

plot during the project to assess impacts and adjust the proposed seed mixtures if new data support such an adjustment. This change, of course, would only be made with full concurrence of the DOGM and OSM.

2. Cultural and Historical Resources. As required under the National Historical Preservation Act and the Antiquities Act, U.S. Fuel contracted with Utah Archaeological Research Corporation to conduct a detailed cultural and historical survey. The methods used by the investigator, Mr. Clayton Cook, have been approved by OSM. This detailed survey of the conveyor and loadout for King 6 was completed subsequent to the March application and are included as Appendix A to the excerpted information.
3. Conveyor Plan. Additional details regarding the planned conveyor system are provided as Appendix D to the excerpted information. These plans were drawn by Mr. Charles Jahne, a registered professional engineer employed by U.S. Fuel. If this supplemental information is still not enough to answer questions posed by either OSM or DOGM, Mr. Jahne will gladly explain the system in person or will provide additional written explanation as required.
4. Bonding. While Mr. Crane stated in his letter to me dated April 17 that bonding information did not have to be provided with the other information, we have included it now to expedite the entire permit approval.

In Chapter III of the March application, U.S. Fuel provided on Table III-12 a cost estimate for reclamation of the King 6 surface disturbance in South Fork canyon. This table shows that, excluding the haulroad which will remain in place for mine access, 14 acres will be disturbed. The table further estimates the total cost of reclaiming this land will be \$40,300, or \$2,878 per acre. Based on our experience with other mines in the area and throughout the West, this is a reasonably accurate per acre figure. Considering that the land is only worth \$150 per acre, the cost benefit ratio for these efforts is high. At the \$100,000 to \$200,000 level mentioned by OSM, the cost per acre ranges from \$7,142 per acre to \$14,285 per acre, which is not realistic.

We believe that the information contained in the excerpts and the supplemental information will satisfy the requirements of both Utah and Federal regulations. If it does not, we respectfully request a written reply listing specific deficiencies so that U.S. Fuel can take immediate action to remedy them.

Mr. James Smith, Jr.  
Division of Oil, Gas and Mining

April 20, 1981  
Page 3

As emphasized in my letter to Mr. Crane dated April 9, U.S. Fuel Company faces substantial financial hardship if early approval is not granted for construction of the King 6 conveyor and loadout. We appreciate the attention that DOGM and OSM are giving the matter, and hope that the issue can be resolved in the next two weeks.

Very truly yours,



David J. Morris  
Vice President and Manager

RECEIVED

APR 20 1981

DIVISION OF  
OIL, GAS & MINING

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Chapter I

INTRODUCTION AND SUMMARY  
OF PERMIT APPLICATION

### 1.1 Scope of Operation

United States Fuel Company of Hiawatha, Utah, a wholly owned subsidiary of Sharon Steel Corporation, hereby submits its permit application on March 23, 1981, pursuant to Utah's Underground Coal Mining Code Part UMC 786.

United States Fuel Company controls, in fee and through a variety of leases, 20,700 acres of land in Carbon and Emery Counties, Utah. The King mine complex represents a consolidation of the original King, Hiawatha, Blackhawk and Mohrland underground mines. These mines have been active since the late 1890's, and through 1977 have produced over 56 million tons of coal.

This permit application represents several different areas of current mining operations and the scheduled redevelopment of others. Surface areas of mines scheduled for redevelopment have been disturbed, to some extent, from previous mining.

## 1.2 Summary of Environmental Impacts

United States Fuel Company has been operating coal mines in the Hiawatha area since the early part of the turn of the century. Any severe environmental impacts will have already occurred. United States Fuel Company has taken necessary steps through the years to mitigate and monitor impacts from mining. Control measures needed to mitigate impacts have included the necessary steps to protect ground and surface waters, soil resources, vegetation, wildlife and air quality. This report represents an accumulation of data previously collected from the mining area and monitoring plans to continue the effort to protect the environment.

Chapter II

LEGAL, FINANCIAL, COMPLIANCE  
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II-1 U.S. Fuel Company Property Ownership

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UNITED STATES FUEL COMPANY  
PROPERTY OWNERSHIP

Land Subdivision	Area (Acres)					Legal Document	Date of Document	Recorded Book Page	Remarks
	1	2	3	4	5				
T.15 S., R.8 E., S1/4									
Section 20; E1/2, NW1/4			480			Patent 1013339	3/8/28	6A - 125	Subsurface-U.S.A.
N1/2 SW1/4			80			Patent 1013339	3/8/28	6A - 125	Subsurface-U.S.A.
S1/2 SW1/4	80					Conveyance	1/3/16	3D - 257	
Section 21; A11			640			Patent 1013339	3/8/28	6A - 125	Subsurface-U.S.A.
Section 26; W1/2 SW1/4	80					Warrenty Deed	6/21/76	161 - 112	
Section 27; N1/2 SE1/4, N1/2 SW1/4	160					Conveyance	1/3/16	3D - 257	
SW1/4 NW1/4, SW1/4 SW1/4	80					Conveyance	1/3/16	3D - 257	
S1/2 SE1/4, SE1/4 SW1/4	120					Conveyance	1/3/16	3D - 260	
Section 28; A11			640			Patent 1013339	3/8/28	6A - 125	Subsurface-U.S.A.
Section 29; NE1/4 NE1/4			40			Patent 1013339	3/8/28	6A - 125	Subsurface-U.S.A.
S1/2 NE1/4, NW1/4 NE1/4	120					Conveyance	1/3/16	3D - 257	
NW1/4, S1/2	480					Conveyance	1/3/16	3D - 257	
Section 30; A11	631					Conveyance	1/3/16	3D - 257	
Section 31; N1/2			316			Conveyance	1/3/16	3D - 257	Coal-U.S.A.
S1/2			316			Patent 1013339	3/8/28	6A - 125	Subsurface-U.S.A.
Section 32; SE1/4 NE1/4	40					Patent 12257	4/22/20	2A - 251	
N1/2 NE1/4, SW1/4 NE1/4	120					Quit Claim Deed	5/6/23	3H - 427	
NW1/4, S1/2	480					Quit Claim Deed	5/6/23	3H - 427	
T.15 S., R8 E., S1/4									
Section 33; N1/2			320			Patent 1013339	3/8/28	6A - 125	Subsurface-U.S.A.
S1/2	320					Conveyance	1/3/16	3D - 260	
Section 34; N1/2 NE1/4, N1/2 SW1/4	160					Conveyance	1/3/16	3D - 260	
NE1/4 SW1/4, SW1/4 NW1/4	80					Warrenty Deed	12/1/17	5F - 309	
SW1/4 NE1/4, NW1/4 SE1/4	80					Patent 12499	10/14/20	2A - 252	
SE1/4 NW1/4	40					Patent 12499	10/14/20	2A - 252	
SE1/4 NE1/4	40					Patent 11722	10/20/19	2A - 226	
S1/2 SW1/4			80			Patent 10835	7/17/18	2A - 226	Coal-U.S.A.
NE1/4 SE1/4	40					Warrenty Deed	6/21/76	161 - 112	
NW1/4 SW1/4			40			Patent 1114115	6/4/42	6A - 267	Subsurface-U.S.A.
Section 35; E1/2 NW1/4, NW1/4 SW1/4	120					Warrenty Deed	6/21/76	161 - 112	
NW1/4 NW1/4	40					Patent 11723	10/20/19	2A - 226	
SW1/4 NW1/4	40					Conveyance	1/3/16	3D - 260	
T.16 S., R.7 E., S1/4									
Section 1; E1/2 E1/2				155		Lease SL-025431	2/8/63	B.L.M.	A11-U.S.A.
W1/2 E1/2				155		Lease SL-069985	11/1/69	B.L.M.	A11-U.S.A.
Section 12; E1/2 NE1/4				80		Lease SL-025431	2/8/63	B.L.M.	A11-U.S.A.
W1/2 NE1/4, SE1/4				240		Lease SL-069985	11/1/69	B.L.M.	A11-U.S.A.
E1/2 W1/2				160		Lease SL-069985	11/1/69	B.L.M.	A11-U.S.A.
Section 13; E1/2, E1/2 W1/2				480		Lease SL-069985	11/1/69	B.L.M.	A11-U.S.A.
T.15 S., R.7 E., S1/4									
Section 12; S1/2				320		Lease U-058261	2/1/61	B.L.M.	A11-U.S.A.
Section 24; N1/2, SW1/4				480		Lease U-058261	2/1/61	B.L.M.	
N1/2 SE1/4, SW1/4 SE1/4				120		Lease U-058261	2/1/61	B.L.M.	
SE1/4 SE1/4		40				Conveyance	1/3/16	3D - 257	Surface-U.S.A.
Section 25; E1/2 E1/2		160				Conveyance	1/3/16	3D - 257	Surface-U.S.A.
W1/2 E1/2				160		Lease SL-069985	11/1/69	B.L.M.	A11-U.S.A.
E1/2 NW1/4				80		Lease U-026583	2/1/61	B.L.M.	A11-U.S.A.
Section 36; N1/2 NE1/4, W1/2 SE1/4				160		Lease SL-069985	11/1/69	B.L.M.	A11-U.S.A.
S1/2 NE1/4, E1/2 SE1/4				160		Lease SL-025431	2/8/63	B.L.M.	A11-U.S.A.
T.15 S., R8 E., S1/4									
Section 17; S1/2 NE1/4, SE1/4			240			Patent 1013339	3/8/38	6A - 125	Subsurface-U.S.A.
E1/2 SW1/2			80			Patent 1013339	3/8/28	6A - 125	Subsurface-U.S.A.
S1/2 NW1/4, NW1/4 SW1/4			140			Conveyance	1/3/16	3D - 257	Coal-Plateau Mining
SW1/4 SW1/4	20					Conveyance	1/3/16	3D - 257	
Section 18; A11	631					Conveyance	1/3/16	3D - 257	
Section 19; A11	631					Conveyance	1/3/16	3D - 257	

**2.12 Appendices**

**II-2 Areas Designated Unsuitable for  
Mining Correspondence**



SCOTT M. MATHESON  
Governor

OIL, GAS, AND MINING BOARD

JORDON E. HARMSTON  
Executive Director  
NATURAL RESOURCES

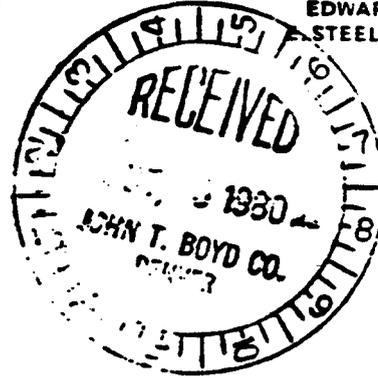
STATE OF UTAH  
DEPARTMENT OF NATURAL RESOURCES  
DIVISION OF OIL, GAS, AND MINING  
1588 West North Temple  
Salt Lake City, Utah 84116  
(801) 533-5771

CHARLES R. HENDERSON  
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JOHN L. BELL  
C. RAY JUVELIN  
THADIS W. BOX  
CONSTANCE K. LUNDBERG  
EDWARD T. BECK  
STEELE McINTYRE

October 2, 1980



Mr. Michael Meenan  
Environmental Engineer  
John T. Boyd Company  
1860 Lincoln Street  
Suite 1028  
Denver, Colorado 80295

RE: U. S. Fuel Company  
Hiawatha Complex  
ACT/007/011  
Carbon County, Utah

Dear Mr. Meenan:

In response to your letter dated September 23, 1980, regarding areas designated unsuitable for mining; to date, this office has received no determination, application or petition of unsuitability for mining at or near U. S. Fuel Company's Hiawatha Complex in Carbon County, Utah.

Should such a condition arise in the future, U. S. Fuel Company shall promptly be notified.

Sincerely,

JAMES W. SMITH, JR.  
COORDINATOR OF MINED  
LAND DEVELOPMENT

cc: Bob Eccli, U. S. Fuel Company

JWS/btm

UNITED STATES DEPARTMENT OF AGRICULTURE  
FOREST SERVICE  
Manti-LaSal National Forest - Price Ranger District  
10 North Carbon Avenue #2  
Price, Utah 84501



John T. Boyd Company  
1860 Lincoln Street  
Suite 1028  
Denver, Colorado 80295  
ATTENTION: Michael K. Meenan

Dear Mr. Meenan:

We are in receipt of your letter of 8/27/80 requesting information on U.S. Fuel Company's property in Carbon and Emery Counties, Utah. As we understand it, your request entails any available information regarding unsuitability criteria or "restrictions" that might apply to the subject property as indicated by your accompanying map.

After researching available data at our disposal, the only unsuitability criterion that might apply would be #17 covering municipal watersheds. The leased land (lease nos. SL 069985, SL 025431 and U 026583) under Forest Service jurisdiction falls into the Price River and Huntington Canyon drainages. Both drainages serve municipal water supplies. Since these watersheds cover such a large area of coal bearing lands owned by Federal, State and private interests, a determination has yet to be made relative to the applicability of criterion #17.

Regarding further "restrictions" not covered under the unsuitability criteria these would be handled on a more specific basis through the environmental assessment process.

One additional item that we might mention is the fact that the U.S. Fuel property boundary, as shown on your map, includes unleased Federal coal lands under Forest Service administration. Specifically, these lands include Section 19, N $\frac{1}{2}$ N $\frac{1}{2}$ , Section 20; N $\frac{1}{2}$ N $\frac{1}{2}$ , S $\frac{1}{2}$ NE $\frac{1}{4}$ , NE $\frac{1}{4}$ SE $\frac{1}{4}$ ; Section 21, W $\frac{1}{2}$ NW $\frac{1}{4}$ , N $\frac{1}{2}$ SW $\frac{1}{4}$ , T. 16 S., R. 8 E., SLM.

We hope that the above adequately complies with your request. If you have any further questions, please don't hesitate to contact us.

IRA W. HATCH  
District Ranger

Chapter III

OPERATION AND RECLAMATION PLAN

The approximate disturbed area at this time for the Middle Fork mine facilities and storage areas is 12 acres. No additional disturbed acres for Middle Fork mine is anticipated. The existing haulroad has approximately 15 acres of disturbed area. The construction of the proposed overland conveyor is estimated to disturb 12 additional acres, bringing the access corridor to a total of 27 disturbed acres. *or 39A overall*

North Fork Ventilation Portal. A plan for the construction of this facility is included in the appendix of this chapter. A portal was constructed in the North Fork drainage to provide the King No. 4 mine with intake ventilation. Originally, the plan called for return ventilation warranting the construction of a fan and powerline. Exhibit III-2 shows the disturbed area, approximately one acre, for the portal facility. A three mile jeep road form Hiawatha to the ventilation portal is the only access.

South (Left) Fork Mine Yard. The South Fork mine yard was constructed in 1947 to facilitate the old King 3 mine. For almost 38 years, from 1948 to 1975, there were mining sections operating in the King 3 mine (old works of the proposed King 6 mine). The mine yard occupies approximately 8 acres of fee land. Work is currently underway to upgrade the existing, and construct new facilities for the proposed King 6 mine. Table III-3 gives a summary of the existing and proposed surface facilities for South Fork mine yard.

Coal will be loaded underground on a proposed 42 inch wire conveyor; that is anticipated to be much the same overland conveyor system as planned for Middle Fork mine and shown on Plate III-1. The coal will then be conveyed from the mine mouth, approximately 2,400 feet down the South Fork canyon, to a coal stockpile. Trucks will be loaded and transport the coal 3 miles to the processing plant at Hiawatha. The surface facilities for South Fork are located on Exhibits III-4A and III-4B.

Table III-3  
Summary of Surface Facilities  
South Fork Mine Yard  
King No. 6

<u>Facility</u>	<u>Date Construction</u>	<u>Size</u>
<b>Mine Yard and Storage Areas</b>		
Parking Lot	1981	0.5 AC
Equipment and Supply Storage	1981	1.0 AC
Upper Sediment Pond	1979	1.0 AC
Truck Loadout Sediment Pond	Proposed	Approx. 1.0 AC
<b>Buildings and Structures</b>		
Change House	Approx. 1948	Approx. 6,400 Sq. Ft. = $\frac{Ac}{0.147}$
Shop Building	Approx. 1948	Approx. 3,600 Sq. Ft. = 0.08
Fan Housing	Approx. 1948	Approx. 800 Sq. Ft. = 0.02
Water Tank		40,000 Gal. = @ 306 Sq. Ft. = 0.007
Main Substation	Approx. 1948	Approx. 500 Sq. Ft. = 0.011
King 6 Portals	1981	3 Openings
Storage Shed	1979	Approx. 1,100 Sq. Ft. = 0.025
Truck Loading Facility	Proposed	Approx. 1.0 AC
<b>Utilities</b>		
Main Power Line	1981	Approx. 2,500 L.F.
Water Lines	1981	Approx. 3,000 L.F.
Sewer Lines	1981	
Drain Field	1981	
<b>Haulage Facilities</b>		
Upgrade Paved Haulroad	1981	30 Ft. x 2.5 Miles = 9.09
42 In. Conveyor System	Proposed	2,000 L.F. x 3.6' = 0.16

14.04 A

Water is supplied to South Fork facilities from a pipe extending through the intake air portal pumped to a 40,000 gallon tank located up the canyon from the changehouse. Remaining water is piped down the canyon to a 130,000 gallon concrete in-ground tank. This water is used at Hiawatha for municipal and industrial uses. A summary of U. S. Fuels water rights is included in Chapter VII, Hydrology. A sewage line runs from the changehouse to a septic tank located in the mine yard; further down the canyon, it runs to a drain field shown on Exhibit III-4A.

Impact on the existing hydrologic balance will be controlled by retaining runoff in sedimentation ponds. Runoff from the mine yard will be channeled to the existing sedimentation at the eastern end of the mine yard. Surface runoff from undisturbed areas is diverted away from disturbed areas. The volume of water retained is the surface runoff only since no water will be discharged from the King No. 6 mine. A sedimentation pond has been designed for runoff from the proposed truck loading facility.

The disturbed area for the South Fork facility yard, including the sedimentation pond, is approximately 8 acres. The access corridor, which includes the haulroad and proposed conveyor system, totals approximately 13 acres of disturbed area. The truck loading facility and remaining sedimentation pond amount to 3 disturbed acres. The total disturbed area for South Fork mine King No. 6, at the present, includes 16 acres with a proposed 8 additional acres.

Hiawatha Processing Plant and Waste Disposal Sites. The processing plant at Hiawatha is located immediately north of the town and is on U. S. Fuel Company fee land. Although U. S. Fuel Company owns the complete town of Hiawatha in fee, including buildings, the permit area only includes mine related boundaries. Table III-4 gives a list of

King 6 Mine. The King 6 mine will be located in the South Fork canyon which is just south of the present King 4 and 5 mines. To bring this mine on stream in 1981, various portal, conveyor, transportation, and production related work must be done. Two portals existing from the abandoned King 3 mine will be reopened and two additional portals will be constructed. Mine workings will be located in sections 25, and 36 T.15S., R.7E. and sections 29, 30, 31 and 32 T.15S., R.8E.

The King 6 mine, as envisioned, will handle two continuous miner coal production sections. These sections, when fully on stream, will have a total capacity of 384,000 tons per year in the Hiawatha and A seams. These two sections will operate two shifts per day making a total of four production shifts per day. Production could average 400 tons per unit shift at full production. Portions of both the Hiawatha and A seams have been mined out previously in this area. The mining plans, Exhibits III-8A and 8B, are designed for one miner working in each of the seams. Since the portals enter on the Hiawatha seam, a tunnel up to the A seam is planned after the main entries have been developed.

The mine has four portal openings planned, intake air, belt haulage, manway and materials, and return air. A five main development heading will be driven west in the Hiawatha seam. One miner section will remain in the Hiawatha seam, the second will advance through a tunnel to the A seam above and recover the remaining A seam coal. Exhibits III-8A and 8B project the mine plans for the King 6, Hiawatha and A seams. Room and pillar extraction methods will be employed with panels extending north of the main heading. Table III-7 lists the projected underground equipment.

Table III-7  
Projected Underground Equipment  
King No. 6

The following mining equipment will be needed to start and sustain production from two mining sections:

Equipment

- 2 - Continuous Miners
- 4 - Joy 10SC Shuttle Cars
- 2 - Stamler Feeder Breakers
- 1 - Diesel Scoop
- 2 - Section Power Centers
- 2 - Roof Bolters
- 2 - Face Distribution Boxes
- 2 - Sections Water Pumps
- 2 - Aux. Face Fans
- 2 - Conveyor Terminals including  
Power Centers
- 5,000 Ft. Conveyor Intermediate
- 10,000 Ft. Conveyor Belting
- 10,000 Ft. 15 KV Power Cable
- 10,000 Ft. 4 In. Water Pipe
- 1 - Lot Mine Communication  
Equipment
- 1 - Lot Fire Protection Equipment
- 1 - Lot Safety Equipment
- 4 - Diesel Mantrips
- 1 - Portable Air Compressor
- 1 - Bulk Rock Dust Tank
- 1 - Rubber Tired Rock Duster
- 3 - Trickle Rock Dusters
- 3 - Bantam Rock Dusters
- Misc. Electrical Cable

Roof control and ventilation plans have been submitted and approved by MSHA for the King 6 mine. A copy of each of the plans is in the Appendix III-4 at the end of this chapter.

King 7 Mine. The King 7 mine will be located in Cedar Creek Canyon. Construction of surface facilities are projected to begin in 1984. Two alternatives for portal locations are being considered at this time. Reopening the old Mohrland mine portals in the Hiawatha seam or developing new portals on the south side of Cedar Creek.

Based on the estimated productivity of 1.2 million tons per year, a mine plan has been developed, Exhibit III-9. King 7 mine plan develops the Hiawatha seam using continuous miners - room and pillar methods. A projected equipment list has been developed in Table III-8.

King 8 Mine. This mine will be developed in the upper seam in the Mohrland area, approximately 330 feet above the Hiawatha seam. Coal will be extracted by way of a vertical raise from the proposed King 7 mine below. The land area to be affected by this mine will be essentially the same as that affected by the King 7 mine, namely that area bounded by the King 1 workings on the north, the coal outcrop on the east and the property boundaries on the south and west. The area comprises 4,500 acres and is shown in Exhibit III-9. Some surface facilities for the King 8 mine can be shared with the King 7 mine. Two sites are being considered for access portals. One is directly above the proposed King 7 portals. The other is farther up Cedar Creek Canyon where the existing road crosses the upper seam outcrop. A projected equipment list is shown on Table III-9.

