PERMIT APPLICATION APPROVAL PACKAGE

Hiawatha Mines Complex (King 4, 5, and 6) U.S. Fuel Company Carbon & Emery Counties, Utah

U.S. Department of the Interior
Office of Surface Mining Reclamation and Enforcement

Fed. Coal Leases SL-025431
SL-069985, U-058261, U-026583

MODIFICATION
Federal Coal Lease U-51923

C0070011

March 1987

File in:
❑ Confidential
❑ Shelf
X Expandable
Refer to Record No 0033 Date 03271987
In C/0070011 Incoming
For additional information

CONTENTS

U.S. Fuel Company
Hiawatha Complex MINE

1. Memorandum from the Assistant Director, Western Field Operations, through the Deputy Director, Operations and Technical Services, to the Director, Office of Surface Mining Reclamation and Enforcement (OSMRE).

   Memorandum from the Director, OSMRE, to the Assistant Secretary-Land and Minerals Management.

2. Maps.

3. Chronology of Events.

4. Findings.

5. National Environmental Policy Act Compliance Documents.

6. Letters of Concurrence and Consultation:

   a. Bureau of Land Management, Branch of Solid Minerals.

   b. U.S. Fish and Wildlife Service.

   c. State Historic Preservation Office.

   d. U.S. Forest Service.

7. Permit.

8. Technical Analysis.

9. Notification.

RECEIVED
MAR 27 1987
DIVISION OF
OIL GAS & MINING

United States Department of the Interior

OFFICE OF SURFACE MINING
Reclamation and Enforcement
WASHINGTON, D.C. 20240

JUL 8 1986

Memorandum

To: Assistant Secretary for Land and Minerals Management

From: Director, Office of Surface Mining Reclamation and Enforcement

Subject: Recommendation for Approval of the Hiawatha Mines Complex Mining Plan, U.S. Fuel Company, Carbon and Emery Counties, Utah, Federal Leases, SL-025431, SL-069985, U-058261, and U-026583

I recommend your approval of the Hiawatha mines complex mining plan, pursuant to the Mineral Leasing Act of 1920, as amended (MLA). The Office of Surface Mining Reclamation and Enforcement (OSMRE) has reviewed the complete permit application package (PAP), and the Administrator of the Western Technical Center has informed me that he is prepared to issue a permit under the Surface Mining Control and Reclamation Act of 1977 (SMCRA) for the Hiawatha Mines Complex subject to your approval of the mining plan. My recommendation to approve the Hiawatha Mines Complex mining plan is based on (1) the applicant's complete PAP including the operation and reclamation plan required by SMCRA, (2) OSMRE's proposed permit conditions, (3) public participation, (4) review of the PAP by OSMRE, (5) compliance with the National Environmental Policy Act, (6) documentation assuring compliance with applicable requirements of SMCRA and other Federal laws, regulations, and executive orders, and (7) comments and recommendations or concurrences of other Federal agencies, including the findings and recommendations of the Bureau of Land Management with respect to the resource recovery and protection plan and other requirements of the leases and the MLA.

The Secretary may approve a mining plan for Federal lands under 30 U.S.C. 207(c) and 1273(c). I find that the proposed operations will be in compliance with all applicable laws and regulations, and I recommend the Hiawatha Mines Complex mining plan, updated through April 28, 1986, be approved.

Approval:

I approve this mining plan.

Assistant Secretary for Land and Minerals Management

JUL 16 1986
Date

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

May 8, 1986

MEMORANDUM

TO: Director, Office of Surface Mining Reclamation and Enforcement

FROM: for Allen D. Klein, Administrator, Western Technical Center

SUBJECT: Recommendation for Approval of U.S. Fuel Company's Hiawatha Mines Complex (King 4, 5 and 6) Mining Plan and Permit, Carbon and Emery Counties, Utah, Federal Leases: SL-025431, SL-069985, U-058261, and U-026583

I. Recommendation

I am prepared to approve with conditions the permit application package for U.S. Fuel Company's Hiawatha Mines Complex (King Mines 4, 5 and 6). This is an existing underground mining operation being permitted for the first time under the Federal lands program and the approved Utah State program. The mining plan and permit were approved under the State interim program. My recommendation is based on the technical analysis and environmental assessment of the complete application. The applicant has proposed to continue underground mining on Federal coal leases SL-025431, SL-069985, U-058261, and U-026583, and private fee coal during the 5-year permit, and later to develop additional portions of those same leases as well as private fee coal during the thirty-year life-of-mine. The permit with conditions will be in conformance with the applicable Federal regulations, the Utah State Program and the Surface Mining Control and Reclamation Act of 1977 (SMCRA). I recommend that you advise the Assistant Secretary for Land and Minerals Management, under 30 CFR Part 746 that the U.S. Fuel Company's Hiawatha Mines Complex mining plan is ready for approval. I concur that a performance bond in the amount of $4,625,900.00 is adequate.

The Utah Division of Oil, Gas, and Mining (DOGM) and the Office of Surface Mining Reclamation and Enforcement (OSMRE), identified elements of the applicant's proposal which require conditions to comply with State and Federal law. The State regulatory authority will issue their permit concurrently with the Federal permit.

My recommendation for approval is based on the complete mining plan and permit application, updated to April 28, 1986. I have determined that this action will not have a significant impact on the human environment.

II. Background

The Hiawatha Mines Complex (King Mines 4, 5 and 6) is located in Carbon and Emery Counties, Utah and is within the Manti-LaSal National Forest. The permit area contains 12,605 surface acres, of which 1,680 and 10,925 acres are Federal and private surface, respectively. Approximately 435 acres have been disturbed to date. The estimated 30-year life-of-mine operation contains 19,211 surface acres, of which 3,764 and 15,447 acres are Federal and private, respectively. All of these acres are owned or have been leased by the applicant. The portals and surface facilities are located on private land and parts of the mines underlie U.S. Forest Service surface. This mine operation will not affect any environmentally-sensitive areas. The majority of the proposed underground operations will utilize room-and-pillar and longwall mining methods. The "A", "B" and Hiawatha coal seams will be mined at a maximum production rate of 1.76 million tons per year. All underground coal mining activities are scheduled to cease around the year 2014.

A primary issue associated with the Hiawatha Mines Complex permitting action is concern for stability of the four underground reservoir seals during operations at the Hiawatha Mines Complex. The reservoir is located in abandoned workings, and the sealed portals are immediately adjacent to the surface facilities of King Mines 4 and 5. The company has collected the information on the construction of the upper seal. From that data, the company has determined the seal is stable and will be able to maintain a safety factor of 2. All four seals were constructed of the same material at the same time; therefore, if the upper seal is safe, then the remaining three seals are also expected to be safe. OSMRE has reviewed the data and agrees with the company. However, as a permit condition, OSMRE is requiring an annual physical inspection of each seal and a contingency plan in case inspections indicate a possibility of failure.

Very little topsoil has been salvaged for reclamation purposes because the majority of disturbances occurred prior to the enactment of SMCRA. To accomplish reclamation of the disturbed areas, soil will be borrowed from areas designated as topsoil borrow areas that will yield sufficient material to reclaim previously disturbed areas as well as the borrow areas.

Five large coal slurry impoundments currently exist in the Hiawatha Mines Complex permit area resulting from coal washing activities. The coal fines are actively removed and are sold to buyers. However, the remaining waste has accumulated resulting in large embankments and refuse piles. OSMRE has worked extensively with U.S. Fuel to develop baseline data for characterizing the refuse waste material as subsoil plant growth media and to design a reclamation plan for the slurry pond/refuse embankments specific to the site and refuse material, and to characterize substitute topsoil materials. OSMRE is requiring a redistribution of 16 inches of substitute topsoil.

U.S. Fuel has identified sufficient substitute topsoil material in four borrow areas to cover regraded refuse waste areas with 16 inches of soil. U.S. Fuel is conducting field trial testing of 6, 12 and 16 inches of topsoil and has proposed to redistribute 6 inches, if the field trials prove that revegetation can be accomplished with less topsoil; OSMRE may revise its 16 inch substitute topsoil requirement. However, the bond has been calculated for redistribution of 16 inches of substitute topsoil.

The nearby town of Hiawatha, owned by U.S. Fuel, was developed during World War I. The current population is about 200. At one time, the town's population reached nearly 1500, but in the mid-1950's, and the 1960's, the population declined to about 150, in response to the diminished national importance of coal as an energy source. The Hiawatha townsite (55 acres) was originally proposed as a part of the permit area but has been removed leaving a permit area of 12,605 acres.

The company's original submission allowed for the postmining retention of the road system and underground reservoir for continued use by the town as its culinary water supply. Because the postmining viability of the company-owned town of Hiawatha is unknown after the cessation of operations at the Hiawatha Mines Complex, OSMRE determined that reclamation plans for the roads and underground reservoir be submitted prior to permit approval. The company submitted plans on December 10, 1984, for reclamation of two Class I roads and one Class III road and a commitment to drain the reservoir if the town's postmining viability cannot be established. The Utah DOGM reviewed the reclamation plans and submitted deficiency comments to OSMRE on January 17, 1985, and OSMRE contacted the company to discuss all of the State's concerns. The company resubmitted the reclamation plan which addressed all of the State's concerns relevant to the roads and underground reservoir on February 4, 1985.

No public hearings were held or requested specifically for U.S. Fuel's permanent program permit application. However, hearings have been held regarding coal development in central Utah, of which the Hiawatha Mines Complex is a part. These hearings were held in order to receive public input for the following documents:

- Draft Environmental Impact Statement: Uinta-Southwestern Utah Coal Region, Round II Coal Leases 1983, BLM;
- Final Environmental Statement: Development of Coal Resources in Central Utah 1979, USGS;
- Land Management Plan: Ferron-Price Planning Unit, Manti-LaSal National Forest 1979, USFS.

The Hiawatha Mines Complex permit application was reviewed by OSMRE and Utah DOGM using the approved Utah State Program and the Federal Lands Program (30 CFR Chapter VII, Subchapter D). The Mineral Leasing Act portion of the plan was also reviewed by the Bureau of Land Management (BLM) for compliance with the applicable portion of 43 CFR Group 3400.

The technical analysis, the cumulative hydrologic impact assessment and environmental assessment for this permit application were prepared by OSMRE. These documents, other documents prepared by Utah DOGM, the company's application, and other correspondence developed during the completeness and technical reviews are part of OSMRE's administrative record. The Utah DOGM and OSMRE jointly developed proposed conditions to assure compliance with State and Federal regulations.

OSM-WTC
1986 AUG 11 AM 8:5
WESTERN TECHNICAL CENTER

A chronology of events related to this mining plan is enclosed. The U.S. Fuel Company published the newspaper notice as required on February 22 and 29, and March 7 and 14, 1984. No written comments, objections, or requests for an informal conference were received. Written concurrence was provided by U.S. Forest Service; Bureau of Land Management (for Federal coal); and letters were received from U.S. Fish and Wildlife Service and the State Historic Preservation Officer.

A total of 19 permit conditions are necessary to clarify the permit application package and assure that the operation and reclamation operations will be conducted in accordance with the applicable regulations. Specifically, Condition Number 1 is intended to assure that no disturbance will occur in areas which have not had adequate cultural resource inventory surveys. Such disturbances are not expected to occur during this permit term. Condition Numbers 2, 4, 5 and 6 require monitoring of hydrologic resources and underground reservoir seals to confirm projected impacts and assure that the continued use of the reservoir is safe. Condition Numbers 3, 7, 8, 9, and 10 require the applicant to submit as-built designs and additional plans and information to clarify or supplement information in the permit application package. Condition Number 11 requires the applicant to demonstrate compliance with U.S. Fish and Wildlife Service mitigation measures. Condition Number 12 requires the applicant to consult with the regulatory authority prior to using a road through a sensitive riparian zone and stream crossing. Condition Number 13 requires the applicant to comply with all the terms of the Reclamation Fee Installment Agreement entered into on November 15, 1985. Conditions Numbers 14, 15, 16, 17, 18, and 19 are requirements set forth by the Utah DOGM and deal mainly with protection measures for anticipated subsidence.

The information in the permit application and mining plan, as well as other information documented in the recommendation package and made available to the applicant, has been reviewed by Utah DOGM staff in coordination with the OSMRE Project Leader.

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

March 16, 1987

MEMORANDUM

TO: Director, Office of Surface Mining Reclamation and Enforcement

THROUGH: Deputy Director, Operations and Technical Services

FROM: Assistant Director, Western Field Operations

SUBJECT: Recommendation to Approve U.S. Fuel Company's Hiawatha Complex Mine Mining Plan Modification and Permit Amendment, Carbon and Emery Counties, Utah, Federal Lease U-51923

I. Recommendation

I recommend approval with conditions of the U.S. Fuel Company's Hiawatha Complex mine mining plan modification and permit amendment. Upon approval, this mining plan modification will supplement the mining plan approved on July 16, 1986 for the existing Hiawatha Complex underground mines. My recommendation is based on the complete permit amendment package (PAP), updated to February 23, 1987, the technical and environmental assessment of the proposed mining and reclamation operations and alternatives prepared by the Office of Surface Mining Reclamation and Enforcement (OSMRE), a technical analysis, and the administrative record.

Approval of this mining plan modification and permit amendment will authorize mining of approximately 1,780,000 tons of Federal coal within the mining plan modification and permit amendment area which covers the 160-acre Federal coal lease U-51923, as shown on the map included with this memorandum.

