify the regulatory authority if operations will cease for more than 30 days (Section 4.2).

The applicant has submitted an appropriate reclamation plan for permanent cessation of operations.

Compliance

The applicant is in compliance with these sections.

Stipulations

None.

UMC 817.133 Postmining Land Use - LK

Existing Environment and Applicant's Proposal

Land uses in and adjacent to the permit area include industrial, agricultural, environmental and recreational activities. Because of the limitations imposed by topography, climate, soils, and other natural features, land uses in the permit area have been limited to livestock grazing, wildlife habitat, and outdoor recreation activities such as camping, hiking and hunting (MRP pages 3-284 through 3-286). Local zoning for the permit area allows for mining activities (page 3-284). Mining has occurred in a limited amount since 1906 until California Portland Cement Company purchased the mine in 1974 and began room and pillar mining (page 3-287).

The applicant proposes to return disturbed lands to the general land uses that existed prior to mining, namely range land, wildlife habitat and recreational use (page 3-288).

Compliance

The applicant has provided a description and discussion of the premining and potential land uses of the area (Section 3.12). The reclamation plan (Section 5.0 to 5.6) has been designed to restore the land to a condition capable of supporting the premine land uses of range land, wildlife habitat and outdoor recreation. The applicant is in compliance with this section.

Stipulations

None.

UMC 817.150-.156 Class I Roads - JRH

Existing Environment and Applicant's Proposal

No Class I roads exist within the affected area. County road 53 is utilized as the haul road from the mine site.

Compliance

The above sections are considered to be in compliance with the regulations.

Stipulations

None.

UMC 817.160-.166 Class II Roads - JRH

Existing Environment and Applicant's Proposal

Due to the low probability that the operator will develop and utilize the waste rock disposal facility over the permit term, and perhaps the life of the mine, design details have not been submitted for the rock waste disposal access road. The operator has provided on Exhibit 4.2-3, the tentative location and layout for the proposed changes to the road through the waste rock facilities area. The operator has committed to submit design details for approval within 120 days prior to construction.

The access road to ventilation fan No. 1 and the water tank is considered by the Division to be a Class II road. Specific information addressing this road with regard to the regulations is not found within the MRP. The operator has provided the general

design and gradient of the road on the Diversion Map, Exhibit 4.2-2. The operator needs to address these sections with regard to the design, construction, maintenance, runoff control and reclamation of the access road to Exhaust Fan No. 1.

Compliance

The above sections are considered to be in compliance with the regulations, but are not considered to be technically complete.

Stipulations UMC 817.160-.166-(1)-JRH

1. The applicant shall provide specific plans and details of the access road to Exhaust Fan No. 1 within 60 days from the date of permit issuance, demonstrating compliance with these regulations.

UMC 817.170-.176 Class III Roads - JRH

Existing Environment and Applicant's Proposal

Part 4.2.3 of the MRP addresses the requirements of this section. Roads which could be considered as Class III roads were pre-existing roads used in conduction with ranching in the area. These roads are occasionally used by the operator in conjunction with monitoring requirements of the permit. Such roads will remain as part of the post mining land use and are not considered an intergral part of the mining plan and permit area.

Compliance

The above sections are considered to be in compliance with the regulations.

Stipulations

None.

UMC 817.180 Other Transportation Facilities - JRH

Existing Environment and Applicant's Proposal

The only other transportation facility located on the mine site is the main belt conveyor leading from the portal that terminates at the coal loadout bin. This structure has been constructed in compliance with applicable federal and state requirements and will be removed upon reclamation in conjunction with the rest of the surface facilities.

Compliance

The above section is considered to be in compliance with the regulations.

Stipulations

None.

UMC 817.181 Support Facilities and Utility Installations - JRH

Existing Environment and Applicant's Proposal

A listing and a description of all surface facilities and installations is included in part 4.2 of the MRP. These facilities are in accordance with the requirements of this section. Measures taken to protect oil, gas and water wells are found in part 4.4.7 of the MRP. There are no oil, gas or water wells within the permit area or within 1000 feet of the mine plan area. Other utilities within the permit area and within 1000 feet of the permit area are identified on the drawings.

Compliance

The above section is considered to be in compliance with the regulations.

Stipulations

None.

UMC 822 Alluvial Valley Floors - JSL

Existing Environment and Applicant's Proposal

Information concerning alluvial valley floors (AVFs) in the permit and adjacent area of the Soldier Canyon Mine can be found in section 3.8 of Volume 2 of the MRP. The valley of Soldier Creek immediately adjacent to the Soldier Canyon Mine does not contain sufficient unconsolidated stream laid deposits to allow sub-irrigation or flood irrigation agricultural activities to occur. The Soldier Creek valley in the vicinity of the mine is broken and rough and the soils are rocky, making the area additionally unsuitable for sub-irrigation or flood irrigation agricultural activities. Therefore, the valley of Soldier Creek immediately adjacent to the Soldier Canyon Mine is not considered to be an AVF.

South of the life of mine area along Soldier Creek, an AVF determination has been made. The AVF is located within the boundaries of the 1980 Sage Point-Dugout Canyon application document. However, the AVF is not within the current permit application boundaries.

Compliance

The applicant's proposal adequately addresses the requirements of this section.

Stipulation

None

UMC 823 Prime Farmlands - JSL

Existing Environment and Applicant's Proposal

No prime farmland exists on the Soldier Canyon Mine plan area. This is documented by a letter of negative determination from the Soil Conservation Service, illustration 3.9-1, page 3-198 of section 3.9, Volume 2.

Compliance

The applicant's proposal adequately addresses the requirements of this section.

Stipulation

None.