### 3.4 Environmental Protection

#### Land Use

U.S. Fuel Company has been operating coal mines in the Hiawatha area since the early part of the turn of the century. Land-use has remained relatively unchanged in the various topographies on the property over the years and is not expected to change significantly in the future. The land-use picture is still and will remain primarily wildlife habitat and limited grazing. U.S. Fuel Company mining operations are located in the narrow canyons that lead to the top of the Wasatch Plateau, therefore, no cropland or prime farmland is within the mine plan area. Control measures needed to mitigate impacts shall include steps necessary to protect ground and surface waters, soil resources, vegetation, wildlife, and air quality.

#### Human Values

A site search conducted by Utah's Division of State History located no known archaeological or cultural sites. Sites have been identified in the area but none are located on the property. In the event any paleontological remains are discovered during the mining operations, U.S. Fuel Company will notify the Division of State History.

#### Hydrologic Balance

Groundwater on the U.S. Fuel Company mine plan area flows through faults and old mine workings in a southerly direction along the dip of the formations. Groundwater is believed to exist in perched aquifers above the lowest mined coal seam. The water is collected at the old Mohrland mine portals and piped to Hiawatha. The water is of high quality and is used for municipal and industrial purposes.

Surface water exists in several small perennial streams on the mine plan area. The streams are recharged by rain, snow melt and springs occurring in the alluvium and colluviums of the channels. There is no discharge of water from mine openings, other than the abandoned Mohrland portal. The major contaminants are suspended solids and oil and grease resulting from surface runoff on disturbed areas.

Control measures to mitigate impacts will include: stabilizing disturbed areas, diverting runoff, reseeded of reclaimed areas, regulating channel velocity, and paving roadways. Sedimentation ponds are used to control suspended solids and oil and grease contaminations.

A monitoring plan is detailed in Chapter VII for both ground and surface waters. Springs and streams will be monitored for quantity and quality to detect any effects mining operations may cause. NPDES permits have been obtained for several discharge locations on the mine plan area; their requirements will be complied with and reported to the appropriate government agency. The U.S.G.S. maintains several water monitoring stations on and near the property.

#### Soil and Vegetative Resources

All of the current and projected mining areas have been disturbed because of mining operations prior to Act 95-87. Topsoil was not removed and stockpiled on any past or present operations. The primary effects on soils are expected to include compaction, loss of organic matter, contamination with coal fines and mixing with the subsoil.

In areas where U.S. Fuel Company has projected redeveloping abandoned surface facilities an effort will be made to salvage topsoil. The surface facilities currently in operation, at the time reclamation takes place, will be removed and revegetated.

### Fish and Wildlife Resources

Some mining activities have been deleterious to our wildlife resources, but over the years most affected populations have adjusted to their altered environments. Future operations will alter the wildlife environments still further. The fish and wildlife consultation guidelines that the Division of Oil, Gas, and Mining has suggested using to prepare the permit have been followed by the Division of Wildlife Resources in Chapter X. Measures to mitigate impacts to fish and wildlife will be employed. The areas disturbed will be kept to a minimum. All disturbed sites no longer needed for mining operations will be reclaimed according to approved reclamation standards. Water qualities will be monitored and maintained.

### Air Quality

U.S. Fuel Company has a thermal drying unit for the preparation of the coal at Hiawatha. Air quality monitoring in the form of stack emissions will proceed as per the request of Utah's Bureau of Air Quality.

Fugitive dust will have an impact on the air quality. Several sources of fugitive dust are:

1. Middle Fork and South Fork truck loading facilities
2. Access roads
3. Ventilation fan
4. Coal handling facilities
5. Coal slurry and refuse impoundments

The plan for fugitive dust control will include the following measures to control fugitive dust in the above areas:

1. Periodic watering of unpaved roads on a frequency as needed;
2. Frequent blading and shaping of unpaved roads to stabilize the road surface;

3. Paving of roads;
4. Restricting the speed of travel;
5. Substituting of conveyor systems for haul trucks and covering of conveyor systems;
6. Minimizing the area of disturbed land;
7. Prompt revegetation of regraded lands;
8. Use of alternatives for coal handling methods, restriction of dumping procedures, wetting of disturbed materials during handling, and compaction of disturbed areas;
9. Extinguishing any areas of burning or smoldering coal and periodic inspections for coal burning areas whenever the potential for spontaneous combustion is high; and
10. Restricting fugitive dust and spoil and coal transfer and loading points.

#### Subsidence Control Plan

A cooperative agreement between U.S. Fuel Company and the U.S. Forest Service exists for the monitoring of subsidence. No subsidence features exist as yet because past mining left support pillars. U.S. Fuel Company is currently fully extracting coal and if subsidence occurs it will occur uniformly over the surface. Due to the amount of cover above the mineable seams, subsidence features may not become visible on the surface. Precautions will be taken to insure enough cover is left between the mining operation and the outcrop to protect from subsidence.

#### Waste Disposal Plans

Fine refuse from the preparation plant is stored in slurry ponds. Some of the fines once dried are sold to available markets. The coarse refuse is used for stabilizing the embankment slopes on the slurry

ponds. Runoff from the embankment slopes is contained in sedimentation ponds. No coal processing waste disposal facility is proposed to return waste to abandoned underground workings. All underground development waste generated by the mining operation is disposed of in mined-out areas underground. U.S. Fuel Company has not produced toxic or acid-forming materials.

Based on the characteristics, handling and disposal of various waste products, the impact on the environment is minimal. The slurry refuse does not go into the hydrologic system. The refuse material is covered with coarse non-combustible waste and compacted to eliminate ignition.

### 3.5 Reclamation Plan

#### Middle Fork

Surface areas related to mining in Middle Fork (King 4 and 5) were disturbed prior to the Surface Mining Control and Reclamation Act, therefore, no topsoil storage or handling areas have been established. The surface structures will be removed and foundations will be backfilled. The compacted topsoil will be scarified before revegetating. Highwalls connected with portals, embankments and benches will be terraced in the form of highwall slope reduction to control erosion.

Abandoned mine portals from Hiawatha No. 2 mine have been closed with gates and posted. One of the Hiawatha No. 2 mine portals is discharging water. This portal has a concrete bulkhead and valve regulating the discharge flow for the town of Hiawatha's water source. The portals for King 4 and 5 will be backfilled and graded to prevent access.

Ponds and diversions will be removed and regraded. Erosion control channels with straw dikes remain at the toe of embankments if necessary for stabilization.

A suitably permanent, diverse and native vegetative cover, as described in Chapter IX, Vegetation Resources, will be established on all affected areas of land, except roadways. Revegetation will be hand spreaded. If revegetation establishes itself without mulching and fertilization, none will be performed. Planting will occur at such times when the greatest moisture conditions exist to eliminat  the need for irrigation.

The Middle Fork mine yard will not disturb any additional area through the mine life of King 4 and 5. An overland conveyor system has been proposed for the Middle Fork access corridor. This acreage has been included with the existing haulroad. The mine life for King 4 and 5 has been projected past the year 2000, therefore, an accurate timetable for reclamation is not possible at this time. Once operations are projected to halt within a permit period, reclamation procedures will be planned, monitored and managed by U.S. Fuel Company.

A cost estimate for reclamation of the Middle Fork mining operations in approximate 1980 dollars is presented in Table III-10.

#### North Fork

The intake ventilation shaft in North Fork was constructed in 1979-80 for the King 4 mine. Trees and large brush were cleared from the site before topsoil was removed. Topsoil was salvaged and stockpiled for reclamation. Topsoil was then redistributed immediately after the completion of surface structures. Following redistribution of topsoil, seeding was placed on the area to protect against erosion. A seeding list recommended in a letter from the Division of Oil, Gas and Mining is included in Appendix III-1. This includes the construction plan agreement with D.O.G.M. and OSM.

#### South Fork

South Fork mine yard is on previously disturbed areas from the King 3 mine which halted operations in 1975. U.S. Fuel Company is reconditioning the facilities to start operations in King 6 mine in 1981. Previously disturbed areas in South Fork will be reclaimed in the same manner as the Middle Fork mine yard. Some topsoil has been salvaged and stockpiled, mostly from areas not previously disturbed. The yard

area topsoil has been compacted from past mining and may have lost nutrients. Following mining operations, projected past the year 2000, the surface structures will be dismantled and removed. The mine yard will be disked and foundations covered with backfill material. Portal openings for the King 6 mine will be backfilled to the angle of repose. No hydraulic mine seals will be necessary. The bench areas will be terraced and straw dikes placed at the toes to control erosion. Sedimentation ponds and diversion channels will be regraded and topsoil replaced.

Revegetation will consist of native species selected from the reference areas on the U.S. Fuel Company property. These areas can be found in Chapter IX, Vegetation. Revegetation will be hand broadcasted over the entire disturbed area. If revegetation establishes itself without mulching and fertilization, none will be performed. Planting will occur during periods of greatest moisture conditions.

#### Hiawatha

The Hiawatha coal processing plant and loadout facility have been in operation since 1939. U.S. Fuel Company intends to dismantle and remove all coal processing, loadout and support facilities. Office buildings will be turned over to the town of Hiawatha. There has been no topsoil or fill material salvaged and stockpiled for reclamation, since operations preceded the Surface Mining Control and Reclamation Act. The majority of disturbed area in Hiawatha is slurry piles, refuse piles (from the preparation plant), and sedimentation ponds. This disturbed area accounts for approximately 150 acres. To reclaim this area U.S. Fuel Company will regrade the slurry and refuse piles and cover them with available topsoil from a borrow pit in the Miller Creek

**Table III-12**  
**Cost Estimate for Reclamation**  
**South Fork Mining Operation**

	(000's)							
	Disturbed Acres		Grading	Disking	Seeding	Total \$		
	Current	Proposed	\$6,000/ Acre	\$50/ Acre	\$300/ Acre	Current	Proposed	
Portals and Slopes	2		12		0.6	12.6		
Facility and Storage Yards	5			0.3	1.5	1.8		
Ponds and Diversion Structures	2		12		0.6	12.6		
Haulroad	11 (haulroad will remain for access)							
Proposed Truck Loading Facility		2		0.1	0.6		0.7	
Proposed Conveyor		3		0.2	0.9		1.1	
<b>Total</b>	<b>14 Acres</b>						<b>28.8</b>	
Engineering Expenses @ 15%							<b>4.3</b>	
Administration @ 5%							<b>1.4</b>	
Miscellaneous Expenses @ 20%							<b>5.8</b>	
<b>Grand Total</b>							<b>40.3</b>	

**Assumptions:**

- a. These costs are essentially based on USF's completely hauling mining operations, reclamation commencing, and 1980 dollars.
- b. The salvage value of the steel in the facilities and the salvage value of the electrical system will meet or exceed the cost of removing such facilities.
- c. The foundations will remain and in most cases be covered with 2.0 feet of topsoil and revegetated.
- d. No removal of water or sewage lines.
- e. Roadways to the mine portals and USF's office buildings at Hiawatha will not be removed or reclaimed; they will remain for access.
- f. No disposal of toxic wastes is necessary.
- g. The mine yards at the portals have not stockpiled topsoil. Recontouring and revegetation of these areas is the only reclamation necessary.
- h. 2.0 feet of topsoil will cover regraded slurry piles for revegetation. This topsoil will be obtained from a borrow pit along the flood plain of Miller Creek one mile maximum distance from the slurry piles.
- i. No hydraulic mine seal is necessary.
- j. No continued monitoring cost following reclamation was calculated.
- k. Revegetation will consist of hand seeding only, thus assuming the land classification is rangeland, no trees, shrubs or forbs will be planted.
- l. The costs are based on engineering judgment and past experience.
- m. Mobilization costs are included in the miscellaneous expenses.

Chapter IV

LAND STATUS, LAND-USE  
AND  
POSTMINING LAND-USE

### 4.3 Land Use

Regional land-use consists primarily of mining, grazing, recreation, and forestry related activities. No developed recreation sites exist in the area. There is some dispersed recreation associated with camping, hiking, sightseeing, and big game hunting in the fall.

Land-use in the mine plan area has been for the most part constant since the early part of this century. Uses of the land in the mine plan area include mining, logging, livestock grazing, oil and gas exploration, wildlife habitat, watershed, and recreation.

Land-use during the mining operations will remain unchanged, due to the fact that mining of the coal will be done by underground methods. All surface facilities will be built on United States Fuel Company fee lands.

The affect of the mining operation on land-use is expected to be negligible since underground coal mining has been associated with the United States Fuel Company property since before the turn of the century. Any disturbance of the land from underground coal mining would have already occurred from this long established mining area.

#### 4.4 Postmining Land-Use

After the recoverable coal reserves have been extracted from the United States Fuel Company property it is expected and anticipated that the current status of the existing land-use area will remain unchanged. Mining in this immediate area has been ongoing since the turn of the century without any significant disruptions to existing land-use.

Chapter V

HISTORICAL AND CULTURAL RESOURCES

## 5.2 Historical Resources

The Historical Inventory is comprised primarily of the town of Hiawatha itself. Carbon and Emery Counties, Utah have been consistently producing coal from the Book Cliffs and Wasatch Plateau since the late 1800's. Many of the mining companies provided living quarters for employees and their families. The town of Hiawatha housing facilities were constructed during the World War I period by the Federal Public Housing Authority. A total of 120 housing units were completed at the town of Hiawatha.

History of mining for the United States Fuel Company extends from beyond the turn of the century.

The following mines are located in the following areas which are illustrated on Exhibit I-2.

<u>Mine</u>	<u>Seam</u>	<u>Area</u>
King No. 4	B	Middle Fork of Miller Creek North Side of Canyon West of Hiawatha Mine
King No. 5	B	Middle Fork of Miller Creek South Side of Canyon West of Hiawatha Mine
King No. 6	Hiawatha	South Fork of Miller Creek West of King No. 3 Mine
King No. 7	Hiawatha	Cedar Creek East of Mohrland
King No. 8	Upper	Cedar Creek East of Mohrland

The King No. 4 mine has been operating in the B seam since 1974.

Portal facilities for the King No. 4 mine are located on the north side of the middle fork of Miller Creek Canyon. King 4 is approximately 1,000 feet west of the old Hiawatha No. 1 mine on the north side of the canyon. This Hiawatha No. 1 mine operated in the Hiawatha seam from 1905 to 1931.

On the south side of the middle fork of Miller Creek Canyon, the King No. 5 mine has been operating in the B seam since 1978. Portal facilities for the No. 5 mine are located on the south side of the canyon, approximately 1,000 feet west of the old Hiawatha No. 2 mine which also operated from 1905 to 1931.

This particular portion of Miller Creek Canyon has had underground coal mining associated with it since before the turn of the century.

The King No. 6 mine is located on the north side of the south (left) fork of Miller Creek Canyon, approximately 500 feet northwest of the old King No. 3 mine which operated from 1898 to 1970 in the Hiawatha seam.

This portion of Miller Creek Canyon has had underground coal mining associated with it from the late 1890's until most recently.

Cedar Creek Canyon is the proposed area for the King No. 7 mine, which will mine the Hiawatha seam as did the Mohrland (King 2) mine from 1896-1938. Portal facilities will be located on the south side of Cedar Creek Canyon, approximately 1,000 feet southeast of the old Mohrland portal.

The King No. 8 mine portal facilities will also be on the south side of Cedar Creek Canyon. Mining will take place in the upper seam.

Coal mining is not new to this canyon. Cedar Creek Canyon has had underground coal mining associated with it from 1896 to 1938. Any associated impacts of the area have been long established.

Effects of mining on Historical Resources are projected to be minimized and negligible.

### 5.3 Archeological Resources

Around 13,000-10,000 B.C., man's activities in the area are thought to have marked the beginning of the Great Basin Archaic Cultures. As early as 450 A.D., the Fremont culture utilized the river valleys both east and west of the Wasatch Plateau. In 1877, Mormons settled into the Castle Valley area and intermittently mined coal from that time until most recently.

From a recent search conducted by the Division of State History (Utah State Historical Society), no known sites were located on the United States Fuel Company property. This clearance letter is included in Appendix V-1.

Effects of mining on archeological resources are projected to be negligible or nonexistent, based upon the clearance by the State of Utah.

#### 5.4 Paleontological

The Paleontologic Inventory consists primarily of casts of dinosaur footprints which are infrequently found in the roof of underground coal mines. Dinosaur bones are most commonly found in the Morrison formation of Jurassic age, which is stratigraphically significantly lower in the section than the Cretaceous age, Black Hawk formation.

Effects on mining on Paleontologic Resources are anticipated to be minimized and negligible.

### 5.5 Public Parks

Inventory of public facilities associated with the United States Fuel Company property is in the form of the Manti Lasal National Forest bordering the property on the west, northwest, and southwest which is illustrated on Exhibit I-2.

The effects of underground coal mining on the Manti Lasal National Forest will be minimized. A cooperative agreement between U. S. Fuel and the Forest Service, for subsidence monitoring, was signed in September of 1979. This letter is included in Appendix V-2. Access into the Manti Lasal National Forest from the United States Fuel Company property will continue to remain open and unchanged.



SCOTT M. MATHESON  
GOVERNOR



STATE OF UTAH  
DEPARTMENT OF COMMUNITY AND  
ECONOMIC DEVELOPMENT

March 3, 1980

Division of  
State History  
(UTAH STATE HISTORICAL SOCIETY)

MELVIN T. SMITH, DIRECTOR  
307 WEST 2ND SOUTH  
SALT LAKE CITY, UTAH 84101  
TELEPHONE 801/533-5755

Mr. Robert Eccli  
Mine Engineer  
United States Fuel Company  
Hiwatha, Utah 84527

Dear Mr. Eccli:

As requested by your letter of February 22, 1980, a site search was completed of the area located on the map furnished by your office. The search located no known archeological or cultural sites. There are a number of known sites in the area, but none are located on your property. Also enclosed is a copy of 36 CFR 800 and a list of surveyors as requested.

If our office can be of further help on advise, please contact me.

Sincerely,

Jim Dykman  
Compliance Administrator

JLD:re

Enclosure:

Chapter VI

GEOLOGY

### 6.5 Geologic Effects of Mining

Existing surface facilities as well as proposed new facilities are all located on U.S. Fuel Company land. The Middle Fork of Miller Creek has King No. 4 and King No. 5 surface facilities, the South Fork has old existing facilities that will be updated for the reopening of King No. 6 and Cedar Creek where the old Mohrland mine workings will be reopened for King No. 7 and King No. 8 mines. These facilities will all be located in canyons near coal outcrops on benches. These surface areas are comprised essentially of quaternary alluvium and colluvium derived from sandstone and shale. This alluvial material generally overlies Mancos Shale and ranges in thickness from thin sheets to over 50 ft. The Mancos Shale has very poor physical properties and should be avoided for surface facilities where ever possible. The alluvial material has good physical properties and provided a good foundation for surface structures.

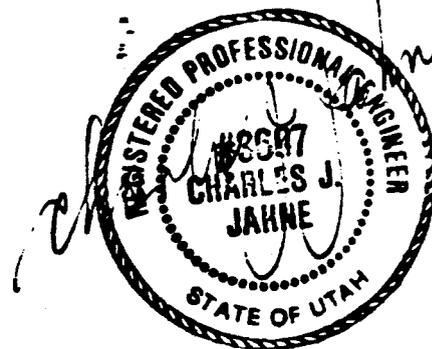
All existing and proposed mine portals will be located within 500 ft. vertically from the top of the Star Point Sandstone formation. Excavations in bedrock for portal face-up areas will affect sandstones, shales and siltstones of the lower part of the Blackhawk formation. Some minor groundwater seeps can be expected in these areas. The existing coal preparation plant along with related yards and coal processing waste disposal sites are located on thick, gently sloping alluvial deposits.

Chapter VII

HYDROLOGY

HYDROLOGIC INFORMATION  
KING VI MINE AREA  
UNITED STATES FUEL COMPANY

Submitted: December 5, 1980



Chapter VIII

SOIL RESOURCES

## SOIL SURVEY AND INTERPRETATIONS

for

U.S. Fuel Co. Mine Area  
near Mohrland and  
Hiawatha, Utah

At the request of Bob Eccli, representing U.S. Fuel Company, headquartered at Hiawatha, Carbon County, Utah and the Price River Watershed Soil Conservation District, the Soil Conservation Service performed a detailed soil survey on existing mine and proposed mine properties. The survey was designed to comply with the March 1979, Permanent Regulatory Program requirements of the Office of Surface Mining Reclamation and Enforcement, Department of Interior.

The survey covers approximately 240 acres near Mohrland, Sections 8, 9, 10, 15, 16, T.16S., R.8E., SLBM, Emery County; 37 acres in Left Fork Canyon, Section 32, T.15S., R.8E., SLBM Carbon County; and 33 acres in Middle Fork Canyon, Section 32, T.15S., R.8E., SLBM, Carbon County. The soils are shown on the attached map.

Each soil is identified with a three letter symbol, and the pattern and extent are shown by the soil boundary lines on the map. All areas having the same symbol are essentially the same kind of soils. There may be small areas of other soils included within the delineations that are slightly different. The soils are named but have not been correlated. When the overall county survey is completed, small areas may become inclusions in other map units. Some names may change also. Following the soil descriptions is a table listing the limitations of the soils for a variety of uses. The soil horizonation symbols, procedures and nomenclature are as defined in the Soil Survey Manual (Agriculture Handbook No. 18), the National Soil Handbook of the Soil Conservation Service, and Soil Taxonomy.

More detailed information is on file in the Price Field Office of the Soil Conservation Service.