Utah Division of Oil, Gas and Mining (DOGM) has reviewed the PAP associated with this mining plan modification under the Utah State program and the Federal lands program (30 CFR Chapter VII, Subchapter D) and has recommended approval of the permit amendment and mining plan modification. Pursuant to the Utah State program , Utah DOGM will issue the permit amendment concurrently with OSMRE.

The operation and reclamation plan portion of the PAP was reviewed by OSMRE, in consultation with other Federal agencies, for compliance with SMCRA, the Federal lands program, and all other requirements of applicable Federal laws. The resource recovery and protection plan was reviewed by the Bureau of Land Management for compliance with the Mineral Leasing Act of 1920, as amended, and 43 CFR Part 3480.

The amended permit included with this memorandum will be in conformance with the Surface Mining Control and Reclamation Act of 1977 (SMCRA), the Mineral Leasing Act of 1920, as amended, the Federal lands program, and other applicable Federal regulations.

I recommend that you advise the Assistant Secretary-Land and Minerals Management, under 30 CFR Part 746, that the U.S. Fuel Company's Hiawatha Complex mine mining plan modification is ready for approval. I concur with Utah DOGM that no increase in the bond amount is needed because no additional surface disturbance is expected.

I have determined that approval of the mining plan modification will not have a significant impact on the quality of the human environment.

II. Background

The Hiawatha Complex mine is located in Carbon and Emery Counties, Utah, 15 miles southwest of Price, Utah, and has been operating since the early 1900's. The mine was permitted under the approved Utah State program on March 13, 1987. The mining plan for the Hiawatha Complex mine was originally approved under the Federal lands program in July 1986. Since the original approval of the mining plan, there have been no mining plan modifications.

The permit amendment area is the same as the mining plan modification area and consists of the 160-acre Federal lease U-51923. The permit amendment and mining plan modification area is within the Hiawatha Complex mine permit area which contains approximately 12,605 acres. Upon approval of this mining plan modification, the approved mining plan area for the Hiawatha Complex mine will contain approximately 2800 acres within Federal leases SL-025431, SL-069985, U-058261, U-51923, and U-026583.

Under this approval, mining is anticipated to proceed until 1992. The PAP indicated that mining operations for the life of the Hiawatha Complex mines would cease around the year 2014 and would affect approximately 19,211 acres.

The Hiawatha Complex underground mining operations utilize longwall and room and pillar mining methods. In the permit amendment and mining plan modification area, the "A" and "B" coal seams will be mined at a production rate of approximately 700,000 tons per year. This mining operation will not affect any environmentally-sensitive areas.

During the review of the PAP no major issues were identified.

The public was notified of the availability of the PAP for review by publication of a newspaper notice on February 24, 1987. No public comments on the PAP were received after the public notice was published.

A technical analysis of the permit amendment application was prepared by Utah DOGM and was included in the documentation provided by Utah DOGM. The technical and environmental assessment of the Hiawatha Complex mines and alternatives was prepared by OSMRE. These documents, other documents prepared by Utah DOGM, the company's PAP, and other correspondence developed during the technical reviews are part of OSMRE's administrative record.

A chronology of events related to the processing of the PAP is included with this memorandum.

Written concurrence was provided by Bureau of Land Management, Branch of Solid Minerals in a letter dated March 5, 1987; U.S. Fish and Wildlife Service in a letter dated August 13, 1984; the State Historic Preservation Officer in a letter dated July 9, 1984; and U.S. Forest Service in a letter dated March 16, 1987.

Approval of the permit amendment and mining plan modification will require no special conditions of approval.

The information in the PAP, as well as other information identified in the decision document included with this memorandum and made available to the applicant, has been reviewed by Utah DOGM staff in coordination with the OSMRE Project Leader. Other information included: the 1983, BLM Final Environmental Impact Statement (FEIS) titled Uinta-Southeastern Utah Coal Region; OSMRE's 1986 Technical and Environmental Assessment for the Hiawatha Complex Mines; and OSMRE's administrative record.

Allen D. Klein acting for
Raymond L. Lowrie

3/17/87
Date

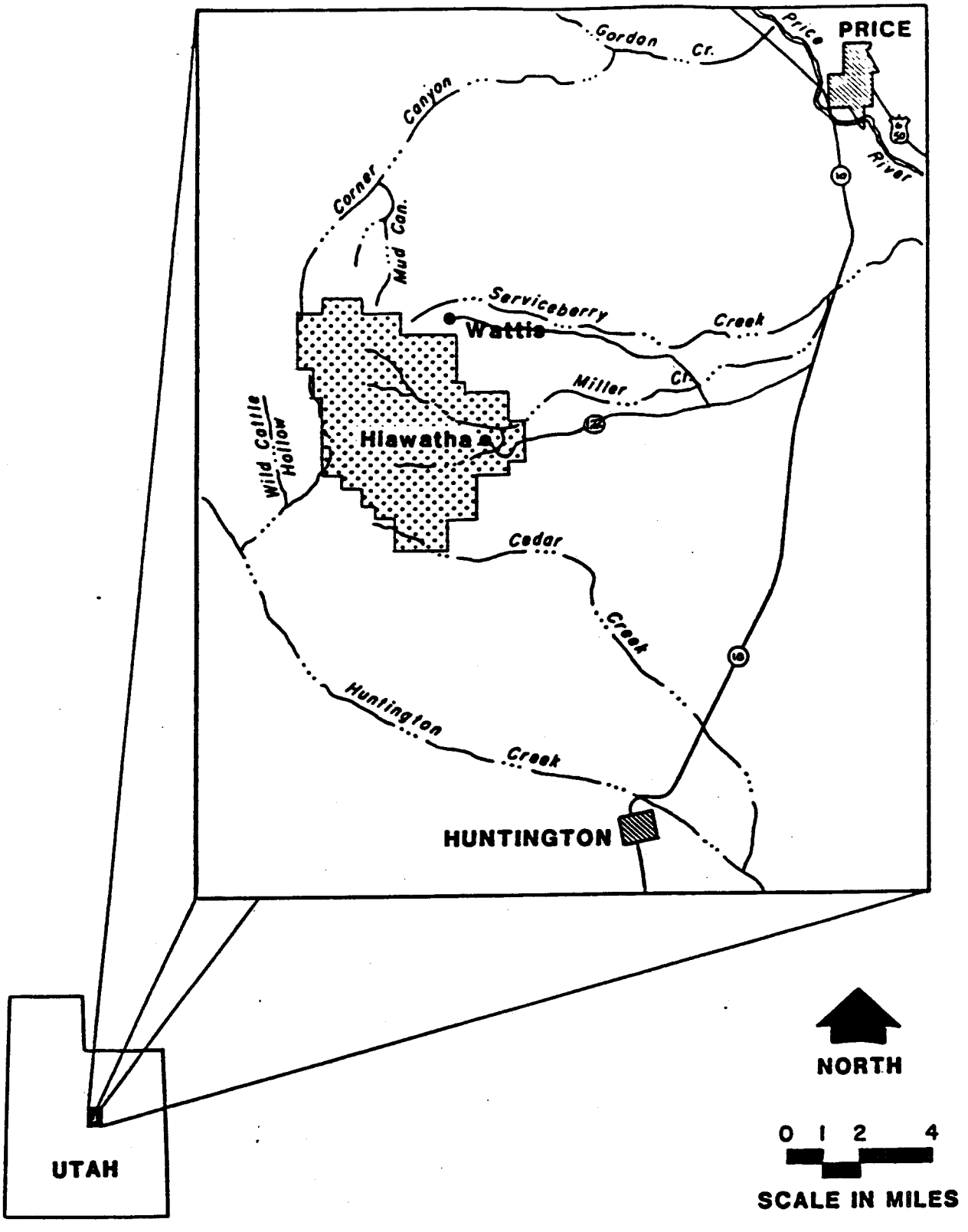


Figure 1
AREA MAP
HIAWATHA MINES COMPLEX

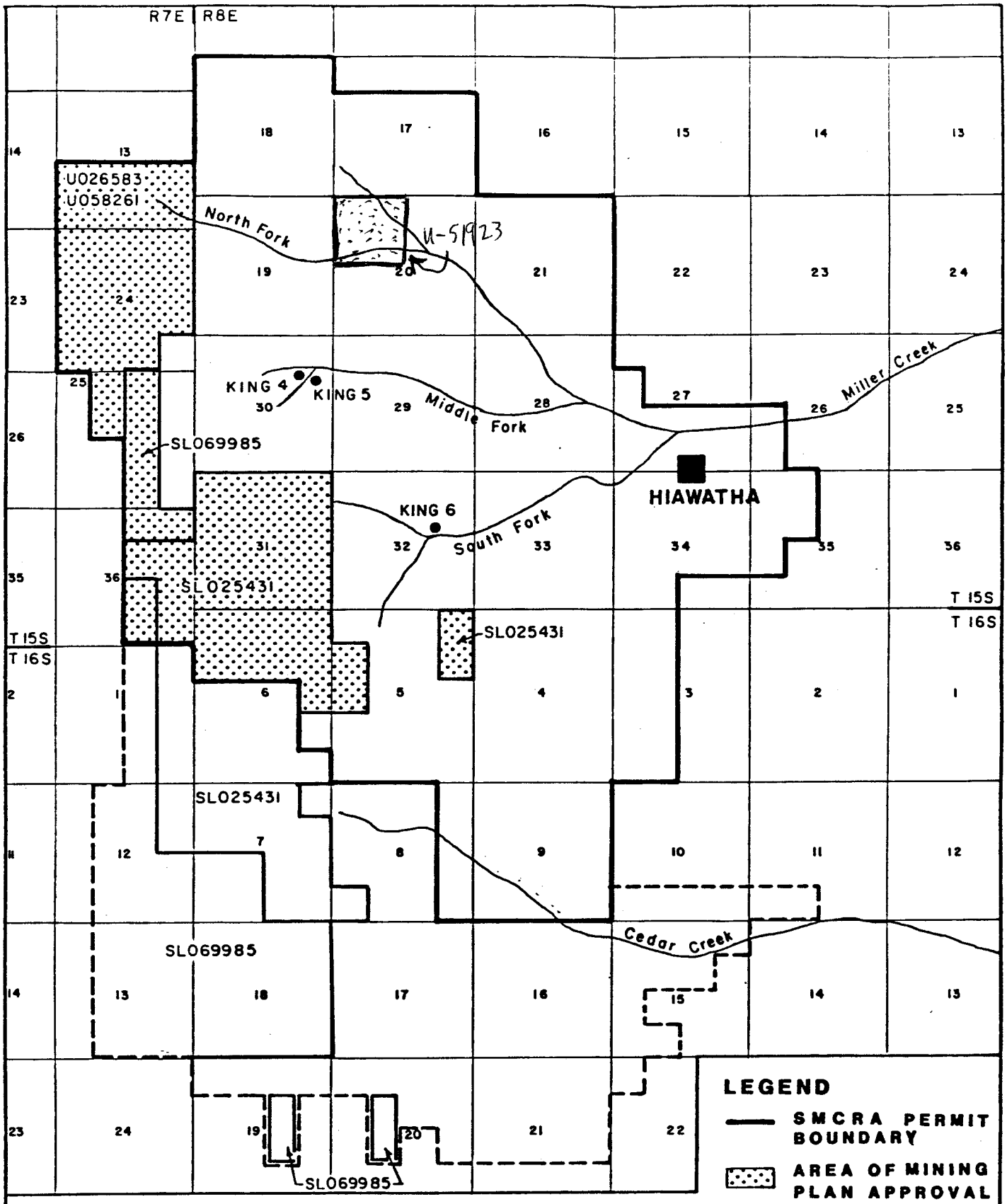


Figure 2

HIAWATHA MINES COMPLEX

CHRONOLOGY OF EVENTS

UNITED STATES FUEL COMPANY
HIAWATHA MINES COMPLEX

Application for Mining Plan and Permit Approval

Date	Event
December 11, 1975	U.S. Geological Survey (USGS) approved 211 mining plan.
May 1977	U.S. Fuel (USF) submitted mine plan to USGS in accordance with 30 CFR 211.
June 1, 1977	USF submitted mining plan to Utah Division of Oil, Gas and Mining (UDOGM) under 1975 Utah Mined Land Reclamation Act.
May 11, 1978	State issued interim permit.
July 1, 1979	USF submitted plans to UDOGM for proposed King 6 Mine.
July 9, 1979	UDOGM approved King 6 Mine with stipulations.
January 28, 1981	Minerals Management Service (MMS) approved development of King 6; however, approval was denied for additional portal, conveyor, and loadout facility until the permanent program permit application is submitted and approved.
March 23, 1981	The permanent program repermitting permit application package (PAP) was transmitted to OSM for review.

From 1985 Draft permit
This page not in 1987 permit

Date	Event
July 10, 1981	OSM approved, with 41 stipulations, the King 6 surface facilities. UDOGM followed with approval on July 15, 1981.
September 4, 1981	OSM transmitted to UDOGM a preliminary apparent completeness review (ACR) of the PAP.
December 11, 1981	UDOGM invoked "administrative delay" in the review of the permit application.
June 3, 1982	UDOGM transmitted letter to USF outlining the status of the applicant's response to the July 10, 1981, stipulations.
November 8, 1982	OSM prepared and transmitted to UDOGM an ACR for the entire mining complex (March 23, 1981, PAP.)
November 8, 1982	UDOGM forwarded their ACR comments to USF. OSM's comments were transmitted as an addendum on November 22, 1982.
March 22, 1983	USF notified UDOGM of its intent to cease operations at the King 6 Mine until market conditions improve.
May 4, 1983	USF notified UDOGM that King 5 will be idled.

