

SURFACE MINING AND RECLAMATION PLAN

SOLDIER CREEK COAL COMPANY

HIDDEN VALLEY MINE

Submitted to the

EMERY COUNTY COMMISSION

95 East Main

Castle Dale, Utah

December 5, 1979

Prepared by:

Soldier Creek Coal Company

Hidden Valley Mine

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TABLE OF CONTENTS

	<u>Page</u>
TABLE OF CONTENTS	
HIDDEN VALLEY MINE OPERATIONS	1
HYDROLOGICAL INFORMATION	2
RECLAMATION PLAN	5
ENVIRONMENTAL ANALYSIS	8
PERFORMANCE CONTRACT AND BOND	10
APPENDICES	
A. General Surface Detail	
B. Surface Facility Detail	
C. Hidden Valley Mine Location	

## HIDDEN VALLEY MINE OPERATIONS

Soldier Creek Coal Company, a division of California Portland Cement Company, is presently developing a new underground mine. The Hidden Valley Mine property is located in Township 23 South, Range 6 East, Salt Lake Base and Meridian, which is approximately seven miles southwest of Emery, Utah (Appendix C). The total mining property will consist of Section 18 and the west half of Section 17. Soldier Creek Coal Company owns all of the surface rights.

Room and pillar mining will be used as the primary mining technique. Continuous miners will be used for coal extraction with maximum production being 500,000 tons per year. Coal will be removed from the mine site and transported by trucks to a railroad loading site near Levan, Utah.

Preliminary design of the surface facilities has been completed by Kaiser Engineers (Appendix B). Proposed structures include a crushing and material handling system, preparation plant, change house, maintenance-warehouse, administration building, material storage sheds, mine ventilation fan, rock dust bin, sewer treatment plant, water pump building, water treatment plant, and water storage tank. Because Hidden Valley Mine is still in the development stage these preliminary plans are currently being evaluated for possible alternatives. Soldier Creek Coal Company reserves the right to amend the contents of this report as additional design information is obtained. Finalized plans will be submitted to the appropriate agencies upon their completion.

## HYDROLOGICAL INFORMATION

### SURFACE WATER

Ivie Creek, which runs west to east, generally bisects the Hidden Valley Mine site. It is the only naturally occurring source of surface water on the property, with the exception of direct precipitation. Ivie Creek is part of the 1,600 square miles which form the Muddy Creek drainage basin. The only known perennial stream that is a tributary to Muddy Creek is Salt Wash, which enters near I-70. Therefore, Ivie Creek is classified as an intermittent stream and is not considered as a significant inflow to Muddy Creek.

Flows along Ivie Creek are sporadic and intermittent during the drier months of the year. No surface flows are common on the west property boundary due to the aluvium deposits in the area. Water will usually surface again near the Ferron Sandstone outcrop, but flows will remain sporadic across the remainder of the property.

There are a number of identifiable seeps along the stream channel, none of which are of measurable quantity. It is believed that a majority of these seeps are nothing more than the resurfacing of subsurface water already in the stream channel. However, there are some seeps which are believed to be direct inflow from ground water. Very few of these seeps exist on the mine site and their quantity of flow is insignificant.

There are a number of factors which contribute to the chemical characteristics and deterioration of surface water quality in the area. The major factor being the geologic composition of the surrounding areas. The Emery Sandstone Member, Blue Gate Member, and Tununk Member of the Mancos Shale are all fine grained marine deposits that contain soluble, evaporite minerals. Runoff from soils produced from these formations probably result in flows having high concentrations of calcium, sodium, sulfate, and consequently of total dissolved solids. Many of the soils in the Emery area are moderately to strongly saline; thus, runoff and return flow from such soils would be expected to have high concentrations of dissolved solids.

## RUNOFF CONTROL

The Hidden Valley Mine site will have three basic disturbed areas which will require sediment control of water runoff. The portal area, surface facilities, and refuse disposal site will require the construction of sedimentation ponds to protect Ivie Creek from any additional sediment loads. The location of these ponds are detailed in Appendices A & B. Drainage basins for each of the three proposed sedimentation ponds will utilize the natural topography, wherever possible, to minimize disturbance.

Preliminary design of the proposed sediment ponds has been completed and submitted to the Utah Division of Oil, Gas, and Mining for their review and approval. Application for the required discharge permit has also been submitted to, and acknowledged by the Environmental Protection Agency.