SOIL LEGEND

<u>Soil Symbol</u>	<u>Soil Mapping Unit Name</u>
B2C	Brycan loam, 6 to 8 percent slopes <u>1/</u>
B2D	Brycan loam, 8 to 10 percent slopes <u>1/</u>
B4E	Brycan Variant stony fine sandy loam, 15 to 20 percent slopes <u>2/</u>
B5E	Brycan stony loam, 15 to 25 percent slopes <u>1/</u>
DM	Mine Dumps
G3E	Grobutte very stony loam, 10 to 20 percent slopes
G4G	Guben extremely bouldery loam, high rain- fall, 30 to 60 percent slopes
IEC	Ildefonso very stony loam, 3 to 8 percent slopes
IEE	Ildefonso very stony loam, 8 to 30 percent slopes
INE2	Ildefonso - Shingle complex, 8 to 30 percent slopes, eroded 55% Ildefonso very stony loam, 8 to 30 percent slopes 35% Shingle extremely stony loam, 8 to 20 percent slopes, eroded
N3G	Norte Variant extremely bouldery fine sandy loam, 30 to 70 percent slopes <u>3/</u>
NJG2	Shingle - Ildefonso - Badland Complex, 50 to 70 percent slopes, eroded  40% Shingle extremely stony loam, - 50 to 70 percent slopes, eroded 30% Ildefonso very stony loam, - 50 to 70 percent slopes 20% Badland

Soil Symbol

Soil Mapping Unit Name

P3G	Podo - Zillion Variant Complex, 40 to 70 percent slopes
	60% Podo very stony loam, 50 to 70 percent slopes
	20% Zillion Variant very stony fine sandy loam, 40 to 70 percent slopes <sup>4/</sup> .
Q3	Typic Ustorthents - Zillion Variant - Cumulic Haploborolls, wet, complex
	40% Typic Ustorthents extremely stony fine sandy loam, 8 to 60 percent slopes
	30% Zillion Variant very stony fine sandy loam, 40 to 70 percent slopes
	20% Cumulic Haploborolls, wet
R2G	Repp extremely bouldery fine sandy loam, 40 to 70 percent slopes
S3D	Silas silt loam, 8 to 10 percent slopes, poorly drained
T3	Typic Ustorthents - Mine Dumps Complex, 8 to 60 percent slopes
	35% Typic Ustorthents gravelly fine sandy loam, 8 to 60 percent slopes
	30% Typic Ustorthents extremely stony fine sandy loam, 8 to 60 percent slopes
	20% Mine Dumps
U3	Ustic Torrifluvents loam, 8 to 15 percent slopes
X2G	Beardall Variant - Beardall Complex, 40 to 70 percent slopes
	40% Beardall Variant loam, 40 to 70 percent slopes <sup>5/</sup>
	35% Beardall stony loam, 40 to 70 percent slopes <sup>6/</sup>

## TAXONOMIC CLASSIFICATION

<u>Soil</u>	<u>Classification</u>
Beardall <u>6/</u>	Fine-loamy, mixed Typic Cryoboralfs
Beardall Variant <u>5/</u>	Fine-loamy, mixed Mollic Cryoboralfs
Brycan <u>1/</u>	Fine-loamy, mixed Cumulic Haploborolls
Brycan Variant <u>2/</u>	Coarse-loamy, mixed, Cumulic Haploborolls
Grobutte	Loamy-skeletal, mixed (calcareous), frigid Ustic Torriorthents
Guben	Loamy-skeletal, mixed Typic Calciborolls
Ildefonso	Loamy-skeletal, mixed, mesic Ustollic Calciorthids
Norte Variant <u>3/</u>	Loamy-skeletal, mixed, (calcareous), frigid Typic Ustorhents
Podo	Loamy, mixed (calcareous), frigid Lithic Ustorhents
Repp	Loamy-skeletal, mixed, frigid Typic Ustochrepts
Shingle	Loamy, mixed (calcareous), mesic, shallow Ustic Torriorthents
Silas	Fine-loamy, mixed Cumulic Cryoborolls
Zillion Variant <u>4/</u>	Loamy-skeletal, mixed Pachic Argiborolls
-	Loamy-Skeletal, mixed (calcareous) frigid Typic Ustorhents
-	Fine-loamy, mixed (calcareous) frigid Typic Ustorhents
-	Fine-loamy, mixed (calcareous) frigid Ustic Torrifluents
-	Cumulic Haploborolls

### Classification Footnotes

- 1/ Brycan is a taxadjunct of the Brycan series and differs in that it lacks a B<sub>2</sub> (cambic) horizon and is calcareous throughout.
- 2/ Brycan Variant is a variant of the Brycan series and differs in that it averages less than 18 percent clay in the 10 to 40 inch layer (25 to 102 centimeter).
- 3/ Norte Variant is a variant of the Norte series and differs in that it lacks a sandy layer in the lower C horizon.
- 4/ Zillion Variant is a variant of the Zillion series and differs in that it lacks a layer of carbonate accumulation and a sandy substratum.
- 5/ Beardall Variant is a variant of the Beardall series and differs in that it is 60 inches (1.5 meters) deep.
- 6/ Beardall is a taxadjunct of the Beardall series and differs in that it lacks a thin dark surface layer.

# DRAFT

**VEGETATION SURVEY  
for  
U.S. Fuel Company  
Hiawatha, Utah**

**February, 1981**

**George Cook, SCS Range Conservationist  
Don Andrews, SCS Range Conservationist  
Gary Moreau, SCS District Conservationist**

## VEGETATION SURVEY

U.S. Fuel Company

At the request of Bob Eccli, representing U.S. Fuel Company, and the Price River Watershed Soil Conservation District, the Soil Conservation Service performed a vegetation survey on existing mine and proposed mine properties. The survey was designed to comply with the March 1979 Permanent Regulatory Program, Office of Surface Mining Reclamation and Enforcement, Department of Interior.

U.S. Fuel Co. is headquartered at Hiawatha, Utah. The survey covers approximately 240 acres near Mohrland, Sections 8, 9, 10, 15, 16, T16S, R8E, SLBM, Emery County; 37 acres in Left Fork Canyon, Section 32, T15S, R8E, SLBM, Carbon County, and 33 acres in Middle Fork Canyon, Section 32, T15S, R8E, SLBM, Carbon County.

SCS range conservationists, George Cook and Don Andrews, visited each described soil in the survey area and recorded present vegetation and productivity according to ecological site analysis methods of the Soil Conservation Service. Present vegetation was recorded by percentage air dry weight. Estimates were made of annual production and range condition for the 1980 growing season. These findings are included in this report and the ecological sites identified on the soil map accompanying the soil report. Potential plant communities, based from clippings, is not yet available from the Bureau of Land Management.

Most of the soils in the survey area are used as rangeland and wildlife habitat except where mine disturbances have occurred. On areas that have similar climate and topography, the kind and amount of vegetation produced on rangeland are closely related to the kind of soil. Effective management is based on the relationship between soils and vegetation and water.

In this survey area the soils are grouped into ecological sites. An ecological site is an area or areas of rangeland or woodland uniform enough in climate, soils, drainage, exposures and topography that it supports a definite plant community that will produce a specific amount of vegetation. The kind of vegetation is generally the combination of plants that grew on the site before the range or woodland was affected by grazing, cultivation or otherwise altered and is called the potential vegetation. Normally the potential vegetation is the most productive combination of range or woodland plants that a site can support.

As climate is a major factor in determining the potential plant community different climatic regime have been defined to facilitate the grouping of soils into ecological sites and the naming of sites. In this survey area there are three climatic regimes used. These are defined generally as follows:

Upland Climatic Regime - The average annual precipitation is 12 to 16 inches. Approximately 35 to 40 percent comes during the summer months. The growing period usually begins about April 1 and lasts until the first of November until moisture is depleted or the plants mature. The freeze-free season is 100 to 130 days, and the mean annual temperature is 47° to 50° F.

Mountain Climatic Regime - The average annual precipitation is 16 to 20 inches. Approximately 35 percent comes during the summer months. The growing season begins in the later part of April and lasts until the middle of October or until moisture is depleted or the plants mature. The freeze-free season is 80 to 110 days and the mean annual temperature is 44° to 47° F.

Wet and Semiwet Climatic Regime - In this climatic regime the soils are wet because they receive run-in water or have a high water table. In these areas the climate is characterized by cold, snowy winters and warm dry summers. The average annual precipitation ranges from 8 to 14 inches. Most of the water available for plants is from run-in water or from the water table. The growing season begins in March and lasts until the first part of November. The freeze-free season is 115 to 140 days and the mean annual temperature is about 47° to 52° F.

Range management requires a knowledge of the kinds of soil and of the potential natural plant community. It also requires an evaluation of the present range condition. Range condition is determined by comparing the present plant community with the potential natural plant community on a particular range site. The more closely the existing community resembles the potential community, the better the range condition. Range condition is an ecological rating only. It does not have a specific meaning that pertains to the present plant community in a given use.

The objective in range management is to control grazing so that the plants growing on a site are about the same in kind and amount as the potential natural plant community for that site.

Such management generally results in the optimum production of vegetation, conservation of water, and control of erosion. Sometimes, however, a range condition somewhat below the potential meets grazing needs, provides wildlife habitat, and protects soil and water resources.

More detailed information is available in the Price Field Office of the Soil Conservation Service.

**SITE LEGEND**

<u>Symbol</u>	<u>Ecological Site Name</u>
B2C B2D B5E	Mountain Loam (Summer Precipitation)
B4E	Upland Loam (P-J)
G3E	Upland Stony Loam
G4G	Mountain Loam (Shrub)
IEC IEE N3G	Upland Stony Loam (P-J)
INE2	55% Upland Stony Loam (P-J) 35% Upland Shallow Shale (P-J)
NJG2	40% Upland Shallow Shale (P-J) 30% Upland Stony Loam (P-J) 20% Bad Land
P3G	60% Mountain Shallow Loam (Shrub) 20% Mountain Stony Loam (Shrub)
Q3..	70% Mountain Stony Loam (Shrub) 20% Semi-wet Streambottom
R2G	Mountain Shallow Loam (Curlleaf)
S3D	Wet Meadow
T3	Disturbed Site
U3	Upland Loam
X2G	Woodland Site

## DESCRIPTION OF VEGETATION

### Mountain Loam (Summer Precipitation) Ecological Site

An inventory of the Mountain Loam (Summer Precip.) ecological site recorded the following vegetation as a percentage of air dry weight in the vicinity of Pit 276, NE $\frac{1}{4}$ , Sec 32, T15S, R8E. This site relates to the B2C, B2D, and B5E soils.

<u>Grasses and Grass like Plants</u>	<u>Percent</u>
Columbia needlegrass	5
Slender wheatgrass	7
Bluegrass (Poa spp.)	3
Kentucky bluegrass	5
Foxtail	1
 <u>Forbs</u>	
Houndstongue	2
Stickseed	1
Poverty weed	2
Sunflower	1
Goatsbeard	2
Other	2
 <u>Trees and Shrubs</u>	
Rubber rabbitbrush	50
Big sagebrush	10

Total annual production was estimated to be 2,000 pounds per acre. A fair condition rating was assigned to this site.

Upland Loam (P-J) Ecological Site

An inventory of the Upland Loam (Pinyon-Juniper) ecological site recorded the following vegetation expressed as a percentage of air dry weight in the vicinity of Pit 462, NE $\frac{1}{4}$ , Sec 32, T15S, R8E. This site relates to the B4E soil.

<u>Grasses and Grass-like plants</u>	<u>Percent</u>
Needleandthread	25
Muttongrass	5
Indian ricegrass	5
Salina wildrye	2
Sedge	2
Bluegrama	1
<u>Forbs</u>	
Herbaceous sage	3
Cutleaf senecio	5
Wallflower	2
Globemallow	3
False yarrow	2
Other	5
<u>Tree and Shrubs</u>	
Big rabbitbrush	5
Oregon grape	2
Pinyon pine	1
Utah juniper	1
Wyoming big sagebrush	20
Douglas rabbitbrush	5
Serviceberry	2
Rocky Mountain juniper	1
Horsebrush	3

Total annual production was estimated at 1,200 pounds per acre. A good condition rating was assigned.

Woodland Site

An inventory of the Woodland Site community associated with the X2G mapping unit provided the following:

- a) understory vegetation for the Beardall stony loam, 40-70 percent slopes near Pit 523, NW¼, Sec 8, T16S, R8E.
- b) understory vegetation for Beardall variant loam, 40-70 percent slopes near Pit 464, Sec. 32, T15S, R8E.
- c) woodland site index for Beardall variant loam, 40-70 percent slopes at Pit 506, NE¼, Sec. 30, T15S, R8E.

<u>Grasses and Grass-like Plants</u>	<u>Percent</u>	
	<u>Pit 523</u>	<u>Pit 464</u>
Mutton grass		5
Salina wildrye		10
Slender wheatgrass		5
Poa spp.	T	2
Smooth brome		3
Nodding brome	T	
<u>Forbs</u>		
Virgin bloomer		1
Penstemon		2
Indian paintbrush		1
Yarrow		1
Pussytoes		1
Senecio		1
Other		3
<u>Trees and Shrubs</u>		
Mountain snowberry		5
Oregon grape	10	13
Serviceberry		1
Douglas fir	35	15
White fir	50	25
Ribes		1
Mountain lover		1
Elderberry		1
Rose		1
Rocky Mountain juniper		2
Total annual production (estimated pounds per acre)	2000	2000

Pit 506: Englemann site index 68  
 Subalpine fir site index 58

Chapter IX

VEGETATION RESOURCES

## 9.1 Scope

A study of vegetation of the U.S. Fuel mining permit area and adjacent areas was conducted between August 21 and August 27, 1980, and supplementary data was collected October 7, 1980. The purpose of the study was to determine existing conditions of the area in terms of kind and quantities of plants.

Several vegetation types occur within the study area. These differences are primarily due to marked changes in elevation, moisture, temperature, topography, aspect, and soils. Ten vegetation types were used to describe the vegetation on the permit area: (1) barren land; (2) pinyon/juniper woodland; (3) riparian; (4) sagebrush; (5) mountain brush; (6) grassland; (7) mixed conifer; (8) mixed conifer/aspens; (9) aspens; and (10) high elevation sagebrush/grass.

Very little of the permit area has not been disturbed in the past. Sources of prior disturbance are old townsites and previous mining activity, along with fire, grazing, plowing, spraying, and seeding. All areas of proposed disturbance are old townsites.

## 9.2 Methodology

Vegetation types were identified and mapped by field reconnaissance and the use of aerial photographs. The acreages of the vegetation types and their percentages of the total permit area were determined from these maps. Acreages of each vegetation type within disturbed areas and areas of new disturbance, and their percentages of each vegetation type in the permit area, were also determined from these maps. Vegetation existing prior to disturbance was inferred from vegetation on adjacent, undisturbed areas.

Reference areas and areas of new disturbance were sampled for aerial cover, species composition, productivity, tree density, and distribution of tree size classes. Each 45,000 cu. ft. (4,200 cu. m) sampling area was marked with four metal T-posts. Percent aerial cover, litter cover, rock, and bare ground were determined by the step-point method (Evans and Love, 1957). The starting point and direction of each 20-point transect were randomly selected for each sampling area. Species composition was determined by listing the species hit at points along the same transects. Productivity was determined by clipping grasses, forbs, and current year's shrub growth within a 1 sq. m frame randomly placed along the step-point transects. Clipped plant material was over-dried at 120 degrees F. (49 degrees C) for 48 hours and weighed on a Metler top-loading balance.

Tree density was measured by the point-centered quarter method (Mueller-Mombois and Ellenberg, 1974). Quarters were established by using the corners of the 1 sq. m productivity frame. Tree size classes were determined by measuring the circumference at breast height of the nearest tree in each quarter. Due to the branching habit of Rocky Mountain juniper, Utah juniper, and pinyon pine, it was necessary to take basal circumference

readings. For trees smaller than 4 ft. (1.2 m) in height, circumference was also measured at the base of the tree. All circumference measurements were converted to diameter measurements.

Sample adequacy for the representative cover and productivity parameters was determined by using the following equation:

$$m = \frac{t^2 s^2}{D^2} \text{ (Snedecor and Cochran, 1967)}$$

Where: M = the minimum number of observations needed,  
t = t distribution value for a given level of confidence,  
s<sup>2</sup> = the variance estimate from preliminary vegetation sampling, and  
D = the level of accuracy desired for the estimate of the mean.

Sample adequacy for aerial cover estimates was determined after completing 10 step-point transects at each area. Sample adequacy for productivity measurements was determined after clipping weighing plant material from 25 plots at each area. A 90 percent confidence level with a 10 percent error of the mean was used to calculate the proper sample size for aerial cover estimates. An 85 percent confidence level with a 15 percent error of the mean was used to calculate the proper sample size for productivity measurements. Additional sampling was performed at those areas where preliminary sample sizes were inadequate.

This report represents a summary of the data and the report done by BIO/WEST, Inc. This summary is organized in the format recommended by Utah's Division of Oil, Gas, and Mining permit guidelines. BIO/WEST, Inc.'s report, in its entirety, is located in the bibliography at the conclusion of this summary. This summary does not alter the contents of that report. The references are listed in the BIO/WEST, Inc. report.

### 9.3 Existing Resources

Although the permit area ranges in elevation from about 7,000 ft. to over 9,600 ft., the areas of proposed surface disturbance are limited to the lower elevations. Less than 16 in. mean annual precipitation and a widely varying temperature range combine with differences in soil and aspect to create a large diversity of vegetation types ranging from aspen to sagebrush. However, due to the restriction of newly disturbed areas to lower elevations and canyon bottoms, only four of these will be disturbed.

Dominant species are White and Douglas firs, Rocky Mountain maple, Quaking aspen, Saskatoon serviceberry, Creeping barberry, Blueleaf aster, and Indian ricegrass. All of the mixed conifer areas are in good condition, however, previous fire suppression measures have resulted in an increased fuel load, correspondingly increasing the danger of fire spreading.

Sagebrush: Due to prior disturbance (Circa 1900 to 1915) with no revegetation attempts, overgrown sagebrush stands with relatively little understory cover have developed. Dominant species here include Big sagebrush, Rubber rabbitbrush, Pricklypear cactus, Hoary aster, and Indian ricegrass.

Pinyon/Juniper Woodland: Dominant species here are Utah juniper and Pinyon pine, with dominant understory species including Saskatoon serviceberry, Big sagebrush, Yucca, Western wheatgrass. Understory cover is limited directly beneath the trees, and Pinyon pine is more evenly distributed by size class than Utah juniper, which consist mostly of seedlings and young trees.

Riparian: Dominant tree species are Narrowleaf cottonwood, Sandbar willow, River birch and Quaking aspen. Understory species include Saskatoon serviceberry, Rabbitbrush, Yellow sweetclover, Sedge, Indian Ricegrass.

Root-sprouting shrubs, such as rabbitbrush, are spreading into streambank areas from roadside disturbed areas, and tree species (excepting some cottonwoods) are mainly young trees and seedlings.

TREE DATA (Continued)

Tree composition by size class for the pinyon-juniper woodland type within proposed disturbance areas.

Species	Diameter breast height (in.)					% of total
	0-2.99	3.0-5.99	6.0-8.99	9.0-12.0	>12.0	
<b>A. Sampling site 4 (conveyor system, coal storage and loading areas below King 6 mine (King Mine) in the Left Fork of Miller Creek)</b>						
<u>Pinus edulis</u>	24	13	6	7	5	68
<u>Juniperus osteosperma</u>	6	1	1	2	1	18
<u>Abies concolor</u>	3	1	1	0	0	6
<u>Juniperus scopulorum</u>	1	3	0	0	1	6
<u>Psuedotsuga menziesii</u>	0	1	0	0	1	2
-----						
% of total	42	24	10	14	10	100
Absolute Density = 199 trees/acre						
<b>B. Sampling site 8 (conveyor system and loading area in King 7 and King 8 mine area in Mohrland Canyon)</b>						
<u>Pinus edulis</u>	30	10	7	5	1	66

TREE DATA (Continued)

Tree composition by size class for reference areas within the pinyon-juniper woodland vegetation type.

Species	Diameter breast height (in.)					% of total
	0-2.99	3.0-5.99	6.0-8.99	9.0-12.0	>12.0	
<b>A. Reference area 4 (near proposed conveyor system and coal storage and loading area below King 6 Mine [King Mine] in the Left Fork of Miller Creek)</b>						
<u>Pinus edulis</u>	25	10	5	4	11	55
<u>Juniperus osteosperma</u>	23	9	7	0	5	44
<u>Pseudotsuga menziesii</u>	1	0	0	0	0	1
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% of total	49	19	12	4	16	100
Absolute Density = 185 trees/acre						
<b>B. Reference area 5 (near perimeter of waste disposal area near town of Hiawatha)</b>						
<u>Juniperus osteosperma</u>	26	8	3	0	1	68

Major plant species assumed to have been present prior to disturbance at the King 6 Mine (King Mine) in the Left Fork of Miller Creek.