Date	Event
May 9, 1983	UDOGM found the PAP to be administratively incomplete and stated that USF must respond to 5 items within 30 days. The deadline for response to the November 8, 1982, ACR was July 15, 1983.
May 19, 1983	USF provided a response to 3 items identified in the May 9, 1983, determination of administrative completeness.
June 8, 1983	OSM's Albuquerque Field Office notified OSM-WTC that USF could be developing a pattern of willful violations.
June 10, 1983	UDOGM found USF's May 19, 1983, response to be adequate for the purpose of declaring the PAP "administratively complete."
June 13, 1983	OSM/UDOGM transmitted letter to the applicant stating that all application deficiencies must be addressed. No deadline was given.
✓ June 14, 1983	OSM received USF response to the November 8, 1982, ACR.
✓ August 10, 1983	OSM transmitted preliminary draft of determination of adequacy (DOA) to UDOGM for review.
✓ September 20, 1983	OSM forwarded draft final DOA to UDOGM for their review and established November 7, 1983, as the date for the applicant's response.

not in 1987 permit

Date	Event
√ September 20, 1983	UDOGM developed preliminary comments on USF proposal (August 31, 1983) to construct a new beltline and portal breakouts in the Middle Fork mine yard. USF was notified that OSM would include this proposal as part of the current permit review.
√ September 23, 1983	OSM and UDOGM met to discuss DOA.
√ September 29, 1983	OSM forwarded final DOA to UDOGM, incorporating their comments made at the September 23, 1983, meeting.
√ October 4, 1983	UDOGM forwarded the DOA to the applicant and set the date of response as November 7, 1983.
√ October 13, 1983	UDOGM, OSM, and USF met to discuss DOA. OSM apprised USF of the timeframe for response (November 7).
√ October 20, 1983	OSM transmitted to USF and UDOGM a DOA clarifying deficiency items discussed at the October 13, 1983, meeting.
October 31, 1983	USF requested a 30-day extension for DOA response.
√ November 10, 1983	USF submitted response to October 4, 1983, DOA. A meeting was held in Salt Lake City to review this material with UDOGM and the applicant's consultants.
January 4, 1984	OSM completed a review of the proposed emergency breakout for the Middle Fork mine yard ventilation portal.

Date	Event
✓ January 9, 1984	USF responded to the November 21, 1983, DOA.
✓ January 20, 1984	OSM forwarded DOA of the January 9, 1984, response to USF.
✓ February 13, 1984	USF responded to January 20, 1984, DOA.
✓ February 17, 1984	OSM notified USF that the PAP was determined to be complete and that the technical analysis (TA) process would begin. USF was notified to begin publication of public notice.
✓ March 14, 1984	USF completed publication of newspaper notice of availability of a complete permit application.
✓ March 16, 1984	USF responded further to January 20, 1984, DOA.
✓ April 4, 1984	Preliminary draft decision document was completed.
April 12, 1984	UDOGM inspectors and OSM conducted field visit of the mine operation.
✓ April 30, 1984	UDOGM forwarded their comments to OSM on the April 4, 1984, preliminary TA.
✓ June 15, 1984	USF responded to deficiency of stability of underground reservoir seals with a plan to evaluate construction by September 21, 1984.
✓ July 20, 1984	Final concurrence received from Bureau of Land Management (BLM) on mining plan.

Date	Event
August 30, 1984	OSM received final TA from contractor.
October 25, 1984	Meeting held with USF to discuss final deficiencies.
December 10, 1984	USF submitted plans for reclamation of roads and underground reservoir.
January 16, 1985	UDOGM submitted comments to OSM on reclamation plans.
January 22, 1985	USF submitted evaluation of underground reservoir seals.
January 30, 1985	USF, via telephone conversation, committed to address all of UDOGM's concerns on reclamation plan.
February 4, 1985	USF submitted revised reclamation plans for the roads and underground reservoir addressing UDOGM concerns.
February 1985	Western Technical Center recommends approval of permit and mining plan with conditions.
	Assistant Secretary for Land and Minerals Management approved mining plan with conditions.

February 4, 1985	USF submitted revised reclamation plans for the roads and underground reservoir addressing Utah DOGM concerns.
March 6, 1985	OSMRE sent copy of Decision Document to Utah DOGM.
April 4, 1985	Utah DOGM sent comments on Decision Document to OSMRE.
September 27, 1985	OSMRE sent copy of revised Decision Document to Utah DOGM.
December 16, 1985	Utah DOGM sent comments to OSMRE on revised Decision Document.
January 8, 1986	OSMRE met with Utah DOGM to discuss December 16, 1985, letter.
January 27, 1986	OSMRE received final letter with Utah DOGM changes to Decision Document.
April 28, 1986	Last update received from USF.
May 1986	OSMRE recommends approval.

CHRONOLOGY OF EVENTS

U.S. Fuel Company
Hiawatha Complex Mine

Mining Plan Modification and Permit Amendment Approval

DATE	EVENT
February 17, 1987	U.S. Fuel Company submitted permit amendment package (PAP) under the approved Utah State Program to the Utah Division of Oil, Gas and Mining (DOGM) for a permit amendment for the Hiawatha Complex mine. Utah DOGM determined that the PAP was complete and commenced its technical analysis.
February 23, 1987	Utah DOGM forwarded the PAP to the Office of Surface Mining Reclamation and Enforcement (OSMRE). OSMRE commenced its review of the PAP.
February 24, 1987	U.S. Fuel Company published in the Price Sun-Advocate notice that its complete PAP was filed with Utah DOGM.
February 26, 1987	OSMRE furnished comments on the PAP, generated during its review of the PAP for NEPA to Utah DOGM.
March 12, 1987	Utah DOGM submitted its Technical Analysis to OSMRE.
March 1987	OSMRE found that no significant impact to the quality of the human environment would result from approval of the mining plan modification and permit amendment and recommends approval of the mining plan modification.

FINDINGS

U.S. Fuel Company
Hiawatha Mines Complex

Application for Mining Plan

I. The Office of Surface Mining Reclamation and Enforcement (OSMRE) has reviewed the permit application package submitted on March 23, 1981, and updated through April 28, 1986, and finds that the permit application is accurate and complete and complies with the approved Utah State Program, the Surface Mining Control and Reclamation Act (SMCRA), and the Federal Lands Program. [UMC 786.19(a)]

II. OSMRE has reviewed the permit application and mining plan, has prepared the technical analysis (TA) and the environmental assessment (EA) and based on these documents, has made the following findings:

1. The applicant proposes acceptable practices for the reclamation of disturbed lands. These practices have been shown to be effective in the short-term; there are no long-term reclamation records utilizing native species in the Western United States. Nevertheless, OSMRE has determined that reclamation, as required by the Act, can be feasibly accomplished under the mining and reclamation activities plan contained in the application. [TA, Chapter XV, Vegetation Resources] [UMC 786.19(b)]

   OSMRE has determined that reclamation at the Hiawatha Mines Complex is technologically and economically feasible under SMCRA Section 522(b).

2. The probable cumulative hydrologic impact assessment (PCHIA) of all existing and anticipated mining by the Hiawatha Mines Complex and the Star Point Mines Complex in the cumulative impact area (CIA) indicates that the operations proposed in the Hiawatha Mines Complex have been designed to prevent material damage to the hydrologic balance outside the proposed permit area. [Cumulative Hydrologic Impact Executive Summary - TA Appendix A; TA Chapter XII , Probable Hydrologic Consequences of Mining; and, CHIA Chapters 5 and 6] [UMC 786.19(c)]

3. After reviewing the description of the proposed permit area, OSMRE determines this area is:

   a. Not included within an area designated unsuitable for surface coal mining operations. (See March 1981 submittal, Volume I, Chapter II, Appendix II-2; correspondence of J.W. Smith (Utah DOGM) October 2, 1980; and I.W. Hatch (USFS). [UMC 786.19(d)(1)]

b. Not within an area under study for designation as unsuitable for underground coal mining activities in an administrative proceeding begun under UMC 764, or 30 CFR 769. [See PAP, Volume I, Chapter II, Appendix II-2; correspondence of J.W. Smith (Utah DOGM) October 2, 1980, and I.W. Hatch (USFS); and currently no petitions exist] [UMC 786.19(d)(2)]

c. Not on any lands subject to the prohibitions or limitations of UMC 761.11(a) (national parks, etc.); and not on lands subject to the prohibitions of UMC 761.11(b) (public buildings, and cemeteries). [TA, Chapter VI, Cultural and Historic Resources] [UMC 786.19(d)(3)]

d. Within 100 feet of the outside right-of-way of State Highway 122 and Carbon County Road 338. However, the applicant has demonstrated that this mining operation was in existence prior to enactment of SMCRA. Therefore, the company had a previous right to these activities and may continue them under the permit. Further, the county and state highway departments have reviewed and approved construction of roads and an underpass within the permit area after public notification. [TA, Chapter IV, Legal, Financial and Compliance Information] [UMC 786.19(d)(4)]

e. Within 300 feet of occupied dwellings. However, the applicant owns the dwellings, therefore, permission to operate within 300 feet is not required. [DOA response, Volume I, Chapter II] [UMC 786.19(d)(5)]

f. Not unsuitable in accordance with Section 522(b) of SMCRA.

g. Located on Federal lands within the boundaries of Manti-LaSal National Forest. However, based on OSMRE's analysis and on the concurrence of the Forest Service, the surface operations and impacts are incident to an underground coal mine and will not be incompatible with significant recreational, timber, economic or other values of the Manti-LaSal National Forest.

4. OSMRE's issuance of a permit and the Secretarial decision on the mining plan is in compliance with the National Historic Preservation Act and implementing regulations (36 CFR 800) as a result of Utah State Historic Preservation Officer concurrence in a letter dated July 9, 1984, with OSMRE's finding that the mining operation will not adversely affect cultural resources listed or eligible for listing on the National Register of Historic Places. [TA Chapter VI, Cultural and Historic Resources] [UMC 786.19, 30 CFR 786.19(e)]

5. The applicant has the legal right to enter and conduct mining activities in the permit area. [PAP, Volume I, Exhibits, Chapter II-8; and, DOA Response, Volume 1, Chapter II] [UMC 786.19(f)]

6. The applicant's and OSMRE's records indicate that there are outstanding violations of applicable law and regulations in the form of deliquent penalties/fees for the Abandoned Mine Lands (AML) fund. However, the applicant has demonstrated that payment of these delinquent AML fees is in the process of being corrected. [George M. Stone, Jr., Chief, Branch of Compliance, Program Operations, correspondence dated January 29, 1986; UMC 782.14]

7. OSMRE's records do not confirm that all fees for the Abandoned Mine Reclamation Fund have been paid. The applicant has paid all required reclamation fees based on the underground production rate of $0.15/ton. However, there has been a disagreement between the applicant and OSMRE over the required rate for coal fines reclaimed from the slurry ponds. At issue is the $0.20/ton difference in the reclamation fee rates for surface and underground mined coal. Resolution has been pursued and a settlement agreement has been reached with the company. [George M. Stone, Jr., Chief, Branch of Compliance, Program Operations, correspondence dated January 29, 1986; UMC 786.19(h)]

8. OSMRE and Utah DOGM records show that the applicant and operator do not control and have not controlled mining operations with a demonstrated pattern of willful violations of the Act and the Utah State Program of such nature, duration, and with such resulting irreparable damage to the environment as to indicate an intent not to comply with the provisions of the Act. [George M. Stone, Jr., Chief, Branch of Compliance, Program Operations, correspondence dated January 29, 1986, and telephone confirmation memo dated February 12, 1986; UMC 786.19(i), 773.15(b)(1)]

9. Underground coal mining and reclamation operations to be performed under the permit will not be inconsistent with the underground Star Point Mines Complex in the immediate vicinity of the Hiawatha Mines Complex. [CHIA; and, Resource Recovery and Protection Plan] [UMC 786.19(j)]

10. The applicant has provided evidence and OSMRE has found there are no prime farmlands in the permit area. [Letter of negative determination from Soil Conservation Service, January 17, 1983, Appendix VIII-I, response to apparent completeness review] [UMC 786.19(l)]

11. Negative alluvial valley floor determinations have been made for all drainages in the proposed permit area and adjacent areas. These determinations were made on the basis of: 1) unsuitability for flood irrigation agricultural activities (i.e., steep slopes, small acreage, stony soils); 2) presence of plants not important to agriculture on the areas meeting the geomorphic criteria. [TA Chapter X] [UMC 786.19(l)]

12. All existing structures comply with UMC 700.11(e)(1)(i) and the applicable performance standards of Subchapter B or UMC Subchapter K and no significant harm to the environment or public health or safety will result from use of the structures. [TA, Chapter XII, UMC 817.55; and, Chapter XXII, Mine Facilities, Coal Handling Structures and Support Facilities.] [UMC 700.11(e)(1)(i)]

13. The proposed postmining land use of wildlife habitat and livestock grazing on the permit area has been approved by the Utah Division of Oil, Gas and Mining, OSMRE, the U.S. Forest Service, and the Bureau of Land Management. [TA, Chapter V, Land Use; and, concurrence letters] [786.19(d),(m)]

14. Utah Division of Oil, Gas and Mining and OSMRE have made all specific approvals required by the Act, the approved Utah State Program and the Federal Lands Program. [TA] [UMC 786.19(d),(n)]

15. The proposed operation will not affect the continued existence of threatened or endangered species or result in the destruction or adverse modification of their critical habitats if the permit condition is met. [TA, Chapter XVI, Fish and Wildlife Resources; letter from U.S. Fish and Wildlife Service dated August 13, 1984; and NEPA compliance document] [UMC 786.19(o)]

Administrator
Western Technical Center

FINDING OF NO SIGNIFICANT IMPACT

United States Fuel Company
Hiawatha Mines Complex

The technical analysis (TA) and the environmental assessment (EA) were prepared by the Office of Surface Mining Reclamation and Enforcement (OSMRE). These documents identify certain environmental impacts that would result from the Federal approval of the mining plan for U.S. Fuel Company's Hiawatha Mines Complex. The 5-year permit application, submitted to the State under its approved permanent program, proposes a total permit area of 12,605 acres, all of which were previously permitted under the interim program. The permit area encompasses portions of four Federal leases.