## GROUND WATER

Geology is the principal factor controlling the occurrence and availability of ground water. The Ferron Sandstone Member of the Mancos Shale is the only known water-bearing formation on the property.

The Ferron can be divided into two parts on the basis of lithology. The lower Ferron is a gray, fine-grained, carbonaceous, calcareous marine sandstone and siltstone. The upper beds consist mainly of alternating thick to massive beds of tan, yellow-gray, mostly medium-grained sandstone, shaley sandstone of the same color and shale. The shales are clayey, silty and carbonaceous. It is in the shaley division that the coal beds are usually found.

The Ferron Sandstone Member can also be divided hydrologically into the upper and lower Ferron. These divisions correlate with the geologic divisions. The marine deposited sandstone of the lower Ferron are much more consistent and cleaner than those of the upper Ferron. These qualities enhance the water bearing properties of the formation making it a better water carrier. Generally speaking, the deeper the penetration into the Ferron Sandstone member, the higher the flows and heads of ground water will be.

The upper Ferron was a result of a decided change in sedimentation. Its deposition was the result of an influx of flood plain and swamp type sediments ranging from 0-500 feet thick. These characteristics make the upper Ferron a less desirable aquifer than the lower Ferron. However, there exists on the mine site one or more weak aquifers, and possibly one moderately strong source of ground water in the upper Ferron member.

Ground water recharge for the Ferron member is believed to enter along the fault zone which parallels the Wasatch Plateau. Water entering the Ferron at this point is part of another hydrological system. Recharge for this system is not clearly understood, but the most probable source of water is the Wasatch Plateau.

Since all mining operations will be confined to the coal beds located in the upper Ferron member, Hidden Valley Mine believes that its mining operation will have no adverse effects to the aquifers in the lower Ferron member. The overall effect to the total aquifer system in the Ferron member would be negligible.

The U.S.G.S. is currently collecting data for a technical report on the hydrology of the Ferron Sandstone Member. Hidden Valley Mine recommends that any further consideration given to ground water should be made after careful review of the U.S.G.S. findings and evaluations. Their report is scheduled to be on open file status as early as fall of 1980.

#### WATER MONITORING PLAN

Hidden Valley Mine began sampling both surface and ground water in September, 1978. A baseline water monitoring plan has been submitted to, and tentatively approved by, the Utah Division of Oil, Gas, and Mining.

## RECLAMATION PLAN

### GENERAL

It is the intent of Hidden Valley Mine to keep surface disturbance to a minimum, to reclaim the land as soon as possible, and return as much of any disturbed area, as nearly as possible, to a condition compatible with its original use.

Disturbed areas will be limited to those areas required for construction of surface facilities, mine portal area, and refuse pile. Areas temporarily disturbed during construction will be revegetated as soon as possible to minimize erosion.

Final reclamation of the disturbed areas will consist of removal of all structures, sealing of portals, grading, soil stabilization, and revegetation. All reclamation will conform, insofar as possible with Federal and State rules and regulations in effect at that time.

### SITE PREPARATION

A limited number of juniper and pinyon trees will have to be removed prior to the removal of top soil. Soils in the area of the surface facilities are in the Castle Valley series. This soil is a very fine sandy loam with sandstone bedrock at the depth of 0-20 inches. Sandstone outcrop is very common and may account for as much as 25% of the area.

Hidden Valley Mine proposes that soils in this area be removed and used as fill material for areas that will be paved. Soils will then be protected from wind, water erosion, and contaminants. Segregation of top soil and subsoil, if any, is not considered practical.

Final reclamation of the area would begin shortly after mining ceases. Soils will be redistributed, stabilized and revegetated in accordance with all Federal and State regulations in effect at that time.

### REFUSE DISPOSAL

The proposed refuse disposal site is located in the SW $\frac{1}{4}$  of Section 18 in an isolated drainage basin of approximately 59 acres (See Appendix A). Only about 35 acres will actually be disturbed, and all disturbances will be contained to the

drainage basin. A sedimentation dam will be constructed in order to control the quality of any water to be discharged from the area.

Refuse disposal will follow approved engineered plans. Surface material will be systematically stripped and stockpiled. Refuse will be deposited and compacted in lifts to specified elevations and grades. Surface material will then be redistributed, graded, and revegetated. All refuse operations will be conducted in accordance, insofar as possible, with all Federal and State rules and regulations in effect at that time.