Life form	Botanical name	Common name
<b>Vegetation Type: Mixed Conifer</b>		
Tree	<u>Abies concolor</u>	White fir
	<u>Acer glabrum</u>	Rocky Mountain maple
	<u>Juniperus scopulorum</u>	Rocky Mountain juniper
	<u>Picea pungens</u>	Colorado blue spruce
	<u>Pinus edulis</u>	Pinyon pine
	<u>Populus tremuloides</u>	Quaking aspen
	<u>Pseudotsuga menziesii</u>	Douglas fir
Shrub	<u>Amelanchier alnifolia</u>	Saskatoon serviceberry
	<u>Artemisia tridentata</u>	Big sagebrush
	<u>Berberis repens</u>	Creeping barberry
	<u>Cercocarpus ledifolius</u>	Curl-leaf mountain mahogany
	<u>Cercocarpus montanus</u>	True mountain mahogany
	<u>Chrysothamnus viscidiflorus</u>	Low rabbitbrush
	<u>Packistima myrsinites</u>	Myrtle pachistima
	<u>Symphoricarpos oreophilus</u>	Mountain snowberry
Forb	<u>Aster glaucodes</u>	Blueleaf aster
	<u>Castilleja linariaefolia</u>	Wyoming painted-cup
	<u>Eriogonum sp.</u>	Eriogonum
	<u>Lupinus sp.</u>	Lupine
	<u>Machaeranthera canescens</u>	Hoary aster

Life form	Botanical name	Common name
<u>Vegetation Type: Mixed Conifer (Continued)</u>		
Grass	<u>Agropyron smithii</u>	Western wheatgrass
	<u>Bromus ciliatus</u>	Fringed brome
	<u>Elymus salina</u>	Salina wildrye
	<u>Koeleria cristata</u>	Prairie junegrass
<u>Vegetation Type: Pinyon-Juniper Woodland</u>		
Tree	<u>Abies concolor</u>	White fir
	<u>Juniperus osteosperma</u>	Utah fir
	<u>Juniperus scopulorum</u>	Rocky Mountain juniper
	<u>Pinus edulis</u>	Pinyon pine
	<u>Pseudotsuga menziesii</u>	Douglas fir
Shrub	<u>Amelanchier alnifolia</u>	Saskatoon serviceberry
	<u>Artemisia nova</u>	Black sagebrush
	<u>Artemisia tridentata</u>	Big sagebrush
	<u>Berberis repens</u>	Creeping barberry
	<u>Cercocarpus ledifolius</u>	Curl-leaf mountain mahogany
	<u>Cercocarpus montanus</u>	True mountain mahogany
	<u>Chrysothamnus viscidiflorus</u>	Low rabbitbrush
	<u>Ephedra viridis</u>	Green ephedra
	<u>Symphicarpos oreophilus</u>	Mountain snowberry
	<u>Tetrademia canescens</u>	Gray horsebrush
	<u>Xanthocephalum sarothrae</u>	Broom snakeweed
	<u>Yucca harrimaniae</u>	Harriman yucca

Life form	Botanical name	Common name
<b>Vegetation Type: Pinyon-Juniper Woodland (Continued)</b>		
Forb	<u>Arabis</u> sp.	Rockcress
	<u>Artemisia ludoviciana</u>	Louisiana sagebrush
	<u>Eriogonum</u> sp.	Eriogonum
	<u>Hymenoxys acaulis</u>	Stemless hymenoxys
	<u>Machaeranthera linearis</u>	Hoary aster
	<u>Solidago</u> sp.	Goldenrod
Grass	<u>Agropyron smithii</u>	Western wheatgrass
	<u>Bouteloua gracilis</u>	Blue grama
	<u>Elymus salina</u>	Salina wildrye
	<u>Oryzopsis hymenoides</u>	Indian ricegrass
	<u>Stipa comata</u>	Needle-and-thread grass
<b>Vegetation Type: Riparian</b>		
Tree	<u>Abies concolor</u>	White fir
	<u>Acer glabrum</u>	Rocky Mountain maple
	<u>Juniperus scopulorum</u>	Rocky Mountain juniper
	<u>Populus tremuloides</u>	Quaking aspen
	<u>Pseudotsuga menziesii</u>	Douglas fir
Shrub	<u>Artemisia tridentata</u>	Big sagebrush
	<u>Chrysothamnus nauseosus</u>	Rubber rabbitbrush
	<u>Rhus trilobata</u>	Skunk bush sumac
	<u>Rosa woodsii</u>	Wood's rose
	<u>Symphoricarpos oreophilus</u>	Mountain snowberry
	<u>Xanthocephalum sarothrae</u>	Broom snakeweed

Life form	Botanical name	Common name
<b>Vegetation Type: Riparian (Continued)</b>		
Forb	<u>Artemisia ludoviciana</u>	Louisiana sagebrush
	<u>Aster glaucodes</u>	Blueleaf aster
	<u>Cirsium vulgare</u>	Bull thistle
	<u>Clematis ligusticifolia</u>	Western virginsbower
	<u>Equisetum</u> sp.	Horsetail
	<u>Isomopsis aggregata</u>	Wyoming painted-cup
	<u>Melilotus officianalis</u>	Yellow sweetclover
Grass (Grasslike)	<u>Bromus ciliatus</u>	Fringed brome
	<u>Carex</u> sp.	Sedge
	<u>Oryzopsis hymenoides</u>	Indian ricegrass
	<u>Stipa commata</u>	Needle-and-thread grass

Total Acres in Plan Area

Acreages of each vegetation type and their percentages of the total permit area acreage.

Vegetation type	Acreage	% of permit area
Aspen	2,386	12.4
Barren Land	52	0.2
Grassland	582	3.0
High Elevation Sagebrush-Grass	1,122	6.0
Mixed Conifer	7,743	40.3
Mixed Conifer-Aspen	2,516	13.1
Mountain Brush	1,862	9.7
Pinyon-Juniper Woodland	2,465	12.8
Riparian	212	1.1
Sagebrush	<u>266</u>	<u>6.0</u>
	19,206	100.0

Total Acres of Vegetation Types to be Disturbed

Acreages of each vegetation type found in disturbed areas (and areas of new disturbance) and their percentages of the total acreage of each type in the permit area.

<u>Vegetation type</u>	<u>Acreage Disturbed (New disturbance)</u>	<u>% of vegetation type Disturbed (New disturbance)</u>
Mixed Conifer	8.5 (53.1)	0.1 (0.7)
Mountain Brush	4.0 (3.8)	0.2 (0.2)
Pinyon-Juniper	260.0 (17.5)	10.5 (0.7)
Riparian	1.0 (1.7)	0.5 (0.8)
Sagebrush	(24.3)	(9.1)

Total Disturbance = 373.9 acres.

Major species present within proposed disturbance below King 6 Mine (King Mine) in the Left Fork of Miller Creek, sampling site 4 (conveyor system, coal storage and loading areas).

Life form	Botanical name	Common name
<u>Vegetation Type: Pinyon-Juniper Woodland</u>		
Tree	<u>Abies concolor</u>	White fir
	<u>Acer grandidentatum</u>	Big-tooth maple
	<u>Juniperus osteosperma</u>	Utah juniper
	<u>J. scopulorum</u>	Rocky Mountain juniper
	<u>Pinus edulis</u>	Pinyon pine
	<u>P. ponderosa</u>	Ponderosa pine
	<u>Pseudotsuga menziesii</u>	Douglas fir
Shrub	<u>Amelanchier alnifolia</u>	Saskatoon serviceberry
	<u>Artemisia nova</u>	Black sagebrush
	<u>A. tridentata</u>	Big sagebrush
	<u>Berberis repens</u>	Creeping barberry
	<u>Cercocarpus ledifolius</u>	Curl-leaf mountain mahogany
	<u>C. montanus</u>	True mountain mahogany
	<u>Chrysothamnus viscidiflorus</u>	Low rabbitbrush
	<u>Ephedra viridis</u>	Green ephedra
	<u>Juniperus communis</u>	Common juniper
	<u>Pachistima myrsinites</u>	Myrtle pachistima
	<u>Symphoricarpos oreophilus</u>	Mountain snowberry
	<u>Tetrademia canescens</u>	Gray horsebrush
	<u>Xanthocephalum sarothrae</u>	Broom snakeweed
<u>Yucca harrimaniae</u>	Harriman yucca	

Life form	Botanical name	Common name
<b>Vegetation Type: Pinyon-Juniper Woodland (Continued)</b>		
Forb	<u>Arabis</u> sp.	Rockcress
	<u>Artemisia ludoviciana</u>	Louisiana sagebrush
	<u>Eriogonum corymbosum</u>	Corymbed eriogonum
	<u>Hymenoxys acaulis</u>	Stemless hymenoxys
	<u>Solidago</u> sp.	Goldenrod
Grass	<u>Agropyron smithii</u>	Western wheatgrass
	<u>Bouteloua gracilis</u>	Blue grama
	<u>Elymus salina</u>	Salina wildrye
	<u>Oryzopsis hymenoides</u>	Indian ricegrass
	<u>Sitanion hystrix</u>	Bottlebrush squirrel-tail
	<u>Stipa commata</u>	Needle-and-thread grass

Major species present within reference area 4 (near proposed conveyor system and coal storage and loading area below King 6 Mine [King Mine] in the Left Fork of Miller Creek).

Life form	Botanical name	Common name
<u>Vegetation Type: Pinyon-Juniper Woodland</u>		
Tree	<u>Abies concolor</u>	White fir
	<u>Juniperus osteosperma</u>	Utah juniper
	<u>Juniperus scopulorum</u>	Rocky Mountain juniper
	<u>Pinus edulis</u>	Pinyon pine
	<u>Pseudotsuga menziesii</u>	Douglas fir
Shrub	<u>Amelanchier alnifolia</u>	Saskatoon serviceberry
	<u>Artemisia tridentata</u>	Big sagebrush
	<u>Berberis repens</u>	Creeping barberry
	<u>Cercocarpus ledifolius</u>	Curl-leaf mountain mahogany
	<u>C. montanus</u>	True mountain mahogany
	<u>Chrysothamnus viscidiflorus</u>	Low rabbitbrush
	<u>Ephedra viridis</u>	Green ephedra
	<u>Juniperus communis</u>	Common juniper
	<u>Pachistima myrsinites</u>	Myrtle pachistima
	<u>Symphoricarpos oreophilus</u>	Mountain snowberry
	<u>Tetrademia canescens</u>	Gray horsebrush
	<u>Yucca harrimaniae</u>	Harriman yucca
	Forb	<u>Artemisia ludoviciana</u>
<u>Eriogonum corymbosum</u>		Corymbed eriogonum
<u>Hymenoxys acaulis</u>		Stemless hymenoxys
<u>Machaeranthera linearis</u>		Hoary aster
<u>Solidago sp.</u>		Goldenrod

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Life form	Botanical name	Common name
<u>Vegetation Type: Pinyon-Juniper Woodland (Continued)</u>		
Grass	<u>Agropyron smithii</u>	Western wheatgrass
	<u>Bouteloua gracilis</u>	Blue grama
	<u>Oryzopsis hymenoides</u>	Indian ricegrass
	<u>Stipa commata</u>	Needle-and-thread grass

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Similarities between reference area 2 and disturbed areas at the portal in the Right Fork of Miller Creek, the King 4 and King 5 mines (Hiawatha Mine), the King 6 Mine (King Mine), and the Blackhawk Mine.

Item	Reference Area 2	Portal Area	King 4 and 5 mines	King 6 Mine	Blackhawk Mine
<u>Vegetation Type: Mixed Conifer</u>					
Species composition	22	17	21	25	18
Total aerial cover (%)	84	75-90	75-90	75-90	70-80
Productivity (g/m <sup>2</sup> )	-	-	-	-	-
Geology	Blackhawk Formation				
Soils					
Slope (degrees)	31°	20-25°	30-35°	30-35°	20-25°
Aspect	NNW	NE	NNW	NNE	NNE

Similarities between reference area 4 and the disturbed area at the King 6 Mine (King Mine), the proposed conveyor system from King 4 and King 5 mines (Hiawatha Mine) in the Middle Fork of Miller Creek to the coal preparation plant near Hiawatha, and the proposed conveyor system and coal storage and loading area below the King 6 Mine (King Mine).

Item	Reference Area 3	King 6 Mine	King 4 and 5 Mine Proposed Conveyor	King 6 Mine Proposed Conveyor
<u>Vegetation Type: Pinyon-Juniper Woodland</u>				
Species composition	26	25	24	32
Total aerial cover (%)	59	45-60	55.5	58.5
Productivity (g/m <sup>2</sup> )	21.08	-	-	33.68
Geology	Masuk Shale	Blackhawk Formation	Masuk Shale	Masuk Shale
<u>Soils</u>				
Slope (degrees)	22°	20-25°	20°	20°
Aspect	SSE	SSE	S	SSE

#### 9.4 Threatened and Endangered Species

There are no threatened or endangered species in any of the areas of proposed disturbance.

### 9.5 Effects of Mining Operations on Vegetation

While little or no impact is expected on the overlying vegetation, vegetation on the proposed disturbance sites is expected to be totally destroyed for the duration of the disturbance.

## 9.6 Revegetation Methods and Justifications

The following steps would be taken following cessation of production towards the reestablishment of a balanced environment within the areas of proposed disturbance:

- a. Filling in and restoration of any settling ponds
- b. Removal of proposed buildings and foundations not remaining in use
- c. Reapplication of topsoil to previously undisturbed areas as necessary
- d. Recontouring proposed disturbed areas to their approximate pre-existing topography, if altered
- e. Reseed and plant trees during the appropriate growing seasons to restore newly disturbed vegetation types.

These procedures will be done in consultation with concerned federal, state and local agencies.

## 9.7 Revegetation Monitoring

An established native vegetation plot will be monitored during the project to assess impacts.

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### 9.8 Bibliography

BIO/WEST, Inc., 1980, Vegetation Survey of U.S. Fuel Company Property, Hiawatha, Utah, Final Report PR-41-1.

Department of the Interior, 1979, Development of Coal Resources in Central Utah, United States Geological Survey, Denver, Colorado, FES 79-27.

User Guide to Vegetation, Mining and Reclamation in the West: Ogden, Utah, U.S.D.A. Forest Service General Technical Report INT-64.

Chapter X

FISH AND WILDLIFE RESOURCES



**DIVISION OF WILDLIFE RESOURCES**  
 DOUGLAS F. DAY  
 Director

EQUAL OPPORTUNITY EMPLOYER

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

February 2, 1981

Reply To **SOUTHEASTERN REGIONAL OFFICE**  
 455 West Railroad Avenue, Box 840, Price, Utah 84501  
 (801) 637-3310

Mr. Robert Eccli, Senior Mine Engineer  
 U.S. Fuel Company  
 Hiawatha Complex  
 Hiawatha, Utah 84527

Dear Bob:

I want to take this opportunity to extend thanks for the assistance you have provided our staff in becoming familiar with existing and planned surface facilities on the area encompassed by the Hiawatha Complex mining project. I believe that you will find the enclosed information helpful at filing a mine and reclamation plan.

In response to your request for wildlife resource information (UMC 783.20) the attached map, data and comments are provided. The wildlife resource information is consistent with the formal guidelines for acquisition of fish, wildlife and habitat information provided your Company by Utah's Division of Oil, Gas and Mining. In instances where your Company was required to provide for study beyond existing information, such findings need be merged with our report.

The Division Publication No. 78-16 "Species List of Vertebrate Wildlife that Inhabit Southeastern Utah" represents a low level of study. It adequately identifies potential occurrence; season of use (avifauna only); relative abundance as unknown, common, uncommon, rare, occasional, accidental, endangered, threatened, limited and extirpated; status as protected or non-protected; population trend and preferred habitat use area for each species of wildlife that can be found regionally as well as those species that have potential to inhabit the project area.

Please note that the enclosed wildlife plan (UMC 784.21) represents our recommendations; Utah's Division of Oil, Gas and Mining is the regulatory authority for approval of the mining and reclamation plan. Implementation of the recommended wildlife plan should assist the Company in compliance with performance standards UMC 817.97.

Thank you for an opportunity to assist your Company in complying with the State's permanent program for coal mining and reclamation and the resultant protection of Utah's wildlife resources. If the Division can be of any further service, please coordinate with our Regional Resource Analyst (Larry Dalton, phone 801-637-3310) as appropriate.

Sincerely,



John Livesay, Supervisor  
Southeastern Region

JL:LBD:gp

Attachment

cc: Darrell Nish  
Clark Johnson  
Cleon B. Feight  
Leon Berggren  
Don Ward



SCOTT M. MATHESON  
Governor

OIL, GAS, AND MINING BOARD

JORDON E. HARMSTON  
Executive Director,  
NATURAL RESOURCES

STATE OF UTAH

DEPARTMENT OF NATURAL RESOURCES

DIVISION OF OIL, GAS, AND MINING

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EDWARD T. BECK  
E. STEELE McINTYRE

August 22, 1980

Mr. Bob Eccli  
Senior Mine Engineer  
U.S. Fuel Company  
Hiawatha Complex  
Hiawatha, Utah 84527

RE: Fish and Wildlife Consultation  
Pursuant to UMC 783.20  
Hiawatha Complex  
ACT/007/011

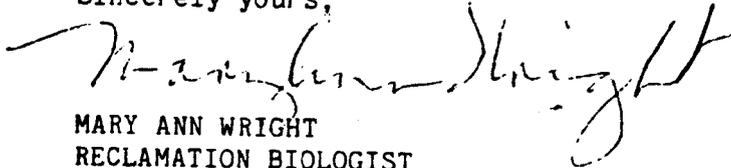
Dear Mr. Eccli:

Enclosed are the guidelines which were compiled by the Division of Oil, Gas and Mining as a result of the consultation with the agencies having jurisdiction over fish and wildlife and habitat in the mine plan area. Please be reminded of the requirements of UMC 771.23(c) when writing your permit application.

Enclosed for your use in preparation of the fish and wildlife plan for Part UMC 784.21 and for compliance with performance standards UMC 817.97(c) are the guidelines for the design and construction of electric power lines.

Should any questions arise concerning these matters, please call me.

Sincerely yours,

  
MARY ANN WRIGHT  
RECLAMATION BIOLOGIST

MAW/te

Enc: Guidelines

cc: Shirley Lindsay, O.S.M.

Division of Wildlife Resources

Clark Johnson, U.S. Fish & Wildlife Service

Table 1. Recommended seed mixtures that will benefit wildlife through enhancement of moderately disturbed shrublands habitats of the montane ecological association. Also included are acceptable alternatives if seed for a plant species is not available. Alternatives marked with an asterisk (\*) are for use in special treatments such as erosion control or roadbank stabilization. If disturbance was severe and total reclamation is needed, increase amount of seed by a factor of 2 to 3 times. Information assembled from Plummer, A.P., D.R. Christensen and S.B. Monsen. 1968. Restoring big game range in Utah. Utah Division of Fish and Game (now Utah Division of Wildlife Resources) Publication No. 68-3. 183 pp. Also from personal contacts with A. Perry Plummer.

Species	North exposures and shady areas		Sunny exposures (south, west, east)		Mixture for tall mountain brush type, shaded sites.	
	Broadcast	Drilled	Broadcast	Drilled	Species	Seeding per acre
-Pounds per acre -						
<b>Grasses:</b>					<b>Grasses:</b>	<u>Pounds</u>
Fairway crested wheatgrass	2	1	2	1	Smooth brome (southern strain)	5
Smooth brome (southern strains)	4	2	2	1	Fairway crested wheatgrass	1
Intermediate wheatgrass	4	2	2	1	Intermediate wheatgrass	3
Pubescent wheatgrass	0	0	2	1	Orchardgrass (Utah grown)	2
Bluestem wheatgrass	0	0	1	1/2	Tall oatgrass	1
Orchardgrass	1	1/2	1	1/2	Mountain brome	1
Russian wildrye	0	0	1	1/2		
Tall oatgrass	1	1/2	0	0		
<b>Forbs:</b>					<b>Forbs:</b>	
Alfalfa (Nomad, Rambler, Travois, Ladak-equal parts)	2	1	2	1	Alfalfa (creeping strains or Ladak)	1
Chickpea milkvetch	0	0	1	1/2	Pacific aster	1/4
Utah sweetvetch	0	0	1	1/2	Oneflower helianthella	1/2
Yellow sweetclover	0	0	1	1/2	Showy goldeneye	1/4
Arrowleaf balsamroot	1	1/2	1	1/2		
Pacific aster	1	1/2	1	1/2	<b>Totals</b>	<b>15</b>

Table 1. Continued

Species	North exposures and shady areas		Sunny exposures (south, west, east)	
	Broadcast	Drilled	Broadcast	Drilled
-Pounds per acre-				
Shrubs:				
Rubber rabbitbrush	1/2	1/4	1/2	1/4
Douglas rabbitbrush	1/2	1/4	1/2	1/4
Big sagebrush	0	0	1/2	1/4
Fourwing saltbush	0	0	1	1/2
Totals	17	8 1/2	20 1/2	10 1/4
Shrubs for pits, major disturbance areas, cleat marks, and drilled areas:				
Antelope bitterbrush	1	1/2	2	1
Golden currant	1/2	1/4	1/2	1/4
Birchleaf mountain mahogany	1	1/2	1/2	1/4
Curleaf mountain mahogany	0	0	1/2	1/4
Cliffrose	0	0	1/2	1/4
Green ephedra	1/2	1/4	1/2	1/4
Fourwing saltbush	0	0	1	1/2
Woods rose	1	1/2	1/2	1/4
Saskatoon serviceberry	0	0	1	1/2
Totals	4	2	7	3 1/2

Table 1. Continued

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Alternate Species for Mountain Brush Associations

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Grasses:

Bearded bluebunch wheatgrass	Great Basin wildrye	Sand dropseed*
Beardless bluebunch wheatgrass	Green needlegrass*	Siberian wheatgrass
Big bluegrass *	Hard sheep fescue	Slender wheatgrass
Bluestem wheatgrass	Indian ricegrass*	Standard crested wheatgrass
Bottlebrush squirreltail *	Kentucky bluegrass*	Sulcata sheep fescue
Bulbous barley*	Meadow brome*	Tall wheatgrass *
Bulbous bluegrass*	Mountain rye *	Winter rye *

Forbs:

American vetch*	Louisiana sagebrush*	Small burnet
Bouncing-bet	Low penstemon*	Stream globemallow*
Bramble vetch*	Nevada showy goldeneye	Sweetanise*
Common cowparsnip*	Nuttall lomatium	Tall milkvetch*
Cutleaf balsamroot	Palmer penstemon*	Tarragon sagebrush*
Eaton penstemon*	Parry goldenrod*	Thickleaf penstemon*
German iris*	Sicklepod milkvetch	Toadflax penstemon*
Gooseberryleaf globemallow*	Sidehill penstemon*	Wasatch penstemon*
Lewis (or blue) flax	Silky lupine*	Cushion eriogonum*

Shrubs:

Apache-plume*	Desert bitterbrush*	Nevada ephedra*
Arizona cypress*	Desert peachbrush*	New Mexican forestiera*
Black common chokecherry*	Dwarf rabbitbrush*	Oldman wormwood (stem cut-
Black sagebrush	Fringed sagebrush*	tings)*
Blueberry elder *	Gambel oak*	Parry rabbitbrush*
Boxelder*	Gardner saltbush*	Peking cotoneaster*
Common bladdersenna*	Longflower snowberry*	Purpleosier willow*
Common lilac*	Martin ceanothus*	Redberry elder*
Creeping barberry*	Mountain snowberry*	Rocky Mountain sumac*

Table 1 . Continued

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Alternate Species for Mountain Brush Associations

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Shrubs: (continued)

Rocky Mountain juniper\*

Roundleaf buffaloberry\*

Russian-olive\*

Siberian peashrub\*

Silver buffaloberry\*

Skunk bush sumac\*

Squaw apple\*

Tatarian honeysuckle\*

Utah serviceberry

Western virginsbower\*

Winterfat\*

Wyeth eriogonum

Yellowbrush

Table 2. Recommended seed mixtures that will benefit wildlife through enhancement of moderately disturbed aspen and spruce-fir habitats in the montane ecological association. Restoration of tree species should be accomplished with seedling transplants at a rate of about 500 plants per acre. This figure can be greatly influenced by the site index which must be determined by a silviculturist. Also included are acceptable alternatives if seed for a plant species is not available. If disturbance was severe and total reclamation is needed, increase amount of seed by a factor of 2 to 3 times and contact appropriate expertism for input relative to tree replacement. Information assembled from Plummer, A.P., D.R. Christensen and S.B. Monsen. 1968. Restoring big game range in Utah. Utah Division of Fish and Game (now Utah Division of Wildlife Resources) Publication No. 68-3. 183 pp. Also from personal contacts with A. Perry Plummer.