The regional impacts of coal mining in the Cedar Creek Basin are addressed in the Bureau of Land Management's Uinta-Southeastern Utah Coal Region Environmental Impact Statement, 1983.

OSMRE has determined that impacts to the King Nos. 4, 5, and 6 Mines area would result from mining. However, OSMRE finds that impacts would not be significant.

OSMRE identified two potentially significant issues during the early phases of the mine plan review including: 1) an underground water storage system that didn't meet MSHA's safety standards and 2) reclamation of a series of large coal slurry ponds.

Regarding the underground storage of ground water, U.S. Fuel has removed the upper bulkheads from the mine openings that will limit the amount of water that can be stored in the mine to a level acceptable to OSMRE and MSHA. In addition, the bulkhead was dismantled and the construction details verified in order to document the stability of other bulkheads that will be left in place.

Five large coal slurry impoundments currently exist in the Hiawatha Mines Complex permit area resulting from coal washing activities. The coal fines are actively removed and are sold to buyers. However, the remaining waste has accumulated resulting in large embankments and refuse piles. OSMRE has worked extensively with U.S. Fuel to develop baseline data for characterizing the refuse waste material as subsoil plant growth media and to design a reclamation plan for the slurry pond/refuse embankments specific to the site, refuse material, and substitute topsoil characteristics. U.S. Fuel has identified sufficient substitute topsoil material in four borrow areas to cover regraded refuse waste areas with 16 inches of soil. U.S. Fuel is conducting field trail testing of 6, 12 and 16 inches of topsoil and has committed to redistribute 6 inches, if the field trials prove that revegetation can be accomplished with less topsoil. However, the bond has been calculated for redistribution of 16 inches of substitute topsoil.

Impacts identified by OSMRE and the State would be mitigated by those appropriate environmental protection measures detailed in the mining plan and proposed conditions attached to the permit.

Based upon the evaluation of impacts given in the TA and EA, I find that no significant impacts to the human environment would result from the proposed mine. Therefore, an environmental impact statement is not required.

Richard E. Dawes

Acting Administrator
Western Technical Center

5/12/86
Date

Assistant Secretarial Findings For Mining Plan Modification Approval

1. The Assistant Secretary determines that approval of the Hiawatha Complex mine mining plan modification, including the operation and reclamation plan portion of the permit application, complies with the Mineral Leasing Act of 1920, as amended, the terms of the lease, the Federal lands program, and all other requirements of applicable Federal laws. (See Office of Surface Mining Reclamation and Enforcement Findings and Bureau of Land Management letter dated March 5, 1987.)

2. The Department has considered the effect of a decision on the mining plan modification on historic properties in accordance with the National Historic Preservation Act. (See State Historic Preservation Officer letter dated July 9, 1984.)

3. The proposed operation is not likely to jeopardize the continued existence of threatened or endangered species or result in the destruction or adverse modification of their critical habitats, as determined under the Endangered Species Act of 1973 (16 U.S.C. 1531 et seq.). (See U.S. Fish and Wildlife letter dated August 13, 1984.)

COPY — ORIGINAL IN ASLMM FOLDER

Assistant Secretary-Land and Minerals Management Date

Office of Surface Mining Reclamation and Enforcement Findings At the Time of Mining Plan Modification and Permit Amendment Approval

1. The Office of Surface Mining Reclamation and Enforcement (OSMRE) has reviewed the Hiawatha Complex mine permit application and determines that it is complete and accurate and complies with the Surface Mining Control and Reclamation Act of 1977 (SMCRA), the Federal lands program (30 CFR Chapter VII, Subchapter D), and all other requirements of applicable Federal laws. (See State's Technical Analysis and Technical and Environmental Assessment.)

2. After reviewing the description of the proposed area of the mining plan approval, OSMRE determines this area is:

   a. Not unsuitable for mining in accordance with section 522(b) pursuant to section 522(a)(2) of SMCRA. (See Technical and Environmental Assessment.)

   b. Not unsuitable for mining in accordance with section 522(b) pursuant to standards set forth in section 522(a)(3) of SMCRA. (See Technical and Environmental Assessment.)

   c. Located on Federal lands within the boundaries of the Manti-LaSal National Forest. However, based on OSMRE's analysis and on the concurrence of the Forest Service, the surface operations and impacts of the Hiawatha Complex mine are incident to an underground coal mine and will not be incompatible with significant recreational, timber, economic, or other values of the Manti-LaSal National Forest. (See Environmental Assessment and U.S. Forest Service letter dated March 16, 1987.)

Chief, Federal Programs Division
Western Field Operations

3/16/87
Date

FINDING OF NO SIGNIFICANT IMPACT

U.S. Fuel Company's
Hiawatha Complex Mine

The technical analysis prepared by Utah Division of Oil, Gas and Mining (DOGM) and the technical and environmental assessment (TEA) prepared by the Office of Surface Mining Reclamation and Enforcement (OSMRE) preceding this "Finding of No Significant Impact" identify certain environmental impacts that would result from the Federal approval of the mining plan modification and permit amendment for U.S. Fuel Company's Hiawatha Complex mine. The permit amendment package, submitted to the State under its approved State program, proposes an extension of underground operations into the 160-acre Federal lease U-51923, which is entirely within the permit area of the Hiawatha Complex mine.

The regional impacts of coal mining in the Cedar Creek/Miller Creek Basins are addressed in the Bureau of Land Management's Uinta-Southeastern Utah Coal Region environmental impact statement (EIS), 1983. Site specific impacts of the existing operations were discussed in OSMRE's Environmental Assessment for the Hiawatha Complex Mine, 1986.

The State determined that impacts to the Cedar Creek/Miller Creek area would result from mining at the Hiawatha Complex mine. However, OSMRE finds that impacts would not be significant.

Based upon the evaluation of impacts given in the technical analysis and environmental assessment, I find that no significant impacts to the quality of the human environment would result from the proposed operations. Therefore, an environmental impact statement is not required.

Allen D. Klein
Chief, Federal Programs Division
Western Field Operations

3/16/87
Date

Contact with the Bear Canyon Fault at several points in old mine workings has resulted in large flows of water and accounts for most of the mine water presently discharging from the old Mohrland portal. One water-producing contact with the fault in the King 4 Mine is presently used for fire protection and dust suppression in that mine. Generally, mine water flows southerly, away from active mining, and discharges by gravity flow at the old Mohrland portal. Some of this water is diverted for culinary and industrial use at Hiawatha, and the remainder flows into Cedar Creek. No other mine discharge or dewatering activities are anticipated by U.S. Fuel.

More than 75 percent of the seeps and springs in the study area issue from formations located stratigraphically above the coal-bearing Blackhawk Formation, and more than half of the seeps and springs were found to be issuing from the North Horn Formation which occupies the ridges in the western portion of the permit area. Flow rates from springs issuing from these upper formations vary between about 2 and 8 gallons per minute (gpm), and they showed evidence of light to heavy usage by deer and cattle where accessible.

Approximately one-fifth of the seepage points in the study area are located in the Blackhawk Formation. Flow rates at these points tend to be minimal, with seepage issuing predominantly at the interface between sandstone and shale lenses. Usage is also minimal as a result of the low flow rate and the general inaccessibility of the seeps.

Water Supply

Mine water is used by U.S. Fuel for fire prevention and dust suppression in King 4 and by the town of Hiawatha for culinary purposes. These uses are covered by water rights claimed by U.S. Fuel for 4,758 gpm (3,746 gpm in surface water rights and 1,012 gpm in ground water rights). Mine water discharge from the old Mohrland portal is regulated under the National Pollutant Discharge Elimination System (NPDES) permit UT-0023094.

Water is piped to the town of Hiawatha from the mines. Water is diverted into the mine on the North Fork of Miller Creek. This water together with the water intercepted in the mine is stored in the mined out section of the abandoned Hiawatha No. 2 Mine. Maximum storage volume in this underground reservoir was about 120 million gallons (368 acre-feet). With the removal of one of the bulk head seals during September 1984, the capacity is limited to approximately 24 million gallons.

Water in excess of that used in the mining operation is routed south by gravity to the Mohrland Portal where it is collected and piped to the town of Hiawatha. Excess water is discharged into Cedar Creek. At the town of Hiawatha there are four water storage tanks with a combined capacity of 245,000 gallons (0.75 acre-feet). Water is treated and then stored in the 40,000 gallon (0.1 acre-feet) tank 5A, near the preparation plant. The preparation plant is located east of the town and adjacent to the rail spur.

Members of the Mancos Shale, Mesaverde Group, and Wasatch Group all outcrop in the area. From bottom to top, the geologic units are Masuk Shale (a member of the Mancos Shale), Star Point Sandstone, Blackhawk Formation, Price River Formation, and North Horn Formation (a member of the Wasatch Group). The Star Point Sandstone, Blackhawk Formation, and Price River Formation are members of the Mesaverde Group. Mineable coal seams are located in the lower half of the Blackhawk Formation. Six coal beds have been identified in the Blackhawk Formation in the area of the Hiawatha complex. Four of these seams, the Hiawatha, A, B, and Upper seams, are thick enough to be economically mined at this time. U.S. Fuel has mined all but the Upper seam.

Climate and Air Quality

The climate of the Hiawatha Mines Complex area is typical of canyon areas of central Utah. Summer temperatures range from 40 degrees to 95 degrees (F) while winter temperatures average 25 degrees. The average annual precipitation is 12 inches. Winds in the mine area are affected by the area's topography, although general wind directions in the region are from the north-northeast in the winter and the south-southwest in the summer.

Central Utah is primarily rural with some light or dispersed industrial activity. Existing air quality is generally excellent, although high total suspended particulate values result from travel on unpaved roads. Carbon monoxide, ozone, lead, and hydrocarbons are not monitored in the region, but are estimated to be within the National Ambient Air Quality Standards (NAAQS) (Bureau of Land Management 1983).

Surface Water Hydrology

In the vicinity of the Hiawatha Mines Complex, the Wasatch Plateau is dissected by two drainage systems, Miller Creek and Cedar Creek. The drainage area for Miller Creek, above the confluence with Serviceberry Creek, is about 29,700 acres. Streamflow in Miller Creek is perennial below the confluence with the North Fork of Miller Creek. The left fork of the North Fork of Miller Creek is diverted into an underground water storage reservoir that provides water for the town of Hiawatha. Cedar Creek is also a perennial stream with a drainage area of approximately 5,300 acres. Cedar Creek receives approximately 1 cubic foot per second (cfs) of discharge from the old Mohrland portal located south of the Hiawatha Mines Complex.

Ground Water Hydrology

Ground water in the region around the Hiawatha Mines Complex is recharged principally by direct infiltration of precipitation in the higher plateau, infiltration from perennial streams that flow into Mancos Shale lowlands, and, to a limited extent, by infiltration in outcrops.

The maximum rate of production at the Hiawatha Mines Complex will be approximately 1.79 million tons per year and will be achieved during the 1985-1990 period. Production from 1990 through 2004 will fluctuate between 1.53 and 1.73 million tons per year. Annual production will then decline to approximately 200,000 tons per year in 2014. Total production over the life-of-mine (1984-2014) will be 35.2 million tons. Coal is, and will continue to be, transported to Nevada, the Northwest, and local markets via rail.

U.S. Fuel employs approximately 281 people at its Hiawatha Mines Complex (June 1983). Total employment would increase continually as the maximum rate of production is achieved, peaking at 500 employees (during the period 1985-1990). Thereafter, employment levels will fluctuate with production rates over the life-of-mine.

DESCRIPTION OF THE EXISTING ENVIRONMENT

Topography and Geology

The Hiawatha complex is located on the east side of the Wasatch Plateau, at elevations ranging from 6,750 to 9,600 feet, in an area characterized by steep canyons and high plateaus. Miller and Cedar Creeks drain the mine plan area.

Portals for the Hiawatha complex lie at the base of an erosional escarpment that forms the eastern face of the Wasatch Plateau. The Wasatch Plateau is a high, broad, flat area dissected by numerous streams. The high plateaus of Utah, which include the Wasatch Plateau, are thought to be a transition zone containing geologic structures common to both the Colorado Plateau Province to the east and the Basin and Range Province to the west.

The mine complex is located in the Wasatch Plateau coal field. Coal outcrops appear in the canyon walls and along the cliffs. Rock types in the region are late Cretaceous and Tertiary in age and are generally representative of continental and/or transitional sediments. Marine sediments occur below the sequence and are on the valley floors east of the escarpment.

The region is not structurally complex. Strata are fairly flat with dips to the south (sometimes slightly southeast or southwest) at 1 to 3 degrees. Locally, near faults, the dip increases to about 20 degrees.

The Pleasant Valley Fault Zone cuts across the western portion of the study area. It runs from north of Scofield Reservoir to south of Huntington Creek. The Pleasant Valley Fault Zone is 3 to 5 miles wide and displacement is generally between a few feet and 100 feet, although greater displacement occurs locally (Doelling, 1972).