Soils in the disposal area are mostly the direct weathered product of the Blue Gate Shale outcrop. Quality of the topsoil does not warrant segregation from the subsoil. Therefore, it is proposed that the surface material be stripped as one unit.

#### REVEGETATION

All indications show that revegetation in the Emery area will be difficult, primarily due to the arid climate. Only in certain years when precipitation is above average, can successful revegetation be expected.

In the fall of 1977 the Intermountain Forest and Range Experiment Station in cooperation with the Bureau of Land Management conducted several studies to evaluate the feasibility of revegetation after simulated strip mining. The experimental areas are approximately 5 miles southeast of the town of Emery where several test plots on different soil types and with different cultural treatment were evaluated.

Some methods used included cultural treatment with a gouger-seeder, spring-tooth type harrow, and a cultipacker. In addition two organic mulches, alfalfa hay and bark-wood fiber compost were compared with no mulch. Variations of methods were used on both topsoil and subsoil. Of particular interest to Hidden Valley Mine were the studies involving Castle Valley soils and the Blue Shale subsoil, both of which will require revegetation upon final reclamation.

All study plots showed favorable results in both seed germination and plant survival. However, these test results may prove to be deceptive due to the above-average rainfall for the test period.

Hidden Valley Mine believes that these studies are representative of the conditions on the mine property. Soil types and native vegetation on the proposed disturbed areas are basically the same as the test plots.

The critical factor in revegetation will be precipitation. Soil analysis of samples taken from proposed disturbed sites show adequate nutrients for revegetation. However, accumulations of salt on the proposed refuse site may be of some concern. Revegetation of temporarily disturbed sites will provide vital information for final reclamation.

It is the intent of Hidden Valley Mine to attempt to establish an effective vegetative cover, compatible to the original ground cover on all disturbed sites. This may be accomplished by use of all practical methods and technology generally accepted at the time of reclamation.

## ENVIRONMENTAL ANALYSIS

### Description of the Existing Environment

#### Non-Living Components

The proposed project lies just to the west of Molen Reef, a part of Coal Cliffs. Situated on the Blue Gate member of the Mancos Shale, soil is a light gray calcareous shale with occasional covering of wind blown silt. Elevation varies from 5800-6300 feet.

There has been no historical earthquakes. One epicenter with Richter magnitude 4.0 to 4.9 has been recorded north of the town of Emery.

The climate is arid, characterized by low relative humidity, abundant sunshine, low to moderate precipitation, warm summers and cold winters. Seasonal and daily variations in temperature can be extreme. Annual average precipitation is about eight inches with three to four inches falling in summer thunderstorms.

Air quality is fairly good. The major contributor to degradation of air quality is wind blown dust.

#### Living Components

The mine plan area is located on the San Rafael Desert. Vegetation is sparse to non-existent. Near the west end of the property a few matt saltbrush exist. The remaining property is sparsely covered with juniper trees and range grasses. Grazing in this area would be generally poor. Lack of vegetation reduces the ground cover necessary for rodent population, thereby limiting the number of predators and other animals.

Generally speaking, the mine plan area is inhabited on occasion and during different seasons by about 331 species of vertebrate wildlife. The Utah Division of Wildlife Resources has determined that no endangered species are located on the mine property. The endangered northern bald eagle between November 15 and March 15 inhabits the San Rafael Desert area. Currently no roost trees are known and no bald eagles nest in Utah.

## Environmental Impacts

### Living and Non-Living Components

The majority of the environmental impact on the non-living components of the environment would result directly or indirectly from soil disturbances associated with the construction of the mine facilities. All mining facilities are located on private property owned by Soldier Creek Coal Company. Upon completion of mining, approximately 40 years, all surface evidence of mining will be removed and the land will be reclaimed. This is a requirement of the Utah Division of Oil, Gas, and Mining. All reclamation activities will be under the direct supervision of the Division.

Impact on the living component will be very minimal. This is attributed to the lack of vegetation and the low population density of wildlife. The slight loss of habitat resulting from the mine would be insignificant and would have very little effect on the wildlife system.

### Social - Economic

Employment level for the mine will be approximately 160 when at full production. Attaining maximum production will require in excess of one year. The work force necessary for the mining operation will be attracted from a four county area: Sevier, Sanpete, Emery, and Carbon.

Due to the small number of workers required and the large drawing area available, the social-economic impact on Emery County from the development of Hidden Valley Mine should be minimal. It is felt that the mine will utilize the existing work force in the area and that the influx of any additional workers to any single town will be minimal.