Species	Shade	Openings	Alternate Species	
-Pounds per acre-				
<b>Grasses:</b>			<b>Grasses:</b>	
Smooth brome (equal portions of northern and southern strains)	4	4	Bearded wheatgrass	Nodding brome
Orchardgrass (Intermountain area)	2	1	Blue wildrye	Slender wheatgrass
Tall oatgrass	2	1	Fairway crested wheatgrass	Subalpine brome
Intermediate wheatgrass	0	2	Meadow brome	Thurber fescue
Mountain brome	1	1		
Meadow foxtail	1	1		
Kentucky bluegrass	1/2	1/2		
<b>Forbs:</b>			<b>Forbs:</b>	
Alfalfa	0	1	Alpine leafybract aster	Pacific aster
Chickpea milkvetch	0	1	American vetch	Porter ligusticum
Mountain lupine	2	1	Bramble vetch	Small-leaf angelica
Silky lupine	1	1	Butterweed groundsel	Smooth aster
Common cowparsnip	1	0	Colorado columbine	Spreading sweetroot
Sweetanise	1	1	Engelmann aster	Sticky geranium
Showy goldeneye	1/2	1/2	Low goldenrod	Thickleaf peavine
			Nettleleaf gianthyssop	Utah peavine
			Northwestern painted-cup	Vegetable-oyster salsify
			Oregon checkermallow	

Table 2 . Continued

Species	Shade	Openings	Alternate Species	
	-Pounds per acre-			
Shrubs:			Shrubs:	
Antelope bitter brush	0	1	Big sagebrush	Creeping barberry
Mountain snowberry	1	1/2	Bigtooth maple	Redberry elder
Rubber rabbitbrush	1	1/2	Blueberry elder	Woods rose
Totals	18	18		

Table 3 . Recommended seed mixtures that will benefit wildlife through enhancement of moderately disturbed wet and semi-wet meadows. Also included are acceptable alternatives if seed for a plant species is not available. If disturbance was severe and total reclamation is needed, increase amount of seed by a factor of 2 to 3 times. Information assembled from Plummer, A.P., D.R. Christensen and S.B. Monsen. 1968. Restoring big game range in Utah. Utah Division of Fish and Game (now Utah Division of Wildlife Resources) Publication No. 68-3. 183 pp. Also from personal contacts with A. Perry Plummer.

Species	Semi-wet soil		Wet soil		Alternate Species	
	Broadcast	Drilled	Broadcast	Drilled	Semi-wet	Wet
-Pounds per acre-						
<b>Grasses:</b>					<b>Grasses and Sedges:</b>	
Reed canarygrass	4	2	8	4	Great Basin wildrye	Meadow barley
Meadow foxtail	3	1 1/2	2	1	Kentucky bluegrass	Ovalhead sedge
Redtop	1	1/2	1	1/2	Meadow barley	Tufted hairgrass
Smooth brome (northern strain)	3	1 1/2	0	0	Ovalhead sedge	
Timothy	1	1/2	1	1/2		
<b>Forbs:</b>					<b>Forbs:</b>	
Alsike clover	1	1/2	3	1 1/2	Alpine leafybract aster	Edible valerian
Strawberry clover	2	1	3	1 1/2	Pacific aster	Pacific aster
Black medick	2	1	0	0		
Oregon checkermallow	2	1	0	0		
<b>Totals</b>	<b>19</b>	<b>9 1/2</b>	<b>18</b>	<b>9</b>		

Table 4. Recommended seed mixtures that will benefit wildlife through enhancement of moderately disturbed inland saltgrass stands typical of riparian sites in the desert scrub habitat of the cold desert ecological association. Also included are acceptable alternatives if seed for a plant species is not available. If disturbance was severe and total reclamation is needed, increase amount of seed by a factor of 2 to 3 times. Information assembled from Plummer, A.P., D.R. Christensen and S.B. Monsen. 1968. Restoring big game range in Utah. Utah Division of Fish and Game (now Utah Division of Wildlife Resources) Publication No. 68-3. 183 pp. Also from personal contacts with A. Perry Plummer.

Species	Wet Lands		Dry Lands		Alternate Species
	Broadcast	Drilled	Broadcast	Drilled	
-Pounds per acre-					
Grasses:					Grasses:
Russian wildrye	4	2	4	2	Alkali sacaton
Tall wheatgrass	2	1	1	1/2	Reed canarygrass
Fairway crested wheatgrass	0	0	2	1	Bluestem wheatgrass
Tall fescue	2	1	0	0	Slender wheatgrass
Great Basin wildrye	2	1	2	1	Meadow foxtail
					Quackgrass
Forbs:					Forbs:
Yellow sweetclover	4	2	4	2	Alfalfa (creeping strain or Ladak)
Strawberry clover	2	1	1	0	Black medick
Pacific aster	1	1/2	1	1/2	Fivehook bassia
					Belvedere summer cypress
Shrubs:					Shrubs:
Gardner saltbush	3	1 1/2	3	1 1/2	American plum
Fourwing saltbush	0	0	4	2	Russian-olive
					Silver buffaloberry
Totals	20	10	21	10 1/2	Purpleosier willow
					Tatarian honeysuckle
					Rubber rabbitbrush
					Winterfat

Table 5. Recommended seed mixtures that will benefit wildlife through enhancement of moderately disturbed shadscale stands typical of the desert scrub habitat of the cold desert ecological association. Also included are acceptable alternatives if seed for a plant species is not available. If disturbance was severe and total reclamation is needed, increase amount of seed by a factor of 2 to 3 times. Information assembled from Plummer, A.P., D.R. Christensen and S.B. Monsen. 1968. Restoring big game range in Utah. Utah Division of Fish and Game (now Utah Division of Wildlife Resources) Publication No. 68-3. 183 pp. Also from personal contacts with A. Perry Plummer.

Species	Application		Alternate Species
	Broadcast	Drilled	
<b>Grasses:</b>			
Russian wildrye	1 1/2	1	Alkali sacaton
Fairway crested wheatgrass	1 1/2	1	Bottlebrush squirreltail
Standard crested wheatgrass	1 1/2	1	Salina wildrye
Indian ricegrass	1 1/2	1	Sand dropseed
			Spike dropseed
			Bluestem wheatgrass
<b>Forbs:</b>			
Gooseberryleaf globemallow	1 1/2	1	Lewis (or blue) flax
Alfalfa	1 1/2	1	Small burnet
<b>Shrubs:</b>			
Winterfat	1 1/2	1	Big sagebrush
Fourwing saltbush	1 1/2	1	Black sagebrush
			Bud sagebrush
			Fringed sagebrush
			Parry rabbitbrush
			Rubber rabbitbrush
			Small rabbitbrush
			Yellowbrush
Totals	12	8	

Table 6. Recommended seed mixtures that will benefit wildlife through enhancement of moderately disturbed blackbush stands typical of the desert scrub habitat of the cold desert ecological association. Also included are acceptable alternatives if seed for a plant species is not available. If disturbance was severe and total reclamation is needed, increase amount of seed by a factor of 2 to 3 times. Information assembled from Plummer, A.P., D.R. Christensen and S.B. Monsen. 1968. Restoring big game range in Utah. Utah Division of Fish and Game (now Utah Division of Wildlife Resources) Publication No. 68-3. 183 pp. Also from personal contacts with A. Perry Plummer.

Species	Application		Alternate Species
	Broadcast	Drilled	
	-Pounds per acre-		
<b>Grasses:</b>			<b>Grasses:</b>
Pubescent wheatgrass	2	1	Alkali sacaton
Intermediate wheatgrass	2	1	Orchardgrass (Mediterranean type)
Fairway crested wheatgrass	1	1/2	Bluestem wheatgrass
Sand dropseed	1	1/2	Standard crested wheatgrass
<b>Forbs:</b>			<b>Forbs:</b>
Alfalfa	2	1	Alfileria
Small burnet	3	1 1/2	German iris
Gooseberryleaf globemallow	1	1/2	Lewis flax
<b>Shrubs:</b>			<b>Shrubs:</b>
Fourwing saltbush	5	2 1/2	Antelope bitterbrush
Winterfat	3	1 1/2	Apache-plume
			Cliffrose
			Desert bitterbrush
<b>Totals</b>	<b>20</b>	<b>10</b>	Desert peachbrush
			Longflower snowberry
			Utah serviceberry

Table 7. Recommended seed mixtures that will benefit wildlife through enhancement of moderately disturbed alpine herblands or parklands of the montane ecological association. Also included are acceptable alternates if seed for a plant species is not available. Alternates marked with an asterisk (\*) are for use in special treatments such as erosion control or roadbank stabilization. If disturbance was severe and total reclamation is needed, increase amount of seed by a factor of 2 to 3 times. Information assembled from Plummer, A.P., D.R. Christensen and S.B. Monsen. 1968. Restoring big game range in Utah. Utah Division of Fish and Game (now Utah Division of Wildlife Resources) Publication No. 68-3. 183 pp. Also from personal contacts with A. Perry Plummer.

Species	<u>Well drained soils</u>		<u>Moist soils</u>		<u>Alternate Species</u>	
	Broadcast	Drilled	Broadcast	Drilled	Well drained Soils	Moist Soils
<b>Grasses:</b>						
Smooth brome (northern strains)	3	1 1/2	4	2	Bearded wheatgrass	Kentucky bluegrass
Smooth brome (southern strains)	3	1 1/2	4	2	Hard sheep fescue	Meadow barley
Intermediate wheatgrass	1	1/2	0	0	Kentucky bluegrass	Meadow brome
Meadow foxtail	1	1/2	2	1	Slender wheatgrass	Ovalhead sedge
Subalpine brome	1	1/2	1	1/2	Sulcata sheep fescue	Timothy
Tall oatgrass	1	1/2	0	0	Timothy	
Orchardgrass (Intermountain area)	1	1/2	0	0		
Mountain brome	1	1/2	0	0		
Reed canarygrass	0	0	2	1		
<b>Forbs:</b>						
Alfalfa (creeping type or Ladak)	1	1/2	1	1/2	Lewis (or blue) flax	Alpine leafybract aster
Mountain lupine	2	1	2	1	Nuttall lomatium	
Common cowparsnip	0	0	1	1/2	Oneflower	Fat solomon-plume
Sweetanise	1	1/2	1	1/2	hellianthella	Low goldenrod
Chickpea milkvetch	2	1	0	0	Oregon fleabane	Pacific aster
					Porter ligusticum	Edible valerian
					Showy goldeneye	
					Silky lupine	
					Smooth aster	

Table 7. Continued

Species	<u>Well drained soils</u>		<u>Moist soils</u>		Alternate Species	
	Broadcast	Drilled	Broadcast	Drilled	Well drained Soils	Moist Soils
Shrubs:					Shrubs:	
Mountain snowberry	1	1/2	0	0	Big sagebrush	Bush cinquefoil
Yellowbrush	1	1/2	0	0	Bush cinquefoil	Geyer willow
					Parry rabbitbrush	Scouler willow
					Redberry elder	Silver sagebrush
					Rubber rabbitbrush	
					Silver sagebrush	
					Squaw currant	
					Sticky currant	
					Woods rose	
					Wyeth erlogonum	
Totals	20	10	18	9		

Table 8. Recommended seed mixtures that will benefit wildlife through enhancement of moderately disturbed black greasewood stands typical of the desert scrub habitat of the cold desert ecological association. Also included are acceptable alternatives if seed for a plant species is not available. If disturbance was severe and total reclamation is needed, increase amount of seed by a factor of 2 to 3 times. Information assembled from Plummer, A.P., D.R. Christensen and S.B. Monsen. 1968. Restoring big game range in Utah. Utah Division of Fish and Game (now Utah Division of Wildlife Resources) Publication No. 68-3. 183 pp. Also from personal contacts with A. Perry Plummer.

Species	Wet to moist soils with high water table.		Dry soils with low water table.		Alternate Species
	Broadcast	Drilled	Broadcast	Drilled	
-Pounds per acre-					
Grasses:			Grasses:		
Tall wheatgrass	3	1 1/2	1	1/2	Alkali sacaton
Fairway crested wheatgrass	1	1/2	3	1 1/2	Creeping wildrye
Pubescent or intermediate wheatgrass	1	1/2	1	1	Bluestem wheatgrass
Reed fescue	2	1	0	0	Great Basin wildrye
Russian wildrye	2	1	4	2	Bottlebrush
Quackgrass <sup>1</sup>	2	1	2	1	Reed canarygrass
					squirreltail
Forbs:					
Strawberry clover	1	1/2	0	0	
Yellow sweetclover	3	1	2	1	
Shrubs:			Shrubs:		
Fourwing saltbush	1	1/2	2	1	Big sagebrush
Gardner saltbush	1	1/2	1	1/2	Russian-olive
Rubber rabbitbrush	1/2	1/4	1	1/2	Russet buffaloberry
Winterfat	0	0	1	1/2	Yellowbrush
Totals	17 1/2	8 1/4	18	9 1/2	

<sup>1</sup> Not recommended if site is near agricultural areas onto which it might spread.

Table 9. Recommended seed mixtures that will benefit wildlife through enhancement of moderately disturbed sagebrush habitats of the submontane ecological association. Also included are acceptable alternatives if seed for a plant species is not available. Alternates marked with an asterisk (\*) are for use in special treatments such as erosion control or roadbank stabilization. If disturbance was severe and total reclamation is needed, increase amount of seed by a factor of 2 to 3 times. Information assembled from Plummer, A.P., D.R. Christensen and S.B. Monsen. 1968. Restoring big game range in Utah. Utah Division of Fish and Game (now Utah Division of Wildlife Resources) Publication No. 68-3. 183 pp. Also from personal contacts with A. Perry Plummer.

Species	Precipitation less than 11 inches		Precipitation 11 inches or more		Alternate Species
	Broadcast	Drilled	Broadcast	Drilled	
<b>Grasses:</b>					
Fairway crested wheatgrass	3	2	4	2	Alkali sacaton*
Standard crested wheatgrass	2	1	0	0	Bottlebrush squirreltail
Bearded bluebunch wheatgrass	1/2	1/2	1	1/2	Bulbous barley*
Bluestem wheatgrass	1/2	1/2	1	1/2	Bulbous bluegrass*
Intermediate wheatgrass	1/2	1/2	1	1	Great Basin wildrye
Pubescent wheatgrass	1/2	1	1	1	Hard sheep fescue*
Russian wildrye	1	1	1	1	Indian ricegrass
<b>Forbs:</b>					
Alfalfa (Rambler, Nomad or Ladak - equal amount of each)	1	1	1	1	Orchardgrass*
Utah sweetvetch	0	0	1/2	1/2	Sand dropseed*
Arrowleaf balsamroot	1/2	1/4	1/2	1/2	Siberian wheatgrass
Small burnet	0	0	1/2	1/2	Smooth brome
<b>Grasses:</b>					
<b>Forbs:</b>					
Bouncing-bet*					
Cushion eriogonum*					
Cutleaf balsamroot*					
Eaton penstemon*					
Goosebearyleaf globemallow*					
Lewis flax					
Louisiana sagebrush*					
Nevada lupine*					
Nevada showy goldeneye*					
Onewflower helianthella*					
Pacific aster*					
Palmer penstemon*					
Showy goldeneye*					
Silky lupine*					
Smooth aster*					
Vegetable-oyster salsify*					
Wasatch penstemon*					
Sicklepod milkvetch					
<b>Shrubs:</b>					
Fourwing saltbush	1	1/2	1	1/2	
Rubber rabbitbrush	1/2	1/2	1/2	1/2	
<b>Totals:</b>	<b>11</b>	<b>8-3/4</b>	<b>13</b>	<b>9-1/2</b>	

Table 9 . Continued

Species	Precipitation less than 11 inches		Precipitation 11 inches or more		Alternate Species
	Broadcast Drilled	Broadcast Drilled	Broadcast Drilled	Broadcast Drilled	
<b>Shrubs:</b>					
Shrubs for separate planting in major disturbance areas - pits, tractor cleat marks, and dozer scalps:					
Antelope bitterbrush	2	1	3	2	
Cliffrose or desert bitterbrush	1	1/2	1-1/2	1	
Fourwing saltbush	2	2	2	2	
Utah serviceberry	1	1	1	1	
Winterfat	1-1/2	1	1	1	
<b>Totals:</b>	<b>7-1/2</b>	<b>5-1/2</b>	<b>8-1/2</b>	<b>7</b>	
<b>Shrubs:</b>					
					Big sagebrush
					Black sagebrush
					Bud sagebrush*
					Desert peachbrush*
					Douglas rabbitbrush
					Gardner saltbush*
					Green ephedra
					Longflower snowberry*
					Martin ceanothus*
					Nevada ephedra
					Rocky Mountain smooth sumac*
					Spineless hopsage*
					Spiny hopsage*
					Squaw-apple*
					Wyeth erigonum*

Table 10. Recommended seed mixtures that will benefit wildlife through enhancement of moderately disturbed pinyon-juniper habitats of the submontane ecological association. Also included are acceptable alternatives if seed for a plant species is not available. Alternatives marked with an asterisk (\*) are for use in special treatments such as erosion control or roadbank stabilization. If disturbance was severe and total reclamation is needed, increase amount of seed by a factor of 2 to 3 times. Information assembled from Plummer, A.P., D.R. Christensen and S.B. Monsen. 1968. Restoring big game range in Utah. Utah Division of Fish and Game (now Utah Division of Wildlife Resources) Publication No. 68-3. 183 pp. Also from personal contacts with A. Perry Plummer.

Species Mixture	Lower elevation (Precipitation less than 12 in.)		Upper elevation (Precipitation 12 in. or more)		Alternate Species
	Broadcast	Drilled	Broadcast	Drilled	
<b>Grasses:</b>					
Fairway crested wheatgrass	4	2	3	1-1/2	Bearded or beardless Mountain rye*
Standard crested wheatgrass	1	1	1	1/2	blue-bunch wheatgrass Orchardgrass
Bluestem wheatgrass	1	1/2	0	0	Bottlebrush squirreltail Sheep fescue
Intermediate wheatgrass	1	1/2	1	1	Bulbous barley Siberian wheat-
Pubescent wheatgrass	1	1/2	1	1	Bulbous bluegrass grass
Russian wildrye	1	1/2	1	1/2	Great Basin wildrye Sulcata sheep
Smooth brome (southern strain)	0	0	1	1	Hard fescue fescue
					Indian ricegrass Tall wheatgrass*
					Meadow brome* Winter rye*
<b>Forbs:</b>					
Alfalfa (Rambler, Nomad, Travois, or Ladak - equal amount of each	1	1	2	1	Lewis' flax Cutleaf balsamroot*
Chickpea milkvetch	0	0	1	1/2	Nevada showy goldeneye Sicklepod milkvetch
Utah sweetvetch	1	1/2	1	1/2	Nuttall lomatium Oneflower
Yellow sweetclover	1	1/2	1	1/2	Pacific aster helianthella *
Arrowleaf balsamroot	1	1/2	1	1/2	Showy goldeneye Palmer penstemon*
Small burnet	1	1	1	1	Eaton penstemon* Parry goldenrod*
					Gooseberryleaf globe- mallow* Silky lupine*
					Louisiana sagebrush* Small aster*
					Nevada lupine* Tarragon sagebrush*
					Bouncing-bet* Thickleaf penstemon
					Bramble vetch* Toadflax penstemon*
					Vegetable-oyster

Table 10 . Continued

Species Mixture	Lower elevation (Precipitation less than 12 in.)		Upper elevation (Precipitation 12 in. or more)		Alternate Species	
	Broadcast	Drilled	Broadcast	Drilled		
<b>Shrubs:</b>						
Big sagebrush	1	1/2	1	1/2	<b>Shrubs:</b> Nevada ephedra Littleleaf mountain- mahogany Squaw-apple Tatarian honeysuckle Apache-plume* Arizona cypress* Black common chokecherry* Blueberry elder* Common lilac* Desert peachbrush* Fringed sagebrush* Gardner saltbush* Longflower snowberry* Martin ceanothus* Mountain snowberry* Peking cotoneaster* Rocky Mountain smooth sumac Roundleaf buffalo- berry* Russian-olive* Siberian peashrub* Skunk bush sumac* Spineless hopsage* Spiny hopsage* Wyeth eriogonum*	
Black sagebrush	1	1/2	1	1/2		
Rubber rabbitbrush	1	1/2	1	1/2		
Winterfat	1	1/2	1	1/2		
Fourwing saltbush	1	1	1	1		
<b>Totals:</b>	<b>19</b>	<b>11-1/2</b>	<b>20</b>	<b>12-1/2</b>		
<b>Shrubs for pits, major disturb- ance areas, and tractor cleat marks by dribblers:</b>						
Antelope bitterbrush	2	1	3	2		
Cliffrose or desert bitterbrush	1	1/2	0	0		
Fourwing saltbush	2	2	1-1/2	1		
Utah serviceberry	1	1/2	0	0		
Green ephedra	1	1/2	1	1		
Birchleaf mountain-mahogany	1	1/2	1-1/2	1		
Curlleaf mountain-mahogany	1	1/2	1-1/2	1		
Woods rose	0	0	1	1		
Golden currant	0	0	1/2	1/4		
<b>Totals:</b>	<b>9</b>	<b>5-1/2</b>	<b>10</b>	<b>7-1/4</b>		

Table 11. Recommended seed mixtures and seedling or larger sized transplants that will benefit wildlife through enhancement of moderately disturbed riparian habitats characterized as upland stream side vegetation in the submontane ecological association. Also included are acceptable alternatives if seed for a plant species is not available.