Several localized fault systems have been identified as being associated with the Pleasant Valley Fault. One of local interest in the study area is the Bear Canyon Fault. The Bear Canyon Fault marks the western limit of past mining at the Hiawatha Mines Complex and has a displacement of up to 250 feet.

ENVIRONMENTAL ASSESSMENT
U.S. FUEL COMPANY
HIAWATHA MINES COMPLEX
KING NOS. 4, 5, AND 6 MINES
MAY 1986

INTRODUCTION

The Hiawatha Mines Complex is located on the east side of the Wasatch Plateau in central Utah, about 15 miles southwest of Price, in Carbon and Emery Counties (Figure 1). The life-of-mine area encompasses 19,211 acres and is located within: T. 15 S., R. 7 E., SLM, Sections 13, 24, 25, 36; T. 15 S., R. 8 E., SLM, Sections 17-21, 26-35; T. 16 S., R. 7 E., SLM, Sections 1, 12, 13; and T. 16 S., R. 8 E., SLM Sections 3-11, 15-22 (Figure 2). In this area, approximately 5,726 acres (approximately 30 percent) of Federal coal are leased by United States Fuel Company (U.S. Fuel). The Federal coal leases are: SL-025431 (2,370.26 acres), SL-069985 (2,356.09 acres), and the combined leases U-058261 and U-026583 (1,000 acres). All of the leases are contained within the life-of-mine area. Most of the remainder of the coal in the life-of-mine area (9,833 acres) is owned by U.S. Fuel.

The Surface Mining Control and Reclamation Act (SMCRA) permit area includes 12,605 acres in T. 15 S., R. 7 E., SLM, Sections 13, 24, 25, 36; T. 15 S., R. 8 E., SLM, Sections 17-21, 26-35; T. 16 S., R. 8 E., SLM, Sections 3-6, 8, 9. The mining plan area consists of the 2,543 acres of Federal coal within the permit area. Some portion of each Federal lease is in the mining plan area, although each also extends outside the permit area.

The Hiawatha Mines Complex is a consolidation of the original King, Hiawatha, Black Hawk, and Mohrland coal mines, which began operating in the early 1900's. U.S. Fuel was organized in 1915 and began operation in 1916, when it took over the properties of the Consolidated Fuel Company, Castle Valley Coal Company, and Black Hawk Coal Company, all of which are located within the current permit boundary. The current 5-year permit application applies to three underground mines (King 4, 5, and 6) which are existing operations. Mining will remove coal from the A (King 4 and 5), B (King 4, 5, and 6), and Hiawatha (King 6) seams of the Blackhawk Formation. All coal is currently shipped by rail from the town of Hiawatha to an electrical generating plant in Nevada and to military facilities in the northwestern states.

Approval of the mining plan by the Assistant Secretary for Land and Minerals Management will provide for mining and reclamation activities in the mining plan area. Approval of the permit application package and issuance of the SMCRA permit by the Office of Surface Mining (OSMRE) will allow mining and reclamation activities within the permit area for the 5 year permit term (1985-1990). The SMCRA permit is subject to successive renewals, but the applicant must submit permit application packages to extend the mining and reclamation operations into areas outside the permit area. Expansion of such operations into Federal coal outside the approved permit area will require Secretarial approval of a mine plan modification.

Water Quality

Surface water on the top of the Wasatch Plateau has a low total dissolved solids (TDS) concentration, usually less than 400 milligrams per liter (mg/l), and a low total suspended sediment (TSS) concentration, usually less than 30 mg/l. Concentrations of dissolved sodium and chloride are usually less than 15 mg/l. The predominant dissolved chemical constituents are calcium and bicarbonate. Water quality during snowmelt runoff tends to be a calcium carbonate type and water quality from ground water discharge tends to have higher concentrations of magnesium and sulfate. Values of pH were fairly constant, ranging from 7.6 to 8.1.

The Utah State Board of Health has established water quality standards to protect against controllable pollution to beneficial uses of water. For the Miller Creek basin, the pertinent water quality standards are for nongame fish (Class 3c) and irrigation of crops and stockwatering (Class 4) (Utah State Board of Health, 1978).

TDS levels of surface waters immediately below some of the active mine areas exceed the water quality standard for irrigation use, but the effects are diluted by surface waters from undisturbed areas. TDS concentrations in Miller Creek are within the water quality standards at the point that it flows out of the Hiawatha Mines Complex permit area; however, TDS concentrations increase about two-fold when comparing above-mining stations and below-mining stations.

Dissolved constituents continue to increase in Miller Creek as water flows across the Mancos Shale. At the junction of Miller Creek and Utah Highway 10 (about 10 miles east of the permit area), TDS concentrations average more than 3,200 mg/l, and the dominant dissolved chemical constituent is sulfate (Mundorff, 1972). The only parameter to exceed pertinent water quality standards is TDS.

The sodium adsorption ratio (SAR) for the area is low. For the headwater areas of the Miller Creek and Cedar Creek drainages, the SAR is less than 0.5. At the base of the plateau, the SAR values are usually between 0.8 and 2.0. On the Mancos Shale, the SAR values range between 1.0 and 4.0. Snowmelt flow usually has a lower SAR value, but as sodium increases during low flow period in streams crossing the Mancos Shale, the SAR also increases.

Both SAR and TDS combine to become a hazard for irrigation water. All of the water in the study area exhibits a low sodium hazard for snowmelt flows, but Miller Creek at Utah Highway 10 shows a medium sodium hazard during low flow periods. This increase in TDS and SAR as streams cross the Mancos Shales in a natural nonpoint source pollution.

Soils

Within the proposed permit area the dominant soils at elevations of 7,000 to 8,500 feet have cool temperature regimes and are moist except for significant periods during the growing season. Slopes generally range from 30 to 60 percent and at times exceed 70 percent. Soils within the proposed permit area generally are cobbly loam in texture and are derived from a variety of sedimentary rock. Some have organically rich surface horizons. The lighter colored soils have significant accumulations of carbonates in the subsoil.

Below 7,000 feet, the soils have moderate temperature regimes and are usually dry during the growing season. Slopes are generally less than 30 percent. Most of these soils are loam to cobbly loam in texture and have developed from alluvium and mass wasting derived from a variety of sedimentary rocks. Many of these soils have accumulations of carbonates in the subsoil. Vegetative production within and adjacent to the Hiawatha Mines Complex is limited by the lack of available moisture during the growing season. Natural sediment production is high.

Very little topsoil has been salvaged for reclamation purposes because the majority of disturbance occurred prior to the enactment of SMCRA. To accomplish reclamation of the disturbed areas, substitute topsoil will be borrowed from areas below 7,000 feet in elevation for reclamation at the portal areas above 8,000 feet. The borrow areas will yield sufficient material to reclaim previously disturbed areas as well as the borrow areas.

Vegetation

The U.S. Fuel SMCRA permit area includes 12,605 acres and is very diverse in elevation, topography, aspect, temperature, and moisture conditions. As a result, a large number of plant community types have developed. Ten vegetation types have been identified and mapped within the permit area. The ten types are: (1) mixed conifer forest (41.1 percent); (2) pinyon-juniper woodland (15.4 percent); (3) mixed conifer-aspen forest (13.9 percent); (4) mountain brush (11.8 percent); (5) high elevation sagebrush-grassland (7.2 percent); (6) grassland (5.5 percent); (7) sagebrush (1.8 percent); (8) aspen (1.8 percent); (9) riparian woodlands (1.4 percent); and (10) barren land (0.1 percent).

The predominant vegetation types in the permit area are forests and shrublands. Conifer, mixed conifer-aspen, and aspen stands occur at high and intermediate elevations on northern exposures, while pinyon-juniper, sagebrush, and mountain brush stands generally occur at lower mountain and foothill elevations with southern or western exposures. Riparian woodlands are confined to narrow corridors flanking permit area streams, such as Miller and Cedar Creek and their tributaries.

Of the 12,605 acres in the total permit area, approximately 435 acres of vegetation has been removed or disturbed by past, as well as current, mining activities. Past mining activities were concentrated in the stream valleys and lower mountain slopes. Consequently, only mixed conifer, mountain brush, sage brush, pinyon-juniper woodlands, and riparian woodlands were affected. Future reclamation activities will disturb an additional 46 acres of pinyon-juniper woodlands as substitute topsoil sources are used. There are no known occurrences of threatened or endangered plant species or designated critical habitats for such species in the permit area.

Wildlife and Fisheries

The permit area occurs in the Transition and Canadian life zones and provides habitat for a great number of wildlife species, including 6 amphibian species, 18 reptilian species, 139 bird species, and 71 mammal species.

Miller Creek and Cedar Creek drainages are the major perennial stream systems present. However, neither drainage supports fish populations. Cedar Creek supports an aquatic invertebrate community. There is no information on the existence of aquatic life in Miller Creek.

The permit area contains approximately 8,305 acres of critical deer and elk winter range, 3,335 acres of high-priority deer and elk summer range, and 1,017 acres of high-priority elk winter range. Past and current mining activities (surface disturbance) have already affected the critical and high-priority deer and elk winter ranges.

Springs and seeps are scattered throughout the area and provide an important habitat feature for many wildlife species. Riparian habitats are restricted to the narrow floodplains of major streams like Miller and Cedar Creeks. Riparian woodlands constitute about 1.4 percent of the permit area.

The golden eagle, great horned owl, and American kestrel are probably the most common raptors in the permit area. No known active nest or roost sites are present. The bald eagle and American peregrine falcon may occasionally visit the area. There are no known occurrences of threatened or endangered species or designated critical habitats present in the permit area.

Land Use

Land uses in the permit area include mining, logging, livestock grazing, wildlife habitat, watershed, oil and gas exploration, and recreation. Most of these uses have existed since the early 1900's and are expected to continue without disruption by continued mining at the Hiawatha complex.

Cultural Resources

The cultural resources of the Hiawatha complex impact areas have been partially inventoried. To date, no historic or archaeological sites have been recorded within the permit area. The applicant has agreed to provide an historical background study of the town of Hiawatha and to complete a pedestrian inventory of proposed direct impact areas associated with the processing plant, waste disposal sites, and substitute topsoil locations. The applicant has proposed measures to ensure that no adverse effects to any significant cultural sites which may be located within the permit area will occur as a result of mining operations. The Utah State Historic Preservation Officer (SHPO) has concurred with OSMRE's finding of no adverse effect for the project. Since the SHPO letter of 7/9/84 was written, the permit area covered by the Hiawatha mine permit application has been changed, and none of the 3 sites mentioned int the letter are included in the proposed permit area.

Transportation

The permit area is accessible on Utah Highway 122 and on paved haul roads up the Middle Fork and the South Fork of Miller Creek. The town of Hiawatha is the terminal point of Utah Highway 122 and the lower portions of the haul roads also receive use by the public. The haul roads also provide access to water diversion, storage and service facilities for the potable water for the town of Hiawatha. Run-of-mine coal is hauled by truck to the processing plant site in the town of Hiawatha. There the coal is loaded on rail cars for shipment over the Utah Railroad system.

Four roads are currently used at the Hiawatha complex. All four roads were built by U.S. Fuel or its predecessor prior to the passage of SMCRA. Three of the roads parallel each of the forks of Miller Creek and run to active or proposed coal mining operations. The fourth road goes south to the inactive coal mining operations along Cedar Creek.

The roads up the Middle Fork and South Fork of Miller Creek are paved Class I roads used to haul coal to the preparation plant. The road up the North Fork of Miller Creek is a Class III dirt road used for maintenance of a ventilation portal and a water diversion. The fourth road is an unpaved county road between Hiawatha and the Mohrland portal. Carbon County allows U.S. Fuel to maintain the road through an informal agreement. Emery County maintains its part of the road.

Socioeconomics

The Hiawatha complex straddles the Carbon-Emery County line in central Utah in the midst of an area commonly referred to as "Coal Country" or "Castle Country". Coal mining has occurred in the vicinity of the Hiawatha complex since the late 1890's. Today, the entire region is linked to mining and energy resource development. The 1980 population of the two counties was about 33,650, a 62 percent increase over 1970. Most of this growth was a result of the renewed energy development. In 1983, nearly one-third of the total employment in the two counties was involved in the mining, transportation, and utilities sectors.

The nearby town of Hiawatha, owned by U.S. Fuel, was developed during World War I. The current population is about 200. At one time, the town's population reached nearly 1,500, but in the mid-1950's and the 1960's the population declined to about 150 in response to the diminished national importance of coal as an energy source.

All houses and land in the town are owned by U.S. Fuel and are rented to residents. At least one member of a household must be employed by U.S. Fuel in order to rent a dwelling in the town. Of the existing 68 homes and 10 mobile home spaces in Hiawatha, 8 to 10 are vacant. A 1981 Southeastern Utah Association of Local Governments (SEUALG) report on housing stock in Hiawatha indicated that, in 1981, 19 percent of the houses were rated "acceptable", 74 percent were "deficient", and 17 percent were "deteriorating." It is unlikely that the quality of housing stock in Hiawatha will improve over the next 30 years.

Twenty-four percent of the current work force of the Hiawatha complex reside in Hiawatha, 46 percent live in the Price area, and 18 percent live in other communities in Carbon and Emery Counties. The place of residence for 12 percent of the work force is not known.