There presently exists an excess of housing in the Emery County area. This is due primarily to the reduction in construction activities at the power plant sites. With the near completion of the second unit at the Hunter Plant, construction workers are migrating out of the area in search of work, making additional housing available. Employees at the Hidden Valley Mine will have a more stable position and, therefore, have a positive effect on the surrounding communities.

PERFORMANCE CONTRACT AND BOND

Prior to the disturbance of any surface acreage Soldier Creek Coal Company must be granted final approval of not only a mining and reclamation plan, but a performance bond covering the surface acreage to be affected. This approval will come from the regulatory authority which is the Utah Division of Oil, Gas, and Mining. Soldier Creek Coal Company is currently pursuing the final approval necessary to commence construction and mining operations.

Current Federal and State regulations, under which Hidden Valley Mine must operate, allow for the development of valuable resources while protecting the natural environment. Emery County can be assured that development of Hidden Valley Mine will be in accordance with all regulations in effect at that time and will be in the best interest of the county.

Hidden Valley Mine

Revisions  
(Post-Construction)

**RECEIVED**  
APR 14 1988

DIVISION OF  
OIL, GAS & MINING

UMC 784.11 (b) Operation Plan: General Requirements

The sediment pond was decommissioned and constructed with a discharge channel of sufficient size and riprapped to handle the expected discharges of a single event from the A seam pad. The second discharge channel was not constructed.

**FILE COPY**

UMC 817.101 Backfiling and Grading: General Requirements

(1) Road

The four culverts (80' of 48" diameter, 40', 50' and 70' of 18" diameter) located on the road will be removed.

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UMC 784.14 (a) (1-4), (b) (1-2) Reclamation Plan: Protection of  
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Regrading of the A seam pad resulted in one drainage through the sediment pond.

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The green alfalfa hay was spread by hand at the rate of 4,000 lbs./acre. The fill and topsoil material proved to be loose sandy-silty material that was not amenable to backdragging with a chain. Also the fear of burying the seed too deep prompted a change in the method of anchoring the hay mulch.

The alternative method was to spread the hay then drive both rubber-tired and tracked machinery on the contour over the mulched area. This crimped the hay mulch into the loose soil and created small terraces on the slopes and depressions on the flats to capture surface runoff from snowmelt and rainfall. The spacing of small microniches in a rough soil surface is a more effective method in this dry climate than the even application of mulch and topsoil for seed germination and plant growth.

The loose soil was not a good medium to anchor netting on the A and B seam fill slopes so this method was discarded. The resultant slopes on the fills were also less than originally envisioned. The A seam fill slope is 2.4:1 and the B seam fill slope is 3.1:1 considerably less than the 2:1 planned for in the MRP. The fill slope changes came because the surveyor found that additional material would need to be excavated from the ephemeral channel than originally planned. Thus the size of the fills were

increased to accommodate this additional material.

The road from the fence to the county road and the disturbed area of the roadbase material was not mulched because livestock grazing in the area from December to April would be attracted to the hay at these sites outside the drift fences. The concentration of cattle on the moist ripped soils would tend to trample and compact the soil surface adversely affecting seed germination.

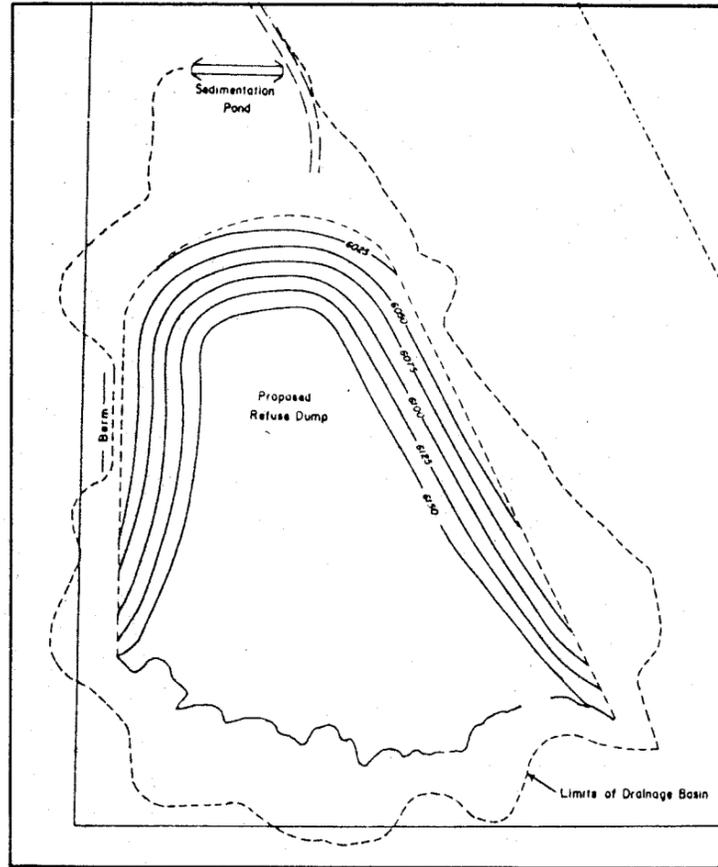
**RECEIVED**  
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OIL, GAS & MINING