Species	North exposures and shady areas		Sunny exposures (south,west,east)		Mixture for tall mountain brush type, shaded sites.
	Broadcast Drilled		Broadcast Drilled		
-Pounds per acre-					
Grasses:(seed mixture,transplants are not practicable)			Grasses:(seed mixture,transplants not practicable)		
Fairway crested wheatgrass	2	1	2	1	Smooth brome (Southern strain) 5
Smooth brome (Southern Strains)	4	2	2	1	Fairway crested wheatgrass 1
Intermediate wheatgrass	4	2	2	1	Intermediate wheatgrass 3
Pubescent wheatgrass	0	0	2	1	Orchardgrass (Utah grown) 2
Bluestem wheatgrass	0	0	1	1/2	Tall oatgrass 1
Orchardgrass	1	1/2	1	1/2	Mountain brome 1
Russian wildrye	0	0	1	1/2	
Tall oatgrass	1	1/2	0	0	
Forbs:(seed mixture, transplants are not practicable)			Forbs:(seed mixture, transplants not practicable)		
Alfalfa(Nomad, Rambler, Travois, Ladak-equal parts)	2	1	2	1	Alfalfa (creeping strains or Ladak) 1
Chickpea milkvetch	0	0	1	1/2	*Pacific aster 1/4
Utah Sweetvetch	0	0	1	1/2	Oneflower helianthella 1/2
Yellow sweetclove	0	0	1	1/2	Snowy goldeneye 1/4
Arrowleaf balsamroot	1	1/2	1	1/2	
Pacific aster	1	1/2	1	1/2	
Shrubs:(seed mixture, transplants not usually sucessful)					
Fourwing saltbrush	0	0	1	1/2	
Rubber Rabbitbrush	1/2	1/4	1/2	1/4	
Douglas Rabbitbrush	1/2	1/4	1/2	1/4	

Table II Continued

Species	Any exposure
	Density per acre
Shrubs and Trees: (seedling or larger sized transplants)	
Big sagebrush	A mixture of all trees and shrubs so that one plant will be planted in every 50 square feet of disturbed area. This equals 1,000 plants per acre.
Antelope bitterbrush	
Golden currant	
Birchleaf mountain mahogany	
Curlleaf mountain mahogany	
Cliffrose	
Green ephedra	
Woods rose	
Saskatoon serviceberry	
Narrow leaf cottonwood	
Bigtooth maple	
Rocky mountain maple	
Willow (use shoots or entire clumps from local area)	
Dogwood	
Birch	
Alder	

Table 11. Continued

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Alternate Species for Upland Stream side Vegetation in the transition life zone

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Grasses:

Bearded bluebunch wheatgrass	Great Basin wildrye	Sand dropseed*
Beardless bluebunch wheatgrass	Green needlegrass*	Siberian wheatgrass
Big bluegrass*	Hard sheep fescue	Slender wheatgrass
Bluestem wheatgrass	Indian ricegrass*	Standard crested wheatgrass
Bottlebrush squirreltail*	Kentucky bluegrass*	Sulcata sheep fescue
Bulbous barley*	Meadow brome*	Tall wheatgrass*
Bulbous bluegrass*	Mountain rye*	Winter rye*

Forbs:

American vetch*	Louisiana sagebrush*	Small burnet
Bouncing-bet	Low penstemon*	Stream globemallow*
Bramble vetch*	Nevada showy goldeneye	Sweetanise*
Common cowparsnip*	Nuttall lomatium	Tall milkvetch*
Cutleaf balsamroot	Palmer penstemon*	Tarragon sagebrush*
Eaton penstemon*	Parry goldenrod*	Thickleaf penstemon*
German iris*	Sicklepod milkvetch	Toadflax penstemon*
Gooseberryleaf globemallow*	Sidehill penstemon*	Wasatch penstemon*
Lewis (or blue) flax	Silky lupine*	Cushion erigonum*

Shrubs:

Apache-plume*	Desert bitterbrush*	Nevada ephedra*
Arizona cypress*	Desert peachbrush*	New Mexican forestiera*
Black common chokecherry*	Dwarf rabbitbrush*	Oldman wormwood (stem cut- tings)*
Black sagebrush	Fringed sagebrush*	Parry rabbitbrush*
Blueberry elder*	Gambel oak*	Peking cotoneaster*
Boxelder*	Gardner saltbush*	Purpleosier willow*
Common bladdersenna*	Longflower snowberry*	Redberry elder*
Common lilac*	Martin ceanothus*	Rocky Mountain sumac*
Creeping barberry*	Mountain snowberry*	

Table 11. Continued

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Alternate Species for ~~Upland~~ Stream side Vegetation in the transition life zone

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Shrubs: (continued)

Rocky Mountain juniper\*

Roundleaf buffaloberry\*

Russian-olive\*

Siberian peashrub\*

Silver buffaloberry\*

Skunk bush sumac\*

Squaw apple\*

Tatarian honeysuckle\*

Utah serviceberry

Western virginsbower\*

Winterfat\*

Wyeth erigonum

Yellowbrush

Table 12. Recommended guidelines for reclamation that utilizes only willow transplants to benefit wildlife through enhancement of moderately disturbed riparian habitats characterized as pure willow stands in the cold desert and submontane ecological associations.

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1. If disturbance was only moderate, the density of willow should approximate a single transplanted stem in every 50 square feet of disturbed area; the willow plantings should be spaced 7 feet apart, this equals 1,000 plants per acre. Total reclamation should establish a willow planting in every four square feet of disturbed area; willow plantings should be spaced 2 feet apart, this equals 1,200 plants per acre.
2. Cut willow stems ranging between 1/4 and 1/2 inch in diameter from local wild stock. The stems must be about 18 inches long. Note that the cut should be made at a 30° angle to the stem so that a maximum of bared stem will be exposed to the soil when planted. Multiple cuttings can come from a singular stem as long as the integrity concerning which end goes into the ground is maintained. During the cutting phase of this operation take the necessary precautions to keep the end of the willow to be placed in the ground from drying (place in a bucket of water).
3. When planting, about 2/3 of the stem should be pushed into the soil and 1/3 should remain above ground.

Note: Best success in terms of survival is in sandy soil; success decreases in soils characterized as gravel. Willow stems larger than 1/2 inch in diameter also have shown a low survival rate.

Chapter XI

CLIMATOLOGY AND AIR QUALITY

### 11.3 Effects of Mining on Air Quality

U.S. Fuel Company intends to comply with all applicable federal, state, and local codes, governing existing coal mining operations, related to airborne emissions. The basic concern in the development of an air pollution control plan will be the fugitive dust emissions. Several sources are identified below:

1. Middle Fork and South Fork truck loading facilities
2. Access roads
3. Ventilation fan
4. Coal handling facilities
5. Coal slurry and refuse impoundments

The plan for fugitive dust control will include the following measures to control fugitive dust in the above areas:

1. Periodic watering of unpaved roads on a frequency as needed;
2. Frequent blading and shaping of unpaved roads to stabilize the road surface;
3. Paving of roads;
4. Restricting the speed of travel;
5. Substituting of conveyor systems for haul trucks and covering of conveyor systems;
6. Minimizing the area of disturbed land;
7. Prompt revegetation of regraded lands;
8. Use of alternatives for coal handling methods, restriction of dumping procedures, wetting of disturbed materials during handling, and compaction of disturbed areas;
9. Extinguishing any areas of burning or smoldering coal and periodic inspections for coal burning areas whenever the potential for spontaneous combustion is high; and
10. Restricting fugitive dust and spoil and coal transfer and loading points.

#### 11.4 Climatological and Air Quality Monitoring

Temperature and precipitation data has been collected at Hiawatha, Utah since 1915. This information is forwarded to the NOAA in Asheville, North Carolina. NOAA records this data in monthly and yearly summary publications for the State of Utah. A sample of this data is given in Appendix XI-1 for a monthly summary (September, 1980) and yearly summaries (1979, 1977, and 1976). Climatological monitoring at Hiawatha will continue.

Air quality monitoring in the form of stack emissions at Hiawatha will proceed as per the request of Utah Bureau of Air Quality. Appendix XI-2, following this chapter, has a copy of the Bureau of Air Quality's request and guidelines for air quality monitoring by U.S. Fuel Company at Hiawatha, Utah. U.S. Fuel Company intends to comply with the requests of Utah's Bureau of Air Quality.

Chapter XII

GEOTECHNICAL INFORMATION

UNITED STATES DEPARTMENT OF AGRICULTURE  
FOREST SERVICE

Manti-LaSal National Forest  
350 East Main Street  
Price, Utah 84501

2820

September 7, 1979



United States Fuel Company  
Attention: Bob Lecli  
P.O. Box A  
Hiawatha, Utah 84527

Gentlemen:

Enclosed is a signed copy of the Cooperative Agreement, U.S.  
Fuel and the Forest Service, for subsidence monitoring. Also  
enclosed is a receipt for the check in the amount of \$6,500 received  
from U.S. Fuel by the Forest Service to cover costs of the  
aerial photography, aerial triangulation and point readings for  
the monitoring.

Sincerely,

A handwritten signature in cursive script, appearing to read "Reed C. Christensen".

for  
REED C. CHRISTENSEN  
Forest Supervisor

Enclosures

F. M. FOX & ASSOCIATES, INC.  
Consulting Engineers and Geologists

4765 INDEPENDENCE STREET  
WHEAT RIDGE (DENVER), COLORADO 80037  
(303) 424-5578 — F.M.F.O.

LABORATORY ROCK MECHANICS  
INVESTIGATION  
U.S. FUEL COMPANY'S KING MINE  
HIAWATHA, UTAH

Prepared For  
John T. Boyd Company

Job No. 1-1365-3744  
October 17, 1978

## INTRODUCTION

This report presents the results of our laboratory rock mechanics testing program conducted on coal and roof samples from U.S. Fuel Company's King Mine, Hiawatha, Utah. The coal samples were obtained in the existing mine by our office and were protected from moisture loss until time of testing. Five large coal blocks were obtained. Blocks 1 through 3 were extracted approximately 30 feet west of the belt at station 78 + 54. Sample block 4 was extracted approximately 50 feet east of the belt at station 77 + 54. Sample block 5 was extracted approximately 220 feet east of the belt at station 77 + 54.

In addition to the coal samples, the roof portion of drill hole F 77-5 was returned to our office. Drill holes 77-2B, 77-3B and 77-4 were not available. Core from drill hole F 77-5 was not protected from moisture loss.

## TESTING PROGRAM

The testing program was conducted as outlined by David J. Morris in a letter dated July 7, 1978, File: 1089B. The program included triaxial shears, unconfined compression (with elastic constants), unconfined compression, Brazilian and rupture moduli tests. In addition, two sandstone roof samples were saturated and tested in unconfined compression.

All tests were conducted in accordance with the American Society for Testing and Materials (ASTM) specification where they exist. Tests that have no ASTM specifications were run in accordance with current state-of-art procedures. Strength tests performed and the appropriate ASTM designations or references are as follows:

Unconfined Compressive Strength	ASTM D-2983-71A
Static Elastic Constant Determinations	ASTM D-3148-72
Triaxial Compressive Strength	ASTM D-2664-67
Modulus of Rupture	Jaeger and Cook
Brazilian Splitting Strength	Jaeger and Cook

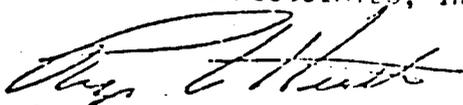
TEST RESULTS

A summary of the laboratory testing results is presented on Tables 1 through 4. Tables 1 and 2 present coal tests data and Tables 3 and 4 present roof test data. Figures 1 through 4 present results of triaxial shear testing in the form of Mohr envelopes.

It should be noted that the triaxial shear test results for the coal are erratic. The variability in coal strength is due to discontinuities in coal fabric. The friction angles and cohesions determined for the coal triaxial tests represent our best estimate based on the test data and our experience with coal of similar moisture contents and densities.

If you have any questions, please do not hesitate to call.

F. H. FOX & ASSOCIATES, INC.

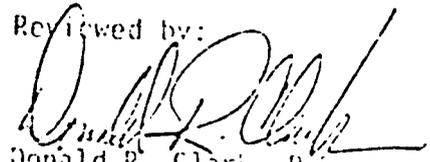


Regan A. Heath  
Geological Engineer

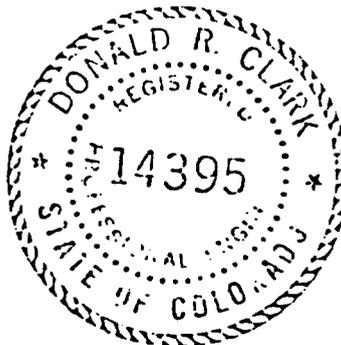
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Copies: 5

Reviewed by:



Donald R. Clark, P.E.  
Division Manager



Chapter XIII

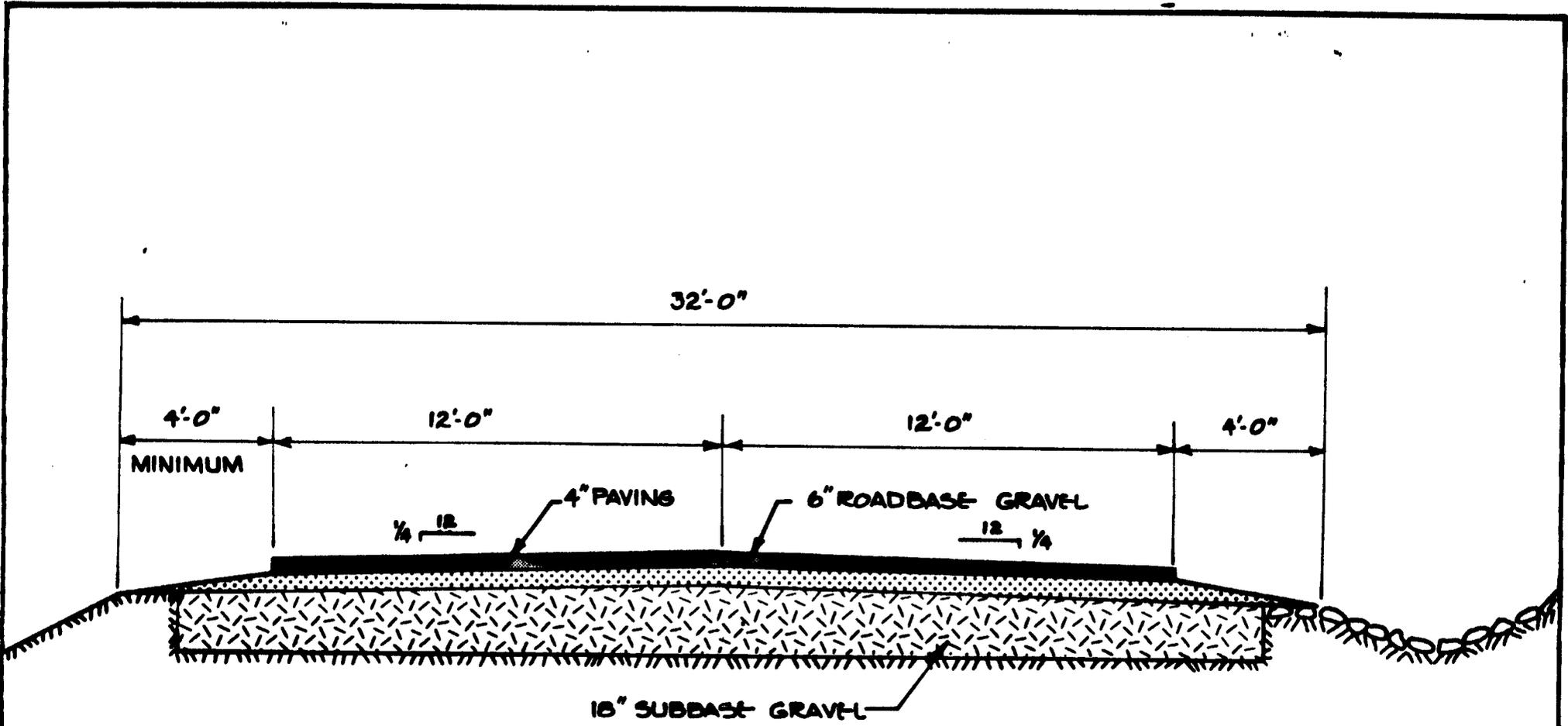
DESIGNS

### 13.1 Scope

Chapter XIII describes the upgrading of the haulroads U. S. Fuel Company has planned to do in South Fork and Cedar Creek Canyons. The Middle Fork roadway, as described in the surface facility description, is 24 feet wide, paved with 4 inches of plant mix bituminous material. The drainage structures are in-place as shown on the Exhibits III-1A and III-1B. No upgrading of the Middle Fork roadway is anticipated at this time.

South Fork roadway will be upgraded to prepare for the King 6 mine opening. The roadway was paved in the past. Since maintenance has been discontinued, the road has deteriorated and repair is needed in the locations indicated on Exhibit III-4B. The reconstruction specifications planned for South Fork haul road are shown on Plates XIII-1 through XIII-3. Additional drainage structures will be included at the locations indicated on Exhibits III-4A and III-4B.

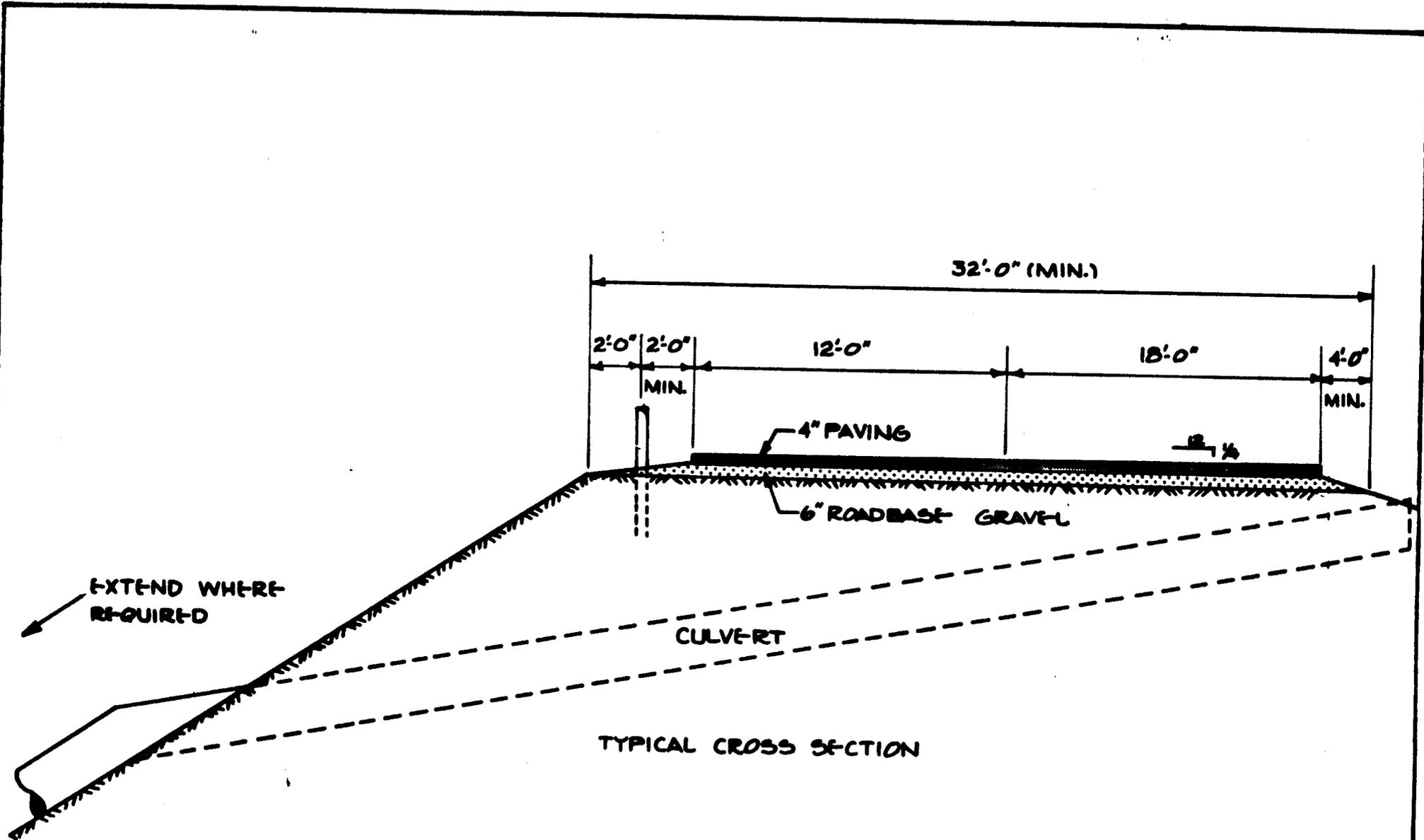
Plan and profile descriptions for Cedar Creek Canyon, Mohrland area are located in the exhibit section of this chapter. The roadway is designed according to Utah's Division of Oil, Gas, and Mining's regulations. Specifications of embankment slopes were not given since analysis of the embankment material will have to be tested at the time of construction. The specification of base and subbase material has not been determined. The roadways in Mohrland are only projected and some may not be constructed.