The majority of the town's budget (90 percent) is provided by property taxes on its $1.8 million assessed valuation. Sales and liquor taxes and state road improvement funds also are sources of revenue. Hiawatha's share of local receipts is dependent on its share of the Carbon County population. The postmining outlook for Hiawatha is dependent on U.S. Fuel. The company could destroy the town, maintain the town, or divest itself of the property. The continued postmining viability of the town would depend on several factors including the desire of residents to remain there and availability of an alternative water supply once the mine is sealed.

PURPOSE AND NEED OF THE PROPOSED ACTION

Pursuant to 30 CFR 746.14(b), the Secretary of the Interior must approve, disapprove, or conditionally approve the proposed mining plan. U.S. Fuel submitted an application for a permit supported by a mining and reclamation plan (MRP) to mine the A, B, and Hiawatha seams at the King Nos. 4, 5, and 6 mines in conformance with the requirements of SMCRA, the Utah State Program, the Federal Lands Program, and the Mineral Leasing Act. Frequent reference will be made to the accompanying technical ayalysis (TA).

ALTERNATIVES

Alternative No. 1: No Action

The Federal Mineral Leasing Act of 1920 and lease conditions require that the Secretary of the Interior approve, disapprove, or conditionally approve mining plans for operations on Federal leases. OSMRE concluded that the permit application was complete on March 2, 1984; therefore, this alternative is not viable and will not be discussed further.

Alternative No. 2: Proposed Action (Preferred Alternative)

The action proposed by U.S. Fuel consists of coal removal from the A (King 4, 5, and 6), B (King 4 and 5), and Hiawatha (King 6) seams of the Blackhawk Formation by room and pillar and continuous mining techniques. Coal from King No. 4, 5, and 6 is to be transported via conveyors from the portals to loadout facilities and transported by truck to the processing facilities in the town of Hiawatha. From Hiawatha the coal is shipped via rail to Nevada or the northwestern states.

The preferred alternative is approval of the permit application package with both Federal and State conditions. Those conditions are contained in the "Permit With Stipulations" section of the decision document. These conditions would be attached to the mining plan approval and to OSMRE's SMCRA permit.

Alternative No. 3: Disapproval of Mine Plan

The disapproval alternative would result in an immediate closure of the existing mining operations. However, U.S. Fuel could reapply for a mining permit. One of the most noticeable impacts of such a closure would be a permanent loss of about 478 direct and induced secondary jobs in the surrounding region, with the greatest losses concentrated in Carbon and Emery Counties.

Disapproval of the mining plan would require initiation of reclamation activities. Impacts to water and land resources from mining would cease. The recovery of 1.53-1.79 million tons of coal resources per year would not occur as a result of implementation of this alternative.

IMPACTS OF ALTERNATIVE NO. 2

Soils

The proposed operations will not cause adverse long-term impacts to permit area soils. Of the 481 acres to be reclaimed following cessation of mining operations, only 46 acres have yet to be disturbed. These areas consist of the Middle Fork breakout (new portal area) and the four substitute topsoil borrow areas (access/haul road corridors not included). In these areas of proposed disturbance, soil pedogenic development will be lost, including developments in soil structure, and the potential for soil loss due to erosion will increase. These long-term impacts to soils will be mitigated by the reclamation of 435 acres of existing disturbed area and the 46 acres proposed to be disturbed.

Within the permit area, additional disturbance to soils causing disturbances to pedogenic development and structure will probably result from mine subsidence. Soil material will probably be lost from subsidence.

The areas disturbed by the proposed operations will be reclaimed using a minimum 6-inch cover of substitute topsoil material for all areas. Substitute topsoil borrow areas have been identified which are sufficient to enable the distribution of 16 inches of substitute topsoil material over 112 acres of graded slurry pond and refuse embankment disturbance and approximately 37 acres of graded coal refuse in the preparation plant area. The need for 16 inches is dependent on results of field trials which will provide data for the evaluation of probable revegetation success of 6, 12, and 16 inches of substitute topsoil over coal refuse. The determination of substitute topsoil thickness for redistribution over the refuse-covered areas will be made after 10 years of field trials. The remaining 332 acres will be reclaimed with available substitute topsoil obtained on-site and supplemented with topsoil from the borrow areas when needed.

The proposed topsoil handling plans will result in the restoration of soil development for both recently and historically disturbed areas, therefore, a majority of all disturbed areas will be returned to conditions which will again permit the natural development of the soils resource.

Vegetation

Past mining activities have altered and/or removed approximately 435 acres of native vegetation (TA, Chapters II and XV). Additional vegetation impacts are anticipated with the proposed operations. Approximately 46 acres of native vegetation will be removed during substitute topsoil removal activities. The life-of-mine operations will not cause significant, long-term adverse vegetation impacts because (1) adequate revegetation with native plant species is practical as proposed; (2) most of the mine-related disturbance has already occurred; (3) essentially all disturbed areas will be revegetated; and (4) a detailed series of field trials will be conducted to test the suitability of the proposed revegetation plan and to revise it as necessary.

Surface Water Hydrology

Portal facilities for the King Nos. 4 and 5 Mines are located on manmade valley fill in the Middle Fork of Miller Creek. One sedimentation pond is used to minimize the sediment leaving the disturbed area. This pond is located in the creek bottom and the creek is diverted by a culvert under the pond. King No. 4 has a ventilation portal in the North Fork of Miller Creek. This portal was punched out from inside the mine and it has a disturbed area of about one acre.

King No. 6 Mine is located adjacent to the South Fork of Miller Creek. Two sedimentation ponds have been built: one for the portal pad and one for the truck loadout/coal storage area. The creek is diverted by a culvert under the sedimentation pond associated with the portal area.

The processing plant is located 2 to 2.5 miles east of the portal areas. Runoff from the processing plant area is conveyed by culverts and open channel ditches to slurry pond no. 5.

There are six slurry ponds located near the town of Hiawatha. One of these (no. 2) has been abandoned (prior to SMCRA) and five of them are still active. There is a sedimentation pond downstream of each of the active slurry ponds. All runoff and sediment control structures associated with slurry pond nos. 1, 3, 4, and 5 are in compliance with the performance standards, but slurry pond 5 north is too small to control runoff draining into the pond, therefore, a permit condition (Condition No. 4, TA, page 34) is necessary.

Two sedimentation ponds will be built to control sedimentation from the substitute topsoil borrow areas. The designs for these two ponds are in compliance with the performance standards.

During reclamation at the portal areas, increase in sediment will be controlled through use of sediment traps. Increase in sediment will also be minimized by scheduling reclamation activities during low flow periods (July through October).

Data from the surface water monitoring reports and the National Pollutant Discharge Elimination System (NPDES) reports indicate that there are no mining-related changes in water quantity or quality associated with disturbances within the buffer zones for the main stem of Miller Creek. Analyses performed in the cumulative hydrologic impact assessment (CHIA) documented that there were increases in total dissolved salts and total suspended solids associated with disturbances along the intermittent forks of Miller Creek, but these increases did not violate established water quality standards. Therefore, there will be no material damage.

At the present time, water from the North Fork of Miller Creek is diverted into the Hiawatha No. 2 Mine. This water is conveyed via underground workings into a mine-regulating reservoir in the Hiawatha No. 2 Mine, with a current storage capacity of 24 million gallons. Discharge from the mine is regulated by pressure valves in bulkheads located in portals along the Middle Fork of Miller Creek. In addition, water is piped across the Middle Fork drainage into the Hiawatha No. 1 Mine. This water is conveyed through underground workings to the South Fork portals. At this location, water is piped from the mine to the town of Hiawatha. This water is considered a secondary source of culinary water for the town. The primary source of culinary water for the town of Hiawatha is the combined ground water issuing from the Bear Canyon Fault in the mine workings and surface water diverted from the North Fork of Miller Creek into the underground workings. This water is conveyed through the mine workings to the Mohrland portal in Cedar Canyon, and then is piped from the mine outlet to the town. Excess water is discharged to Cedar Creek.

Ground Water Hydrology

The Hiawatha Mines Complex encountered a significant ground water inflow from the Bear Canyon Fault of approximately 100 gpm in 1972. This discharge of ground water continues today at the same rate. This water discharges from the abandoned Mohrland portal and is both discharged to Cedar Creek and piped to the town of Hiawatha. The water from the Bear Canyon Fault is the primary source of domestic water for the town of Hiawatha. This high quality water poses no problems to the receiving stream of Cedar Creek. Because the Bear Canyon Fault water was encountered 12 years ago, there are no streamflow or springflow data available to document if other hydrologic resources were affected by the interception of this water in the mine. The extension of the Hiawatha Mines Complex mining within the SMCRA permit area will not produce any other large quantities of water because all mining is complete in the vicinity of the fault zone.

The primary effect that mining at the Hiawatha complex may have on ground water resources is the offset of water bearing strata and resultant loss of ground water discharge points from mine subsidence. Within the zone of possible mine subsidence (4,572 acres), three springs with water rights may be diminished or possibly dried up entirely. Two of the springs belong to U.S. Fuel and the third belongs to the U.S. Forest Service (USFS). The U.S. Fuel springs are reserved for domestic use, although this water supply is not critical, given the excess water available from the Bear Canyon fault via the Mohrland portals. The USFS water right for 5 gpm is reserved for stock watering. Several other small springs without water rights which individually flow less than 5 gpm may also be diminished by mining or possibly dried up entirely. These springs are currently used by stock or wildlife.

The applicant has committed to replace any springs with water rights that are diminished by mining or any wildlife water supplies affected by mining.

Fish and Wildlife Resources

Operations at the Hiawatha complex, will not cause long-term adverse fish and wildlife impacts because (1) the actual area of surface disturbance includes 481 acres all of which will be reclaimed to wildlife habitat; (2) major wildlife displacements and impacts have already been caused by the existing facilities; (3) restoration of premining fish and wildlife habitats is technically and practically feasible; and (4) essentially all disturbed habitats would be revegetated with useful plant species. Continued operation of the existing facility will not cause new or different wildlife impacts.

The U.S. Fish and Wildlife Service (USFWS) has determined that mining activities will not affect the continued existence of endangered or threatened species, or result in impacts to critical supporting habitats if the conservation measures they outline are followed (August 13, 1984, letter). Condition No. 11 (TA, Chapter XVI) is necessary to ensure compliance with the Endangered Species Act.

Large raptors will be protected from electrocutions and nesting disturbances. Key or important habitats will be adequately mitigated with development of equivalent habitats and/or substitute resources.

Backfilling and Grading

After cessation of mining activities, all disturbed areas including the mine portals, coal processing yards, and roads will be regraded and backfilled to a surface configuration resembling the original terrain. The existing haul and access roads in the North, Middle, and South Forks of Miller Creek canyons also will be reclaimed.

Coal and Noncoal Processing Wastes

Coal processing wastes and slurry pond embankments will be regraded and the surface of the disturbed areas will be topsoiled and revegetated. All surfaces will be graded to provide drainage and to control erosion and will blend with the original terrain. Noncoal processing wastes will be disposed at three designated sites. The proposed method of disposal will not produce an adverse impact on the environment.

Subsidence

The underground mining operations of the Hiawatha Mines Complex are expected to produce visible subsidence (i.e., cracks and potholes) in areas where the overburden is less than 400 feet thick. U.S. Fuel has provided subsurface support to protect renewable resource lands and perennial streams.

Socioeconomics

Continuation of underground mining operations at U.S. Fuel's Hiawatha Mines Complex would result in limited direct and indirect impacts of both a beneficial and adverse nature over the life-of-mine. Beneficial impacts include maintenance of existing direct and secondary employment opportunities and additional job opportunities in the future. Current employment is 298. At the projected peak of 500 employees (in years 1989-1990), the Hiawatha Mines Complex would generate 350 additional secondary jobs. Higher employment translates into higher levels of sales for local businesses and higher earnings in the region. Public sector revenues and retail sales tax collections would also increase. Average annual earnings at the Hiawatha Mines Complex are $26,000 per employee. Thus, the current contribution to local earnings exceeds $7.3 million dollars. At peak production and employment, the total earnings would be approximately $13.0 million (1983 dollars). Increased earnings also accrue in the secondary sectors of the economy, resulting in a total local payroll contribution much higher than the direct payroll of the Hiawatha complex.

Peak population in the two-county area associated with the Hiawatha operations would approach 2,000 (in years 1989-1990). An estimated 1,120 of these people are current residents of the region and are members of households directly or indirectly supported by the existing Hiawatha Mines Complex. The remaining population represents growth that will coincide with the increases in production and employment. Total population in Carbon and Emery Counties is projected to increase by 48 percent, from 33,650 in 1980 to 49,950 in 1990. The additional growth attributable to the Hiawatha Mines Complex accounts for about 5.4 percent of the total change.

Historically, a substantial number of U.S. Fuel's employees have resided in Hiawatha. The current housing and facilities are near capacity and the company has no plans to expand the community or facilities. Thus, a larger share of the future growth will reside elsewhere, with most of the growth expected to occur in the Price/Helper and Huntington areas.

Other socioeconomic impacts (for example, the need for additional housing) would parallel the growth in population. There may be at least a temporary deterioration in the quality and/or quantity of services provided by municipalities, school districts, counties, and utilities if growth in revenue does not keep pace with cost and/or demand.

The two primary highways providing access to the Hiawatha Mines Complex, Utah State Highways 10 and 122, have both been identified by the Utah Department of Transportation (UDOT) as deficient and in need of improvement. As a result of its high traffic volume and the high percentage of the total volumes represented by heavy truck and tractor-trailer combinations, improvements to Utah Highway 10 have been assigned a high priority and an improvement program has been conducted over the past several construction seasons. Because of its relatively low traffic volumes, improvements to Utah Highway 122 have been given a lower priority and the UDOT does not have any current plans to improve Utah Highway 122.