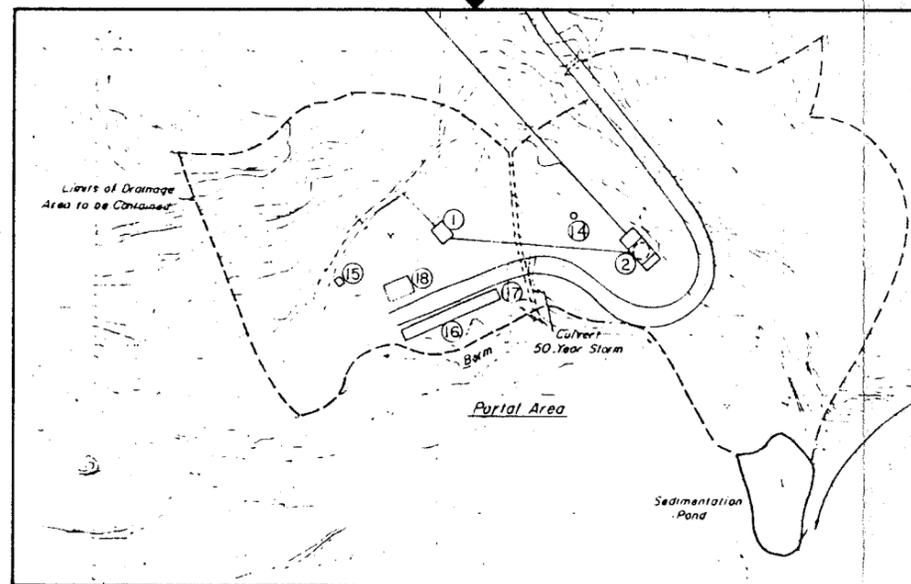
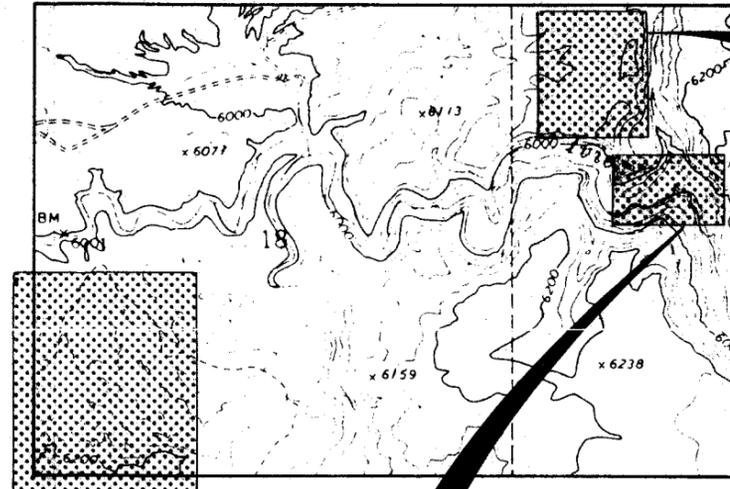
HIDDEN VALLEY MINE