TYPICAL CROSS SECTION AT AREAS OF DAMAGED SUBBASE

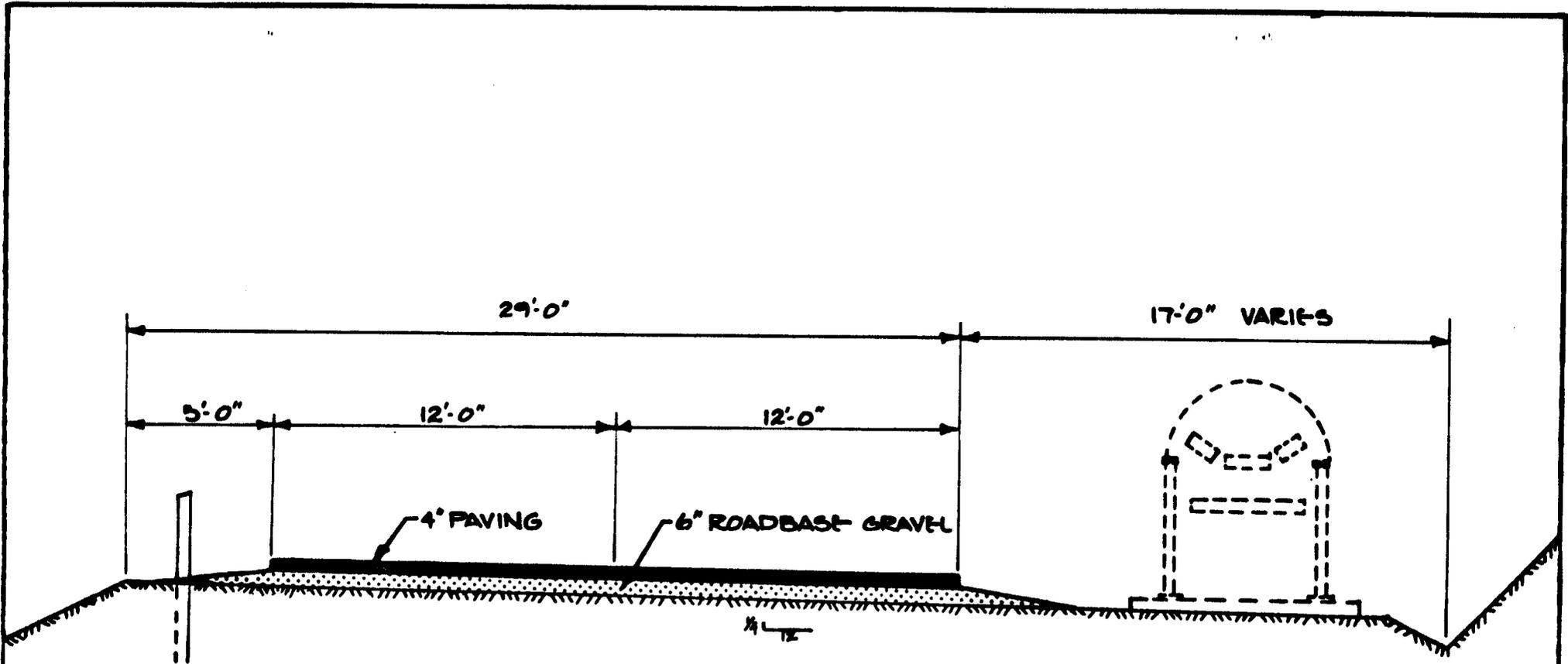
SCALE: N.T.S.	DATE	UNITED STATES FUEL CO. HIAWATHA, UTAH	SOUTH FORK HAUL ROAD RECONSTRUCTION	NO. PLATE XIII-1
DR'N: CARLA F.	1-29-81			
CKD:	AP'VD:			

XIII-2



SCALE: N.T.S.	DATE	UNITED STATES FUEL CO. HIAWATHA, UTAH	SOUTH FORK HAUL ROAD RECONSTRUCTION	NO.
DR'N: CARLA F.	1-29-81			PLATE XIII-2
CKD:	AP'VD:			

XIII-3



TYPICAL CROSS SECTION FROM 92.00 TO 101.00

SCALE: N.T.S.	DATE	UNITED STATES FUEL CO. HIAWATHA, UTAH	SOUTH FORK HAUL ROAD RECONSTRUCTION	NO.
DR'N: CARLA F.	1-29-81			PLATE XIII-3
CKD:	AP'VD:			

XIII-4

Chapter XIV

CONSULTATION AND COORDINATION

Chapter XIV

### 14.1 Scope

This chapter contains two reports required by the U. S. Geological Survey for mines with federal coal leases. The 30 CFR 211.10 report in Appendix XIV-1 was submitted to U.S.G.S. in May of 1977. The information in the report has been changed to a degree because of new data and revised plans.

The General Mining Order No. 1, Reporting Recoverable Coal Reserves from Federal Leaseholds (Federal Register September 17, 1979), to the U.S.G.S. is located in Appendix XIV-2.

Appendix A

HISTORICAL AND CULTURAL FIELD SURVEY

UTAH ARCHAEOLOGICAL RESEARCH CORPORATION • 87 E. CENTER, SUITE 103 • SPANISH FORK, UTAH 84660 • (801) 798-7061  
FIELD OFFICE: P.O. BOX 1147 • MONTICELLO, UTAH 84535

SUBJECT: Archaeological Reconnaissance of A Proposed Coal Facility  
At The King #6 Mine, United Fuel Company, Hiawatha, Utah

AUTHOR: Clayton W. Cook  
Staff Archaeologist

DATE: April 17, 1981

PROJECT: USF-81-1

PERMIT: #80-Ut-137

PREPARED FOR:

Mr. Robert Eccli  
United States Fuel Co.  
P.O. Box A  
Hiawatha, Utah 84527

Mr. Chuck Jahne  
Sharonsteel Mining Division  
19th Floor, University Club Building  
136 East South Temple  
Salt Lake City, Utah 84111

Dr. David B. Madsen  
Utah State Archaeologist  
300 South Rio Grande  
Salt Lake City, Utah 84101

ARCHAEOLOGICAL RECONNAISSANCE OF A PROPOSED COAL FACILITY  
AT THE KING #6 MINE, UNITED FUEL COMPANY, HAIWATHA, UTAH

INTRODUCTION

On April 14, 1981 Utah Archaeological Research Corporation was contacted by United States Fuel Company of Hiawatha, Utah to conduct a cultural survey of a proposed coal facility in the south fork of Miller Creek. The project area is privately owned and the legal description is as follows (see attached map):

Township 15 South, Range 8 East, Section 32 S $\frac{1}{2}$ , NE $\frac{1}{4}$

UTM Zone 12, Easting 496000, Northing 469750

The project consists of building a coal conveyor just to the north of an existing road, a truck load-out and turn around, and a sedimentation pond. The conveyor will be approx. 3000 feet long and will carry the coal from the mine to the load-out. The project will disturb approx. 3 acres of area. The field work was conducted by Clayton Cook, UTARC Staff Archaeologist on April 15, 1981.

ENVIRONMENTAL SETTING

The project is located in a east trending canyon which washes off the east face of the Wasatch Plateau and into the Castle Valley Area; the creek is known as the South Fork of Miller Creek. The project area is 2 $\frac{1}{2}$  miles east of the present town of Hiawatha. The project is located in the Montane Vegetational Zone. The area has about 80% vegetational coverage with 20% sage, 40% conifers (Abies concolor, Pseudotsuga menziesii, etc.) and 40% miscellaneous grasses

and forbes. Sediments in the area are basically colluvial. Faunal observed consisted of deer and various small rodents. The land has been utilized mostly for mining since 1915. Before the 1900's, there was some stock ranging in the area.

#### HISTORICAL SETTING

Coal mining has long been an important part of Carbon County's economical base and has been responsible for the founding of several small communities in the county, including Hiawatha. The first large mines to be opened on the east front of the Wasatch Plateau were opened from 1909 to 1911 in Miller and Cedar Creek Canyons. These operations were soon consolidated into one operation known as King Mine.

The Consolidated Fuel Company organized in 1907 was the first to mine in the area. It built the old Southern Utah Railroad from Price to Hiawatha and opened the mine known as West Hiawatha. A year later the railroad was extended up Cedar Creek Canyon to the Mohrland Mine which was owned and operated by the Castle Valley Coal Company. In 1911, the Blackhawk Coal Company opened the Black Hawk Mine on the mountainside approximately 1000 feet above the present town of Hiawatha. The United States Fuel Company was organized in 1915, and in 1916 commenced operation by taking over the properties owned by the Consolidated Fuel Company, Castle Valley Coal Company, Black Hawk Coal Company, and the Panther Coal Company at Hiener, Utah. The King Coal operations at Hiawatha, owned and operated by United States Fuel, are the longest continuously operated mines in Utah.

In 1948, the King #3 Mine was opened in the South Fork of Miller Creek. The #3 Mine operated until 1975, when it was shut down. Operations at #3, consisted of the portal and vent shaft, showers and office, shop buildings and stock pile.

The proposed operation of King #6, is to reopen the King #3 Mine. This will be accomplished by opening a new portal and bypassing the old #3 portal. Many of the existing buildings will be renovated and reused. The conveyor, as mentioned, will carry the coal to the new load-out facility. These are the only operations which will be constructed on areas that were not previously disturbed by construction of King #3.

#### FILE SEARCH

A file search was conducted at the Utah State SHPO Office and at the State Bureau of Land Management Office prior to entering the field. No cultural resources have been recorded in Section 32 in past work. However, sites have been recorded in Sections 10, 11, 23, 24, 25, and 26 of the same Township and Range. Most of these sections are on ridge tops and not in steep walled canyons such as Section 32. There could possibly have been some aboriginal hunting activity in the area but, no evidence has been encountered as of yet.

#### METHODOLOGY

Field Survey of the proposed construction was conducted by walking parallel transects spaced at 10 foot intervals across the area where the sedimentation pond and turn around will be constructed. A corridor of

approximately 100 feet was walked along the proposed location of the conveyor. This way all areas of potential impact were thoroughly checked for cultural resources.

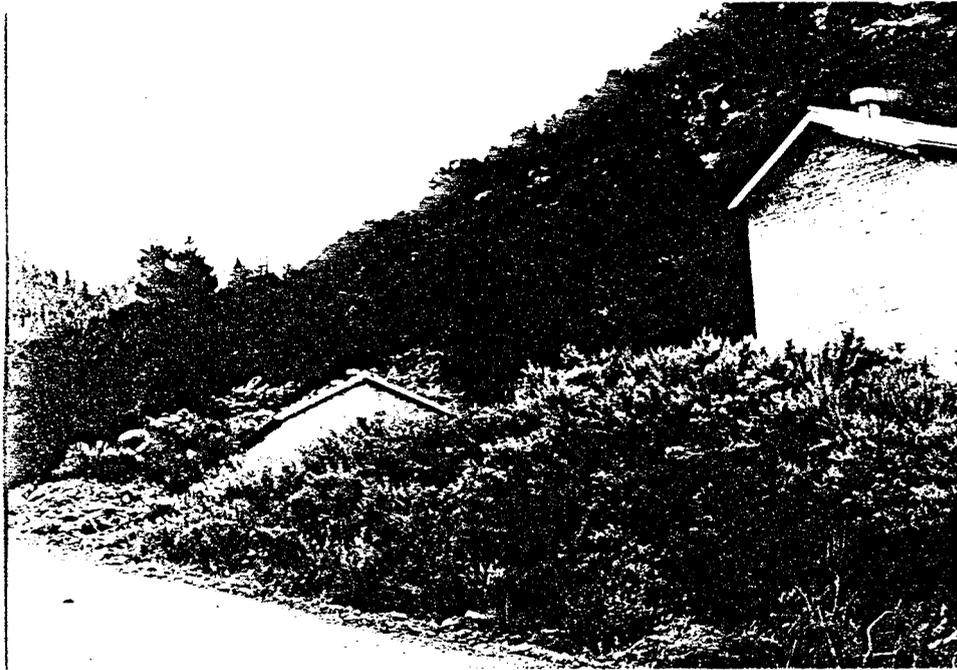
#### RESULTS AND RECOMMENDATIONS

Two existing structures will be torn down during the construction of the turn around and load-out. These structures consist of one powder magazine and one cap magazine. These buildings were built in the late 1940's. They are not considered to be significant because they are not unusual or unique in their construction or function.

No cultural resources of any significance were encountered in the area of the proposed construction. Therefore, clearance is recommended with the stipulation that if buried resources are encountered during construction, work be stopped and a qualified archaeologist be contacted to determine their significance.

#### "Reference Cited"

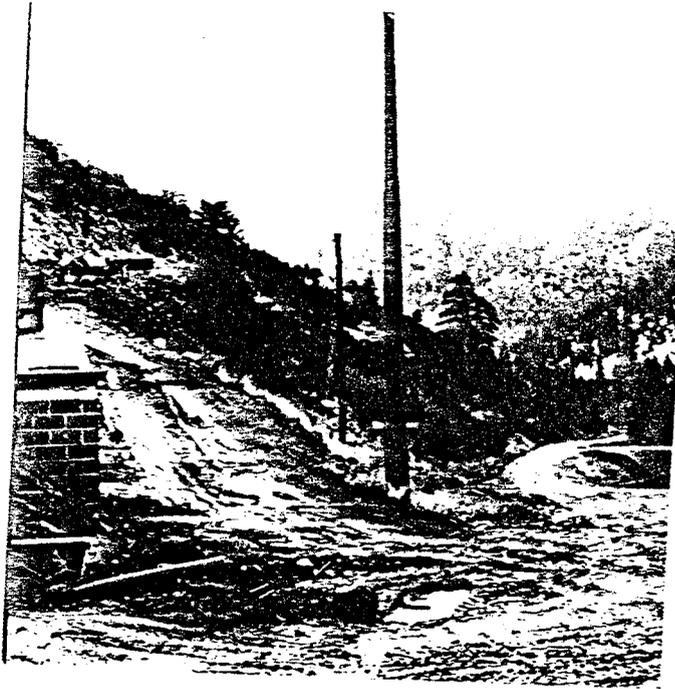
Thirty Years of Coal Mining - Pamphlet Published by The United States Fuel Company, Salt Lake City, Utah 1946.



View of proposed turn around and load-out looking NW.

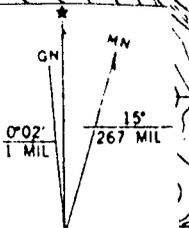
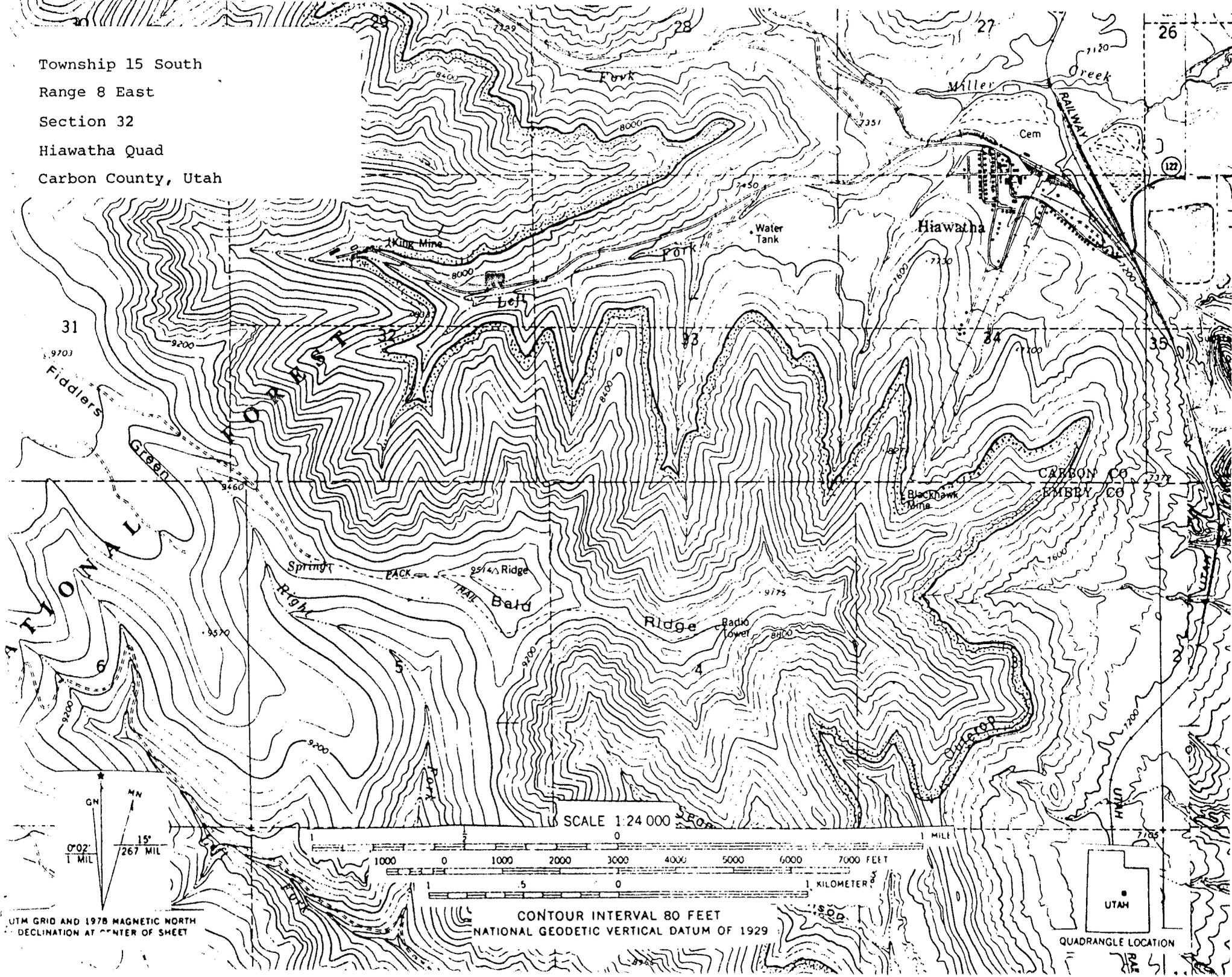


View looking SE of proposed sedimentation pond location.

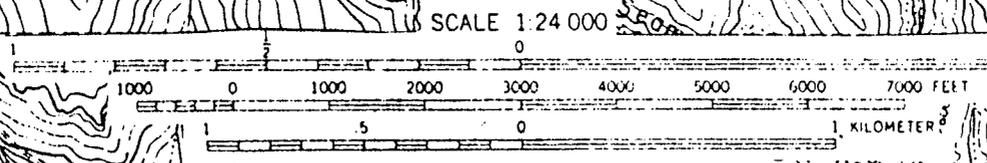


View looking East - Conveyor will run along,  
and to the left of, the existing road.

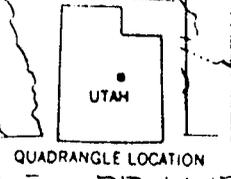
Township 15 South  
 Range 8 East  
 Section 32  
 Hiawatha Quad  
 Carbon County, Utah



UTM GRID AND 1978 MAGNETIC NORTH  
 DECLINATION AT CENTER OF SHEET



CONTOUR INTERVAL 80 FEET  
 NATIONAL GEODETIC VERTICAL DATUM OF 1929



Appendix B

Appendix B

APPROVAL OF PROPOSED SEDIMENTATION POND

Scott M. Matheson  
Governor



James O. Mason, M.D., Dr.P.H.  
Executive Director  
801-533-6111

DIVISIONS

Community Health Services  
Environmental Health  
Family Health Services  
Health Care Financing  
and Standards

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Administrative Services  
Health Planning and  
Policy Development  
Medical Examiner  
State Health Laboratory

STATE OF UTAH  
DEPARTMENT OF HEALTH

DIVISION OF ENVIRONMENTAL HEALTH  
150 West North Temple, P.O. Box 2500, Salt Lake City, Utah 84110

Alvin E. Rickers, Director  
Room 426 801-533-6121

533-6146  
March 19, 1981

RECEIVED  
MAR 25 1981  
S. E. ENGINEERING DEPT.

Charles J. Jahne  
Sharon Steel Corporation  
19th Floor UCB  
136 East South Temple  
Salt Lake City, UT 84116

RE: King VI Sediment Pond

Dear Mr. Jahne:

We have reviewed the plans and information for the United States Fuel Company King VI coal mine loadout sediment pond. Plans G-1 through G-18 and information submitted December 5, 1980 and March 4, 1981 were reviewed.

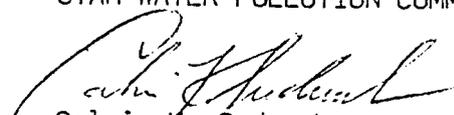
As a result of our review, the plans for the United States Fuel Company King VI loadout sediment pond are approved provided the discharge end of the outlet pipe has suitable riprap to prevent erosion. This letter constitutes a construction permit for that pond.

The excavated pond is to provide approximately .6 acre feet settling for the disturbed loadout area surface runoff from a ten year twenty-four hour 2.2 inch rainfall. This pond is to have a dewatering outlet seven feet from the bottom, slopes approximately 3 horizontal to 1 vertical, and a top dike width of nine feet.

Should the effluent not meet state or federal standards, additional treatment must be provided. One set of plans indicating a construction permit has been issued will be returned to you.

Sincerely,

UTAH WATER POLLUTION COMMITTEE

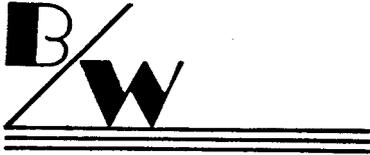
  
Calvin K. Sudweeks  
Executive Secretary

SRM

cc: Oil, Gas & Mining  
Southeast 208  
Southeastern District Health Department

Appendix C

APPROVAL OF FIELD METHODS FOR VEGETATION SURVEY



**BIO/WEST, Inc.**

P.O. Box 3226  
Logan, Utah 84321  
(801) 752-4202

April 16, 1981

Ms. Marcie Greenberg  
John T. Boyd Co.  
1860 Lincoln  
Suite 1028  
Denver, CO 80295

Dear Ms. Greenberg:

This letter is in reference to the adequacy of the vegetation survey conducted for U.S. Fuel Company at the Hiawatha Mine near Hiawatha, Utah. The methods used to collect productivity, cover and density data were verbally approved by Mary Ann Wright (Revegetation Specialist for the Division of Oil, Gas and Mining, Salt Lake City, Utah) prior to the field survey in August 1980. The reference areas established at the Hiawatha Mine were approved by Ms. Wright in October 1980. Enclosed are the guidelines provided by the Division of Oil, Gas and Mining.

If there are any questions, don't hesitate to contact me.

Sincerely,

*Christopher A. Call*

Christopher A. Call  
Reclamation Biologist

CAC/nh

Enc.



STATE OF UTAH  
DEPARTMENT OF NATURAL RESOURCES  
DIVISION OF OIL, GAS AND MINING  
1588 West North Temple  
Salt Lake City, Utah 84116  
(801) 533-5771

VEGETATION INFORMATION GUIDELINES FOR  
PERMANENT PROGRAM SUBMISSIONS FOR COAL MINES  
\*\*\*\*\*

Pursuant to SMC 779.19 and UMC 783.19 Requirements

These guidelines are only intended to provide a suggested format for the submittal of vegetation information to be included in the mining and reclamation plans for coal. The purpose of submitting such information is as follows:

1. To approximate and describe the condition of the land prior to mining.
2. To aid in the prediction of revegetation potential for the site.
3. To identify and describe important wildlife habitat in the mine plan area and the development of corresponding mitigation plans.
4. The primary goal of vegetation studies is to establish valid reference areas which must be utilized to measure the success of revegetation for the purpose of bond release. Reference areas must be set up for each vegetation type which has been or will be disturbed at the mine. Measurements must be taken in the reference areas to describe species composition and cover. Productivity measurements in the reference areas are not useful until revegetation of the disturbed areas occurs.

These vegetation information guidelines have been drawn up at the request of coal operators in Utah. They may best be utilized as a checklist for the submittal of required information.

Should problems or questions arise concerning these guidelines, contact the Division of Oil, Gas and Mining.