Indirect, unavoidable, adverse impacts associated with the projected increase in population would occur in the following resources:

- Increased consumptive use of water and increased sewage effluent discharges;
- Conversion of approximately 109 acres of range and agricultural land for urban community uses, e.g., housing, parks, and public facilities;
- Increased recreation participation including hunting, fishing, and camping; and
- Additional vehicular traffic on the local highway network with resulting impacts on air quality, increased deterioration of highways, congestion, and reduced human safety.

Overall, none of these adverse impacts are considered to be of more than minor significance.

Cultural Resources

A cultural resources inventory of the surface facilities area in the Middle Fork of Miller Creek was conducted in 1983. No cultural resources were recorded in the approximately three-acre survey area (Schleisman and Nielson 1983). In addition to providing the inventory report for that study, the applicant has commited to conducting historical assessments of the town of Hiawatha and cultural resources inventories of the processing plant and waste disposal sites. The applicant has also committed to surveying the substitute topsoil borrow areas prior to the initiation of ground disturbance. The inventory of the town will include a National Register of Historic Places eligibility assessment of the processing plant, for which renovation has been proposed. The applicant has provided sufficient information to determine that proposed ground surface disturbance will not affect any historic mining remains.

The effects of subsidence on cultural resources cannot be estimated at present since no inventory has been conducted in the area over the underground workings. However, the applicant has agreed to conduct additional inventory for the purposes of assessing the effects of subsidence at such time that OSMRE, Utah DOGM, and/or the Utah SHPO perceive that subsidence may adversely affect known or unrecorded cultural sites.

OSMRE has requested and received SHPO concurrence with a finding no adverse effect for the project. The SHPO concurrence included three sites of interest within the proposed permit area at that time. Since then the proposed permit area has been revised so that all three sites are now outside of the permit area.

Implementation of the measures proposed in the application and the conditions concerning the treatment of significant cultural sites and emergency discoveries of cultural sites during mining (Condition No. 1, TA, Chapter VI), in addition to the stipulations on the Federal coal leases, will allow a finding of no adverse effect according to the provisions of the Programmatic Memorandum of Agreement between U.S. Geological Survey, Bureau of Land Management, OSMRE, and the Advisory Council regarding the Federal Coal Management Program, 1980.

LONG-TERM IMPACTS

Long-term impacts that would occur if the mine plan is approved with conditions are: maximum recovery of coal for power plant and military facilities; continued employment of approximately 281 persons in the near future, eventually increasing to approximately 500 employees; possible subsidence on some parts of the permit area; generation of fugitive dust; minor adverse effects to wildlife due to the presence of men and machinery in the area; and loss of some springs in the area.

IMPACTS OF ALTERNATIVE NO. 3

The disapproval alternative would result in the immediate closure of the existing mining operations and implementation of reclamation activities. One of the most noticeable impacts of mine closure would be a permanent loss of 478 direct and induced secondary jobs in the surrounding region. Local payrolls, retail purchases, and tax collections would also decline. In the long term, closure could result in a decline in local population. The largest share of the losses would be concentrated in Carbon and Emery Counties.

Further, this alternative would result in a loss of approximately 1.53-1.79 million tons of coal every year for a period of 30 years. Nonavailability of 1.53-1.79 million tons of coal every year would have to be substituted for by alternate sources of energy such as crude oil, bottled propane energy, or by other coal market sources. However, this alternative would preclude possible additional subsidence in unmined areas and continued impacts to water, air, and land resources. U.S. Fuel would have the option of reapplying for a coal mining permit in the future.

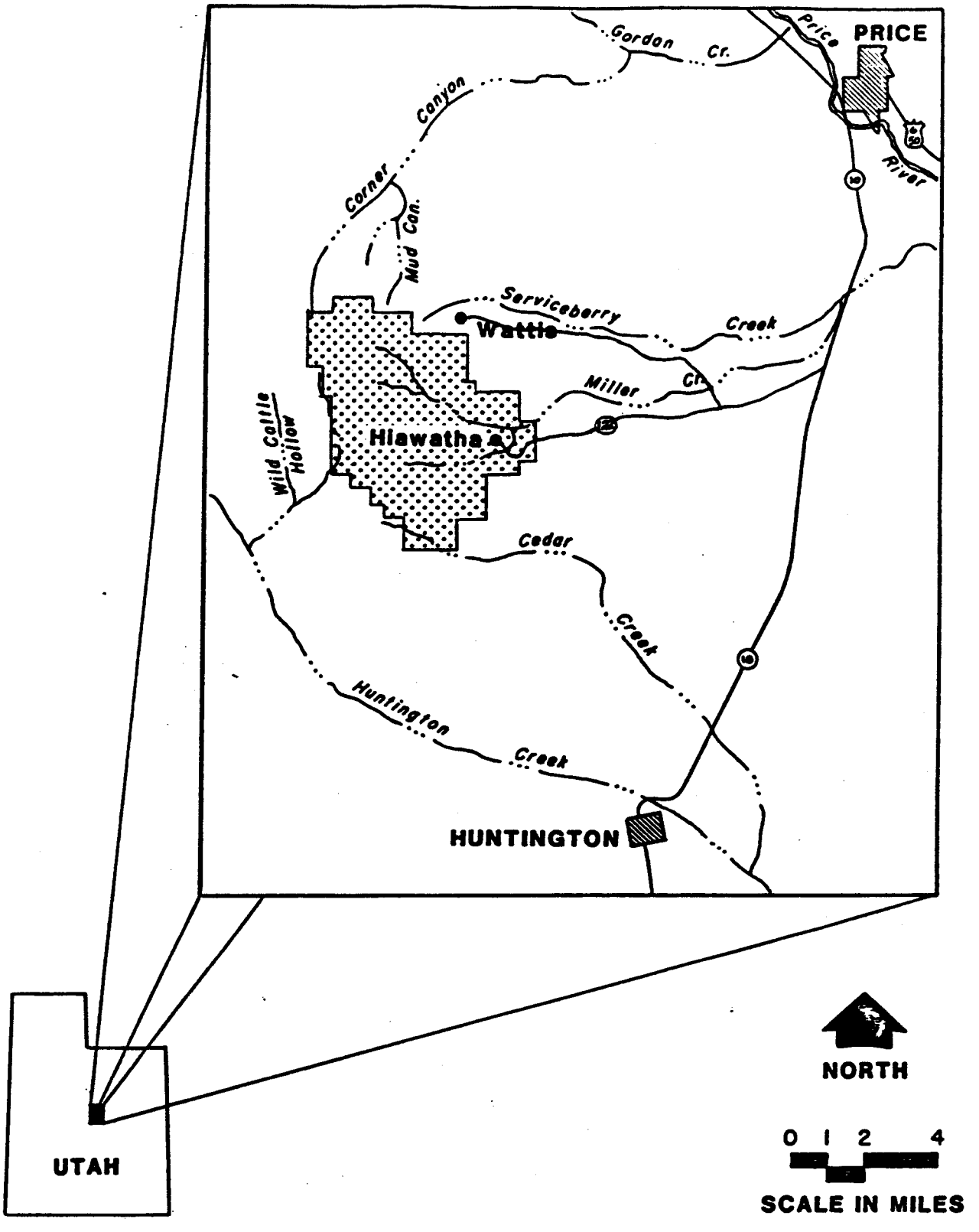


Figure 1
AREA MAP
HIAWATHA MINES COMPLEX

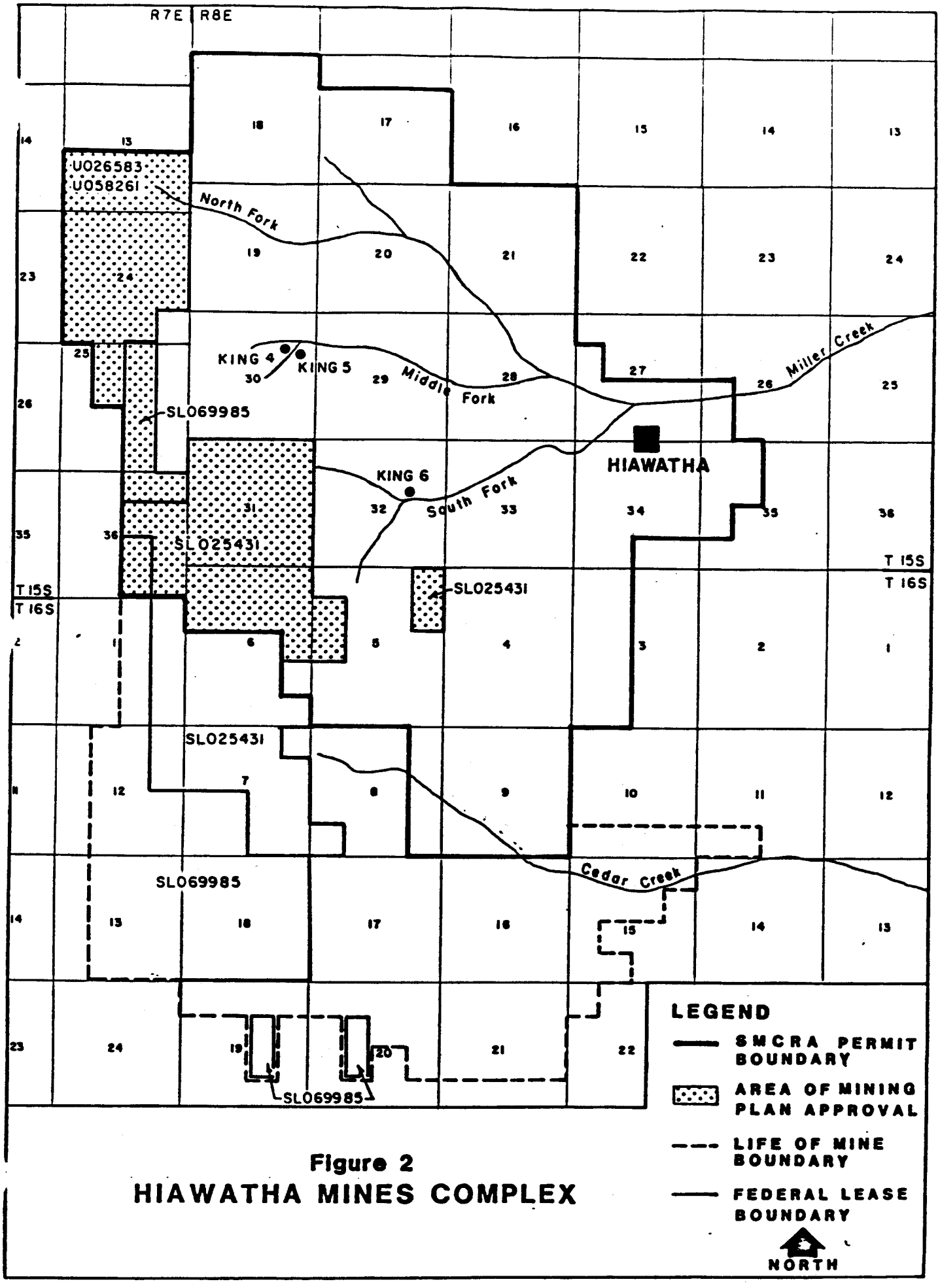


Figure 2
HIAWATHA MINES COMPLEX

Office of Surface Mining Reclamation and Enforcement
Technical and Environmental Assessment
Hiawatha Complex Mines

TABLE OF CONTENTS

PAGE

I. INTRODUCTION....1
II. DESCRIPTION OF THE EXISTING ENVIRONMENT....3
Topography and Geology....3
Climate and Air Quality....5
Hydrology....6
Water Supply....7
Water Quality....7
Soils....8
Vegetation....9
Wildlife and Fisheries....9
Land Use....10
Cultural Resources....10
Transportation....10
Socioeconomics....11
III. SUMMARY OF THE OPERATIONS AND RECLAMATION PLAN....12
IV. LEGAL, FINANCIAL AND COMPLIANCE INFORMATION - UMC 782.13, 782.14, 782.15, 782.16, 782.17, 782.18, 782.19, AND 782.21....13
UMC 782.13 Identification of Interests....13
UMC 782.14 Compliance Information....13
UMC 782.15 Right-of-Entry and Operation Information....13
UMC 782.16 Relationship to Areas Designated Unsuitable for Mining....13
UMC 782.17 Permit Term Information....13
UMC 782.18 Personal Injury and Property Damage Insurance Information....13
UMC 782.19 Identification of Other Licenses and Permits....14
UMC 782.20 Identification of Location of Public Office for Filing of Application....14
UMC 782.21 Newspaper Advertisement and Proof of Publication....14
V. LAND USE - UMC 783.22, 784.15, AND 817.133....14
VI. CULTURAL AND HISTORIC RESOURCES - UMC 761.11(a)(3), 783.12(b) AND 784.17....14
VII. GEOLOGY - UMC 783.13 AND 783.14....15
VIII. HYDROLOGIC BALANCE: SURFACE WATER - UMC 783.16, 784.16, AND 784.22....16
UMC 783.16 Surface Water Information....16
UMC 784.16 Reclamation Plan: Ponds, Impoundments, Banks, Dams, and Embankments....18
(b)(1) Sedimentation Ponds....18
UMC 784.22 Diversions....23
IX. HYDROLOGIC BALANCE: GROUND WATER - UMC 783.13 AND 783.15....25
X. ALLUVIAL VALLEY FLOORS - UMC 785.19 AND 822....26
XI. WATER RIGHTS AND REPLACEMENT - UMC 783.17, 817.53, AND 817.54....26

XII. PROBABLE HYDROLOGIC CONSEQUENCES OF MINING - UMC 784.14, 817.50, 817.55, and 817.52....27
UMC 784.14 Reclamation Plan: Protection of the Hydrologic Balance....27
Surface Water....27
Ground Water....28
UMC 817.50 Hydrologic Balance: Underground Mine Entry and Access Discharges, UMC 817.55 Hydrologic Balance: Discharge of Water into an Underground Mine, and UMC 786.21 Criteria for Permit Approval or Denial: Existing Structures....31
UMC 817.52 Hydrologic Balance: Ground Water Monitoring....33
XIII. CLIMATOLOGICAL INFORMATION AND AIR RESOURCES - UMC 783.18 and 784.26....35
UMC 783.18 Climatological Information and Air Resources....35
UMC 784.26 Air Pollution Control Plan....35
XIV. TOPSOIL - UMC 783.21, 784.13(b)(3 and 4), AND 817.21 THROUGH 817.25....35
UMC 784.13(b)(4) and UMC 817.21 - Topsoil: General Requirements....35
UMC 784.13(b)(4) AND UMC 817.22 - Topsoil: Removal....38
UMC 784.13(b)(4) and UMC 817.23 - Topsoil: Storage....40
UMC 784.13(b)(4) and UMC 817.24 - Topsoil: Redistribution....41
UMC 784.13(b)(4) and UMC 817.25 - Topsoil: Nutrients and Soil Amendments....42
XV. VEGETATION - UMC 783.19, 784.13(b)(5), AND 817.111 THROUGH 817.117....44
XVI. FISH AND WILDLIFE RESOURCES - UMC 784.21 AND UMC 817.97....47
XVII. PRIME FARMLAND - UMC 783.27, 785.17, AND 823....50
XVIII. EXPLOSIVES - UMC 784.23(b)(9) AND 817.61 THROUGH 817.68....50
XIX. OPERATION DESCRIPTION - UMC 784.11 AND 784.12....50
XX. BACKFILLING AND GRADING - UMC 784.13(b)(3), 817.101, 817.72, 817.73, AND 817.74....51
XXI. COAL PROCESSING WASTE AND NON-COAL PROCESSING WASTE - UMC 784.13(b)(6), (b)(7), 784.16(c) AND (d), 784.19, 784.25, 817.71, 817.93 AND 817.103....51
UMC 784.16(d) and (e) Reclamation Plan: Ponds, Impoundments, Banks, Dams, and Embankments....51
UMC 784.19 and 817.71 Underground Development Waste....52
UMC 784.25 Return of Coal Processing Waste to Abandoned Underground Workings....52
XXII. MINE FACILITIES, COAL HANDLING STRUCTURES, AND SUPPORT FACILITIES - UMC 784.11, 784.12, 784.16(a)(2) AND (a)(3), AND 817.181....52
XXIII. ROADS - UMC 784.18, 784.24 AND 817.150 THROUGH 817.180....52
UMC 817.50 Through .155 and UMC 817.171 Through .175....52
UMC 784.18 Relocation/Use of Public Roads....53
UMC 817.156, 817.166, and 817.176 - Roads Restoration....54
UMC 817.180 Other Transportation Facilities and 817.181 Support Facilities and Utility Installations....54
XXIV. BONDING - UMC 805 AND 806....54
XXV. SEALING OF DRILLED HOLES AND UNDERGROUND OPENINGS - UMC 817.14 AND 784.13(b)(8)....55
XXVI. SUBSIDENCE - UMC 817.126 AND 784.20....55
XXVII. SPECIAL CATEGORIES OF MINING OTHER THAN ALLUVIAL VALLEY FLOORS AND PRIME FARMLAND - UMC 817 AND UMC 828....56

XXVIII. MISCELLANEOUS COMPLIANCE.....56
UMC 817.99 Slides and Other Damage.....57
UMC 817.100 Contemporaneous Reclamation.....57
UMC 817.106 Regrading or Stabilizing Rills and Gullies.....57
UMC 817.11 Signs and Markers.....57
UMC 784.13(b)(9) Compliance With Clean Air and Clean Water Acts.....57
UMC 786.11 Public Notices of Filing of Permit Applications.....56
APPENDIX A: CUMULATIVE HYDROLOGIC IMPACT EXECUTIVE SUMMARY
APPENDIX B: BONDING ANALYSIS

TECHNICAL ANALYSIS
HIAWATHA MINES COMPLEX

I - INTRODUCTION

United States Fuel Company (U.S. Fuel), a wholly owned subsidiary of Sharon Steel Corporation, submitted a permit application to the Utah Division of Oil, Gas, and Mining (UDOGM) and the Office of Surface Mining Reclamation and Enforcement (OSMRE) on March 23, 1981 in order to bring its Hiawatha Mines Complex into compliance with the permanent Utah State Program for the next 5 years of mining. This original submittal, updated through February 4, 1985, along with the apparent completeness review (ACR) response (June 14, 1983) and numerous applicant responses to determination of adequacy letters (DOAs), comprise the permit application package (PAP) for the Hiawatha Mines Complex. The Hiawatha Mines Complex consists of the King 4, 5, and 6 Mines and coal handling and processing facilities adjacent to the town of Hiawatha. The following technical analysis (TA) evaluates this permit application package (UT-0006). In addition to providing the application requirements for a Utah coal mining permit, the PAP includes the information required for the Secretary of the Interior to make a decision on U.S. Fuel's mining plan for its Hiawatha Mines Complex.

The Hiawatha Complex is located on the east side of the Wasatch Plateau in central Utah, about 15 miles southwest of Price, in Carbon and Emery Counties (Figure 1). U.S. Fuel controls, through private and Federal leases, 19,211 surface acres that comprise the Hiawatha Mines Complex. Of that total, only 12,605 acres are included in this action. Of this area, approximately 5,726 acres (approximately 30 percent) of coal are held by U.S. Fuel in the form of leases with the Federal government. The leases involved are: SL-025431 (2,370.26 acres), SL-069985 (2,356.09 acres, and the combined leases U-058261 and U-026583 (1,000 acres). Only portions of those Federal leases, as identified on Figure 2, will be mined within the scope of this permit. The SMCRA permit area includes 12,605 surface acres in T.15S., R.7E., SLM, sections 13, 24, 25, 36; T.15A., R.8E., SLM, sections 17-21, 26-35; T.16S., R.8E., SLM, sections 3-6, 8, and 9. Federal coal leases within the permit area total 2,543 acres and comprise the mining plan area. All four Federal leases are involved in the mining plan area. Federal leases SL-025431 and SL-069985 also extend beyond the current mining plan area into the life-of-mine area. The remainder of the coal in the permit area and the life-of-mine area (9,833 acres) is owned by U.S. Fuel. The applicant does not own coal rights in approximately 3,650 acres in the permit area. The surface is owned by U.S. Fuel and the subsurface is controlled by the Bureau of Land Management. However, coal resources are not present within these areas (PAP Exhibits VI - 1 and 2). This permitting action does not include redevelopment of the Mohrland area (King 7 and 8) to the south of the SMCRA permit area; however, a proposed unit train loadout adjacent to the town of Hiawatha is part of this permitting action. Unless otherwise indicated, all references in this TA are to the Utah Regulations Pertaining to the Surface Effects of Underground Coal Mining Activities (UMC 700 et seq. and UMC 800 et seq.).

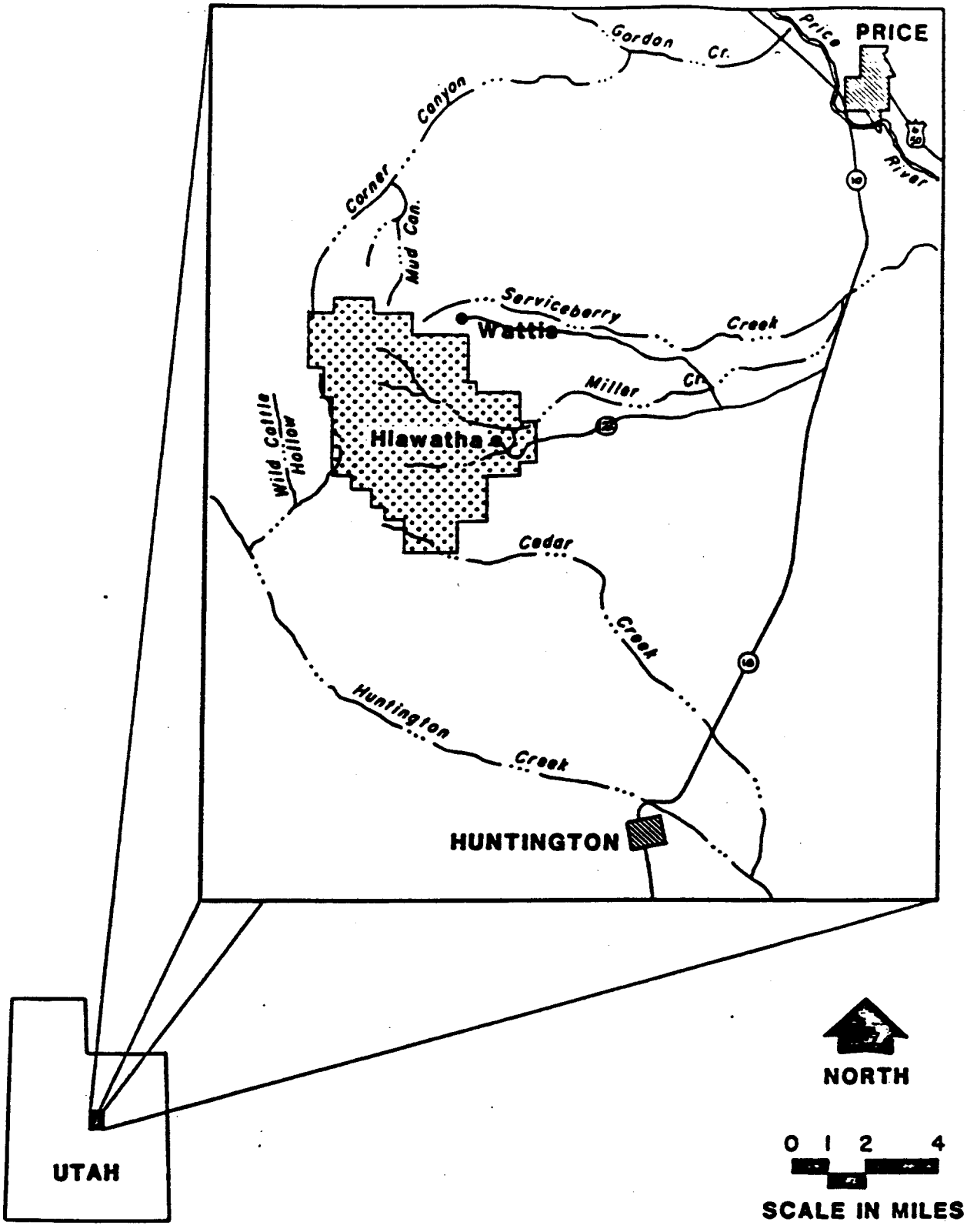


Figure 1
AREA MAP
HIAWATHA MINES COMPLEX

The Hiawatha Mines Complex is a consolidation of the original King, Hiawatha, Black Hawk and Mohrland mines, which began mining coal in the early 1900's. U.S. Fuel was organized in 1915 and began operation in 1916 when it took over the properties of the Consolidated Fuel Company, Castle Valley Coal Company, and Black Hawk Coal Company, all of which are located within the current permit area boundary. The current five-year permit application applies to three underground mines (King 4, 5, and 6) which are existing operations. Mining will remove coal from the A (King 4, 5, and 6), B (King 4 and 5), and Hiawatha (King 6) seams of the Blackhawk Formation.

Approval of both the SMCRA permit by OSMRE and the mining plan by the Secretary would provide for mining at the Hiawatha Mines Complex through the year 1989 at a maximum rate of 1.76 million tons per year. U.S. Fuel currently ships all coal from the Hiawatha Complex by rail to an electric generation plant in Nevada and military facilities in the northwestern United States. U.S. Fuel currently employs approximately 281 people at the Hiawatha Mines Complex. Employment would increase to 500 during the period of maximum production (1989). Because the town of Hiawatha is near capacity, most workers will need to live elsewhere.

The environmental assessment (EA) on the mining plan which accompanies this TA was prepared pursuant to the National Environmental Policy Act (NEPA). The EA and TA frequently reference one another.

II - DESCRIPTION OF THE EXISTING ENVIRONMENT

Topography and Geology

The Hiawatha Complex is located on the east side of the Wasatch Plateau, at elevations ranging from 6,750 to 9,600 feet, in an area characterized by steep canyons and high plateaus. Miller and Cedar Creeks drain the permit area.

Geology is the principal factor controlling the occurrence and availability of ground water in the vicinity of the Hiawatha Mines Complex. Portals for the Hiawatha Complex lie at the base of an erosional escarpment that forms the eastern face of the Wasatch Plateau. The Wasatch Plateau is a high, broad, flat area dissected by numerous streams. The high plateaus of Utah, which include the Wasatch Plateau, are thought to be a transition zone containing geologic structures common to both the Colorado Plateau Province to the east and the Basin and Range Province to the west. The mine complex is located in the Wasatch Plateau Coal Field. Coal outcrops appear in the canyon walls and along the cliffs. Rock types in the region are late Cretaceous and Tertiary in age and are generally representative of continental and/or transitional sediments. Marine sediments occur below the sequence and are on the valley floors east of the escarpment.