**RECEIVED**  
JUN 6 1980

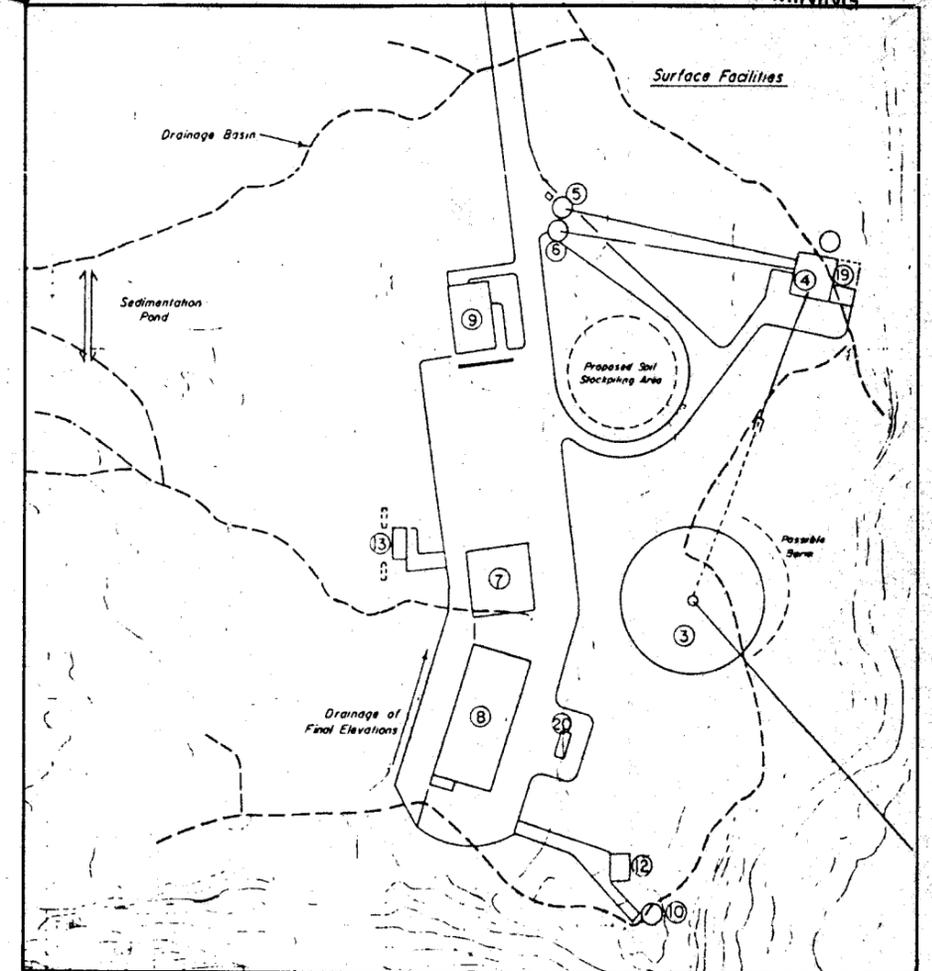
DIVISION OF  
OIL, GAS & MINING



Refuse Disposal Area  
Drainage 59.0 Acres



Portal Area - Drainage 4.3 Acres



Surface Facility Area - Drainage 18.6 Acres



REVISIONS		
NO.	DATE	BY
1		
2		
3		



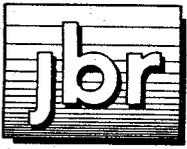
Soldier Creek Coal Company

**HIDDEN VALLEY MINE**

SCALE: NONE  
DRAWN BY DGS DATE 2-18-80

TITLE: General Location of Surface Operations  
CHECKED DATE APPROVED DATE

DRAWING NO. B-014



**CONSULTANTS GROUP**

GEOLOGY      ENGINEERING      ENVIRONMENT      HYDROLOGY

February 18, 1988

**RECEIVED**  
FEB 22 1988

DIVISION OF  
OIL, GAS & MINING

Lowell P. Braxton  
Administrator, Mined Land Reclamation Program  
Division of Oil, Gas and Mining  
3 Triad Center, Suite 350  
Salt Lake City, Utah 84180-1203

RE: Hidden Valley

Dear Lowell;

I have enclosed some revisions to the MRP for Hidden Valley. These are changes in design of the reclamation techniques because of construction or restrictions on construction. These revisions will make the plan more compatible to what is present at the site.

Please insert these into the binder at the appropriate page numbers.

Thank You;

*Joseph M. Jarvis*  
Joseph M. Jarvis  
JBR

**FILE COPY**

Principal Office:  
1841 East Fort Union Blvd.  
Salt Lake City, Utah 84121  
1-801-943-4144

Cedar City Office:  
865 South Cedar Knolls West  
Cedar City, Utah 84720  
1-801-586-8793

## Hidden Valley Mine

### Revisions (Post-Construction)

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