SUGGESTED STEPS IN PREPARING VEGETATION INFORMATION

1. If available, use aerial photography to delineate and map the existing vegetation types found within the permit area and adjacent areas.  
(Scale of 1:24,000)(UMC 783.19)

VEGETATION GUIDELINES

PAGE TWO

2. On the same map as above show the locations and boundaries of the disturbed areas as well as any areas proposed to be disturbed. (UMC 784.23(b)(2))
3. Determine and list the acreages of each vegetation type and their percentages of the total permit area acreage.
4. Determine and list the acreages of each vegetation type found in the disturbed areas (or areas to be disturbed) and their percentages of the total acreage of each type in the permit area. Also note the total acreage of surface disturbance within the permit area.
5. For existing mines - For each vegetation type which was determined to have existed within the disturbed areas prior to mining, described each by visually dominant species and list the major species assumed to have been present within each vegetation type by common and botanical name. List the species by plant groupings, ie; trees, shrubs, forbs, grasses. *Mark* ~~Make~~ disturbed areas on the map. (See step 2).
6. For each vegetation type which is found within any areas of new disturbance-
  - a. Sample randomly for cover and productivity. For stands of trees, density and diameter at breast height (dbh) measurements should be made. Productivity measurements need not include the following: trees, officially designated weeds or noxious plants and dense mountain shrub thickets. Number sample sites and show numbered sample locations on the map.
  - b. Demonstrate sample adequacy.
  - c. In a narrative, describe each vegetation type by visually dominant species, and describe the condition and relative stage of maturity of the vegetation type. Note any past perturbations in the area such as fire, chaining, reseeding, previous mining, cultivation, etc. Discuss any present use by wildlife or livestock.
  - d. List the major species present within each vegetation type by common and botanical name. List the species by plant groupings, ie; trees, shrubs, forbs, grasses.
  - e. Identify, describe and show the map location of any endangered or threatened plants. Make a negative declaration if these are not found in the area.
  - f. Map these areas on contour maps of 1:6000 (1"-500') scale or larger. Mark these maps so that referral may be made back to the permit area (1:24,000) map. (See step 2)

VEGETATION GUIDELINES  
PAGE THREE

7. Identify reference areas , preferably within the permit area, which will not be disturbed but which are of the same vegetation type as those which occurred on the areas to be disturbed, or occur in areas of proposed disturbance.
  - a. mark off the proposed areas in the field.
  - b. sample randomly for cover and species composition. Number sample sites and show numbered sample locations on the map.
  - c. demonstrate sample adequacy.
  - d. list the species present within each vegetation type by common and botanical name. List the species by plant groupings, ie; trees, shrubs, forbs, grasses.
8. Show by table, or other simplified format, the similarity between reference areas and areas of disturbance (or proposed disturbance). Similarity must be shown between species composition, total aerial cover, productivity, geology, soils, slope and aspect. One reference area may represent more than one disturbance site if the reference areas meet the above requirements for each site. Labeled sites would allow for simplified referral between the maps and test. (UMC 700.5)
9. Submit to the Division the copies of the data sheets from the sampling of areas to be disturbed and potential reference sites.

Approval of reference areas by the Division may be obtained prior to approval of the permit application. If prior approval is desired, submittals should be made to allow time for field verifications by the Division.
10. Permanently mark off the approved reference areas in the field and show these locations on the 1:24,000 vegetation map. (See step 1)
11. All technical data submitted in the application shall be accompanied by:
  - a. the names of persons or organizations which collected and analyzed such data,
  - b. the dates of the collection and analyses,
  - c. descriptions of methodology used to collect and analyze the data, and
  - d. the name, address and position of officials of each private or academic agency consulted by the applicant in preparation of the information. (UMC 771.23)

SUMMARY OF MAP GUIDELINES

- A. A vegetation map of the permit area is not required if specifically exempted by the Division.
- B. A vegetation map of the entire permit area on a scale of 1:24,000 is required if not otherwise exempted by the Division. Include sufficient adjacent areas to the permit area to allow for evaluation of wildlife habitat. Adjacent areas shall be decided upon with the Division of Oil, Gas and Mining. The use of aerial photography taken prior to site disturbance would be most helpful in mapping the site.
  1. The 1:24,000 contour map should:
    - a. show the legal description and surface ownership of the permit area,
    - b. show the boundaries of the permit area,
    - c. show the location and boundaries of any surface area(s) already disturbed by mining and any which are proposed to be disturbed. Labeled sites would allow for simplified referral between the maps and text,
    - d. show the location and boundaries of proposed reference area(s). If reference areas will be located outside of the permit area shown on the map, then submit a separate map for the reference area(s). Label the sites for referral to text.
    - e. show the boundaries of existing vegetation types (a.k.a. community types, vegetative response units), including riparian habitats for the entire permit and adjacent areas,
    - f. show the numbered locations of sampling sites,
  2. The 1:6000 (1"=500'), or larger, contour map for the areas to be disturbed should:
    - a. give reference points back to the 1:24,000 map, including the legal description,
    - b. show the existing vegetation types. Label the sites for referral to text.
    - c. show the locations of any endangered plants,
    - d. show the numbered locations of sampling sites.

Appendix D

CONVEYOR AND LOADOUT FACILITY DESIGN

# SHARONSTEEL • Mining Division

AN **NVE** COMPANY

SHARON STEEL CORPORATION

19th Floor, University Club Building  
136 East South Temple  
Salt Lake City, Utah 84111  
Telephone (801) 355-5301

April 15, 1981

The John Boyd Company  
Denver  
Colorado

Re: Request for Narrative on  
Planned King VI Mine 42"  
Wide Overland Conveyor  
System

Attention: Ms. Marcy Greenberg

Gentlemen:

This letter is to provide some detail information on the subject conveyor which United States Fuel Company intends for the South Fork Canyon of Miller Creek near Hiawatha, Utah. In company with this letter are six copies each of Sharon Steel Corporation drawings numbered Est. 43-79-G-20, 21 and 23.

An essential ingredient of the overall King VI Mine operation is the 42" wide overland belt conveyor system. This conveyor system extends from near the mine portal to a coal storage pile located about 0.4 miles down South Fork Canyon. The system is made up of two conveyors: one, a 42" wide cable supported conveyor and the second, a 42" wide truss-supported conveyor. The conveyors are expected to run 16 hours per operating day with a load varying from 0 to 800 TPH. The amount of material being carried on the belts is dependent on the mining activity inside of the mountain. Two mining sections are planned for removing the coal from the mountain. Each has a capacity for delivering the equivalent of 400 TPH when coal is dumped onto the mine belt inside of the mountain. The mine belt delivers the mined coal to the 42" wide overland belt conveyor at the tail end drive location. A 42" wide belt traveling at 450 FPM with 35° troughing idlers can carry about 980 TPH at a load factor of 85%. Since belt space must be provided for large lumps of coal, the 15% nominal excess capacity is considered sufficient to handle the eight inch lumps in their normal percentage of coal mined. Knowing the exact sequence of coal dumping from the mining face to the mine belt is impossible at this time due to a wide range of variables including availability of equipment and manpower, mining conditions of the face, etc. The selection of belt width, speed and capacity has been based on both sections delivering coal at the same time to the mine belt. The size consist of the coal is expected to follow patterns already known to United States Fuel Company from mining similar coal in other seams.

Cable suspended 35° troughing idlers have been chosen for carrying the overland belt for economic reasons. The idlers will be supported on railroad ties located on 15'-0" centers and will carry the belt about 5'-0" above the ground. Three deer crossings will be located on 450 foot centers as shown on attached drawings Est. 43-79, G-20 and

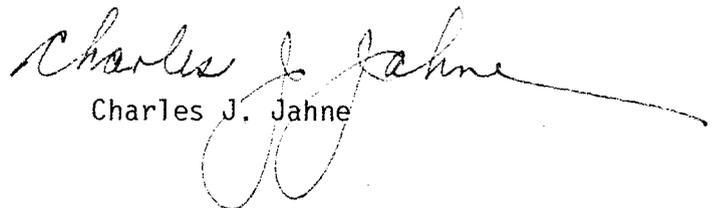
The John Boyd Company  
Attn: Ms. Marcy Greenberg  
April 15, 1981  
Page -2-

G-21. Openings under the conveyor for the deer will be 10'-0" high x 20'-0" wide clear in both directions. These dimensions meet the requirements of regulation UMC 784.21 for underpasses of "3 meters (9.84') clear across a span of 5 meters" (16.40"). Concrete anchors for maintaining cable tension will be located at approximately 100'-0" centers. The truss-supported belt conveyor will have conventional 3-roll, 35° troughing idlers for carrying the belt. Since the belt will be sloping upward over its full length, deer will be able to pass beneath the conveyor for most of its distance.

Both conveyors will be covered for their full length with 22-gage corrugated, galvanized steel rolled to a radius of about 24 inches. The windward side of the cover will be installed below the line of the return belt and the leeward side will be staggered to allow both access to the idlers for service and attachment to the conveyor supports. The system is expected to handle 400,000 tons per year of size 8"x0" ROM coal with a moisture content of from six to eight percent.

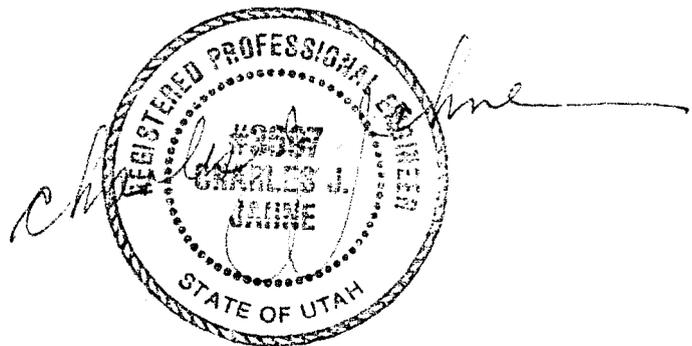
I hope that this letter meets the need for a narrative and that the drawings will help to clear up any problems. If there are any questions, please call me.

Yours very truly,

  
Charles J. Jahne

CJJ:jrs

Enclosures



Scott M. Matheson  
Governor



STATE OF UTAH  
DEPARTMENT OF HEALTH  
DIVISION OF ENVIRONMENTAL HEALTH  
150 West North Temple, P.O. Box 2500, Salt Lake City, Utah 84110

Alvin E. Rickers, Director  
Room 426 801-533-6121

533-6108  
March 13, 1981

James O. Mason, M.D., Dr.P.H.  
Executive Director  
801-533-6111

DIVISIONS

Community Health Services  
Environmental Health  
Family Health Services  
Health Care Financing  
and Standards

OFFICES

Administrative Services  
Health Planning and  
Policy Development  
Medical Examiner  
State Health Laboratory

Charles J. Jahne  
Sharonsteel Corporation  
19th Floor University Club Bldg.  
136 East South Temple  
Salt Lake City, UT 84112

Re: King VI Mine Overland Conveyor  
Project (Hydrologic Information  
King VI Mine area - United States  
Fuel Company - Dated Dec.5,  
1980 - Received Dept. of Health  
Jan 13, 1981).

Dear Mr. Jahne:

As discussed with you on the telephone, March 11, 1981, we have just become aware of the conveyor project. In our review of the December 5, 1980 document we find that the details furnished on the conveyor will not allow us to do an air quality evaluation. If the information in the Hydrologic document with associated prints (G-1, 2, 3, 4, 6, 11-15, & 18) is all the Division of Oil, Gas and Mining can furnish, more details are required from you.

The Utah Air Conservation Regulations (See Section 3.1, copy enclosed) require that a notice of intent be sent to the Bureau of Air Quality on projects which would be air pollution sources. The conveyor system would not be exempt.

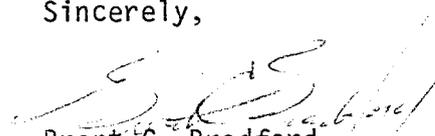
Please provide the notice of intent (letter) with the following to enable us to do an engineering evaluation and proceed with the air quality approval process.

1. Total length of the conveyor with number of transfer points.
2. Size of stockpile (tons and dimensions - max per year).
3. Coal transfer (max per hour, per year).
4. Dust control measures proposed at conveyor transfer points, at loadout, and on stockpile.

5. Increase in vehicle miles traveled along existing haul and access roadways as a result of the new portal.
6. Dust control measures for the roadways including the loadout turn-around.

Please be reminded that the State requires best available control technology to abate emissions. Also, the emission sources should not be operated until an approval order is issued by the Executive Secretary of the Utah Air Conservation Committee.

Sincerely,



Brent C. Bradford  
Executive Secretary  
Utah Air Conservation Committee

MRK:job

cc: Division of Oil, Gas & Mining (D.W. Hedberg)

Enclosure

# SHARONSTEEL • Mining Division

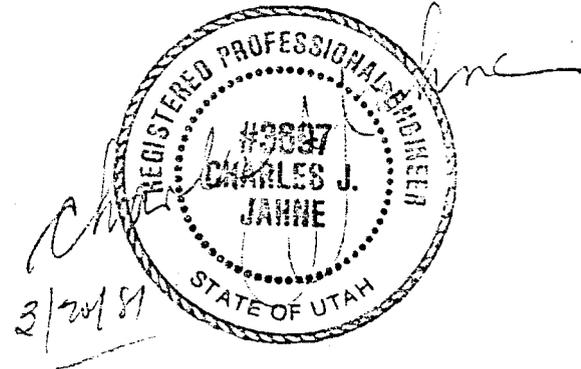
AN **INVE** COMPANY

SHARON STEEL CORPORATION

19th Floor, University Club Building  
136 East South Temple  
Salt Lake City, Utah 84111  
Telephone (801) 355-5301

March 20, 1981

State of Utah  
Department of Health  
Division of Environmental Health  
150 West North Temple  
Salt Lake City, Utah 84110



Re: Your Letter Dated March 13, 1981  
U.S. Fuel Company King VI Mine  
Overland Conveyor Project

Attention: Mr. Brent C. Bradford, Executive Secretary  
Utah Air Conservation Committee

Gentlemen:

This letter is in response to your subject letter. At the same time I should like to include a Notice of Intent on the part of United States Fuel Company to construct an overland conveyor belt from the general vicinity of the new King VI Mine portal to a coal storage pile and truck loadout area. Total length of the 42" overland belt conveying system is about 2130 feet. There are two (2) transfer points in the system - one at the tail end of the 42" overland conveyor and the other at the feed to the 42" wide truss-supported incline conveyor. Both conveyors will be covered throughout their length with 22 gage corrugated galvanized steel, rolled to a radius of about 24 inches. The windward side of the cover will be installed below the line of the return belt and the leeward side will be staggered to allow both access to the idlers for service and attachment to the conveyor supports.

The system is expected to handle 960,000 tons per year of size 8" x 0 ROM coal with a moisture content of from six to eight percent. The King VI Mine portal is located at the head end of the canyon paralleling the South Fork of Miller Creek near Hiawatha, Utah. The King VI Mine has been worked before, but the mine was abandoned about 1973. Present plans call for opening a new portal to the mine and mining at two different levels inside of the mountain. Mining in the lower of the two levels will be done to join the mined out areas already in the mountain.

The present road up South Fork Canyon has fallen into disrepair and must be repaved for service and personnel access as well as for hauling coal from the proposed coal storage pile to the Hiawatha tipple. The nominal grade of the road from the coal storage pile to the end of the canyon is about eight percent. Between the mine portal and the storage pile, the grade is closer to 12 percent. A program of frequently spraying all roads inside of the Hiawatha area has been performed by United States Fuel Company for years, the newly repaired South Fork Canyon road will

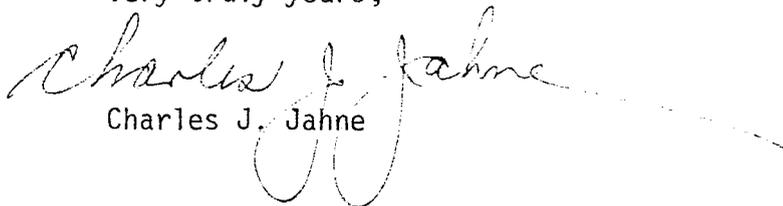
State of Utah  
Department of Health  
Attn: Mr. Brent C. Bradford  
March 20, 1981  
Page -2-

be added to the practice. The loadout is about one-and-three quarter miles from the entrance to the canyon. In order to haul 960,000 tons in a one-year period, some 13,700 trips will have to be made. This combines to a total of some 50,000 miles of back-and-forth travel by 70-ton haul trucks on the road. Since present travel on the road is negligible because there is no mining activity in the canyon, this figure can be considered as an increase in vehicle miles.

Because of the moisture content and the surface moisture of the coal as it arrives at the portal, and since it will be transported immediately to the coal storage pile, thence via haul trucks to the Hiawatha tippie dust emission at transfer points is expected to be non-existent. For this reason, no dust collecting or dust suppression systems are being considered for any of the transfer points or at the stockpile.

In conjunction with this letter, Drawings Est 43-79-G 20, G-21 and G-23 are being transmitted to aid in your engineering evaluation for air quality approval. Should you have any questions, please contact me.

Very truly yours,

  
Charles J. Jahne

CJJ:jrs

Enclosure

# SHARONSTEEL • Mining Division

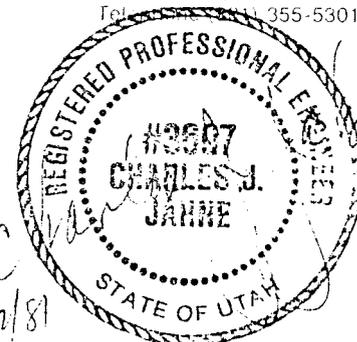
AN **NVF** COMPANY

SHARON STEEL CORPORATION

19th Floor, University Club Building  
136 East South Temple  
Salt Lake City, Utah 84111  
Tel. 355-5301

April 2, 1981

Utah State Department of Health  
Division of Environmental Health Services  
Department of Air Quality  
150 West North Temple  
Salt Lake City, Utah 84103



Re: United States Fuel Company  
Air Quality Report of  
March 20, 1981

Attention: Mr. Monte Keller

Gentlemen:

This is to confirm the telephone conversation just completed regarding the amount of coal to be mined at the King VI Mine, transported by overland conveyor to a storage pile and then delivered to have trucks in the South Fork Canyon of Miller Creek near Hiawatha, Utah. The drawings included with the report called out a total annual capacity of 960,000 tons per year. The correct maximum amount of tons expected to be mined from the King VI Mine is 400,000 tons per year. None of this coal will be processed in the Hiawatha tipple, since it meets the specifications both in BTU content and ash level for a single utility customer with whom a contract has been signed. In summary, then, this 400,000 tons per year will be mined, conveyed, hauled to a loading station near the Hiawatha tipple and loaded onto railroad cars as an entity separate from any coal now being mined, handled, processed, stockpiled and shipped by train.

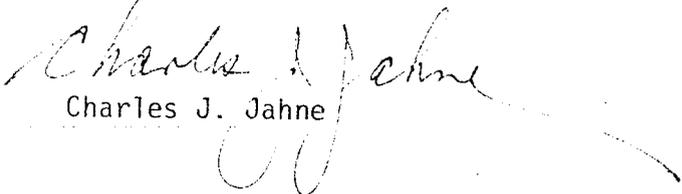
The present nominal capacity for mining, conveying, processing and loading coal at the Hiawatha tipple is 1,100,000 tons per year. During the past three or four years, this capacity has been held back to 800,000 tons per year due to a "soft" coal market. The present load-out facilities will be used to ship the additional 400,000 tons per year from King VI Mine. They will be used more frequently than at present. There are three loading points in the vicinity of the Hiawatha tipple from which coal can be loaded into trains. These are shown in color on the attached drawing. They are referred to as: I, "THE PIT" a location which will allow a conical pile of about 12,000 tons from which trains can be loaded on track No. 4 as they pass under the tipple; II, "THE INTERIM LOAD-OUT" thru which coal may be pushed from an oblong pile to rail cars on track No. 6 as they pass under the loading belt; and III, "THE RAIL YARD" where an oblong pile can be built parallel to the eastern-most track and coal can be loaded from the pile into cars by a front-end loader. Estimated use of each area on a percentage basis would be: "THE PIT" 30%, "THE INTERIM LOAD-OUT" 50% and "THE RAIL YARD" 20% on an annual basis. Maximum pile size at any location would not exceed 10,000 tons. All of the stockpile and loading areas have been in use for several years.

Utah State Department of Health  
Division of Environmental Health Services  
Attention: Mr. Monte Keller  
April 2, 1981  
Page -2-

I also wish to state in this letter that the truck-turn-around planned for the South Fork Canyon of Miller creek will be both paved and wetted down in keeping with the program mentioned in the original report. Finally, a flexible discharge duct will be located at the discharge of the truck load-out conveyor in South Fork Canyon.

I appreciate your interest and speed in this matter of the King VI Mine. Should you have any other questions, please call me.

Very truly yours,

  
Charles J. Jahne

CJJ:jrs

Table 10 . Continued

Species Mixture	Lower elevation (Precipitation less than 12 in.)		Upper elevation (Precipitation 12 in. or more)		Alternate Species	
	Broadcast	Drilled	Broadcast	Drilled		
<b>Shrubs:</b>						
Big sagebrush	1	1/2	1	1/2	<b>Shrubs:</b> Nevada ephedra Littleleaf mountain- mahogany Squaw-apple Tatarian honeysuckle Apache-plume* Arizona cypress* Black common chokecherry* Blueberry elder* Common lilac* Desert peachbrush* Fringed sagebrush* Gardner saltbush* Longflower snowberry* Martin ceanothus* Mountain snowberry* Peking cotoneaster* Rocky Mountain smooth sumac Roundleaf buffalo- berry* Russian-olive* Siberian peashrub* Skunk bush sumac* Spineless hopsage* Spiny hopsage* Wyeth erioogonum*	
Black sagebrush	1	1/2	1	1/2		
Rubber rabbitbrush	1	1/2	1	1/2		
Winterfat	1	1/2	1	1/2		
Fourwing saltbush	1	1	1	1		
<b>Totals:</b>	<b>19</b>	<b>11-1/2</b>	<b>20</b>	<b>12-1/2</b>		
<b>Shrubs for pits, major disturb- ance areas, and tractor cleat marks by dribblers:</b>						
Antelope bitterbrush	2	1	3	2		
Cliffrose or desert bitterbrush	1	1/2	0	0		
Fourwing saltbush	2	2	1-1/2	1		
Utah serviceberry	1	1/2	0	0		
Green ephedra	1	1/2	1	1		
Birchleaf mountain-mahogany	1	1/2	1-1/2	1		
Curlleaf mountain-mahogany	1	1/2	1-1/2	1		
Woods rose	0	0	1	1		
Golden currant	0	0	1/2	1/4		
<b>Totals:</b>	<b>9</b>	<b>5-1/2</b>	<b>10</b>	<b>7-1/4</b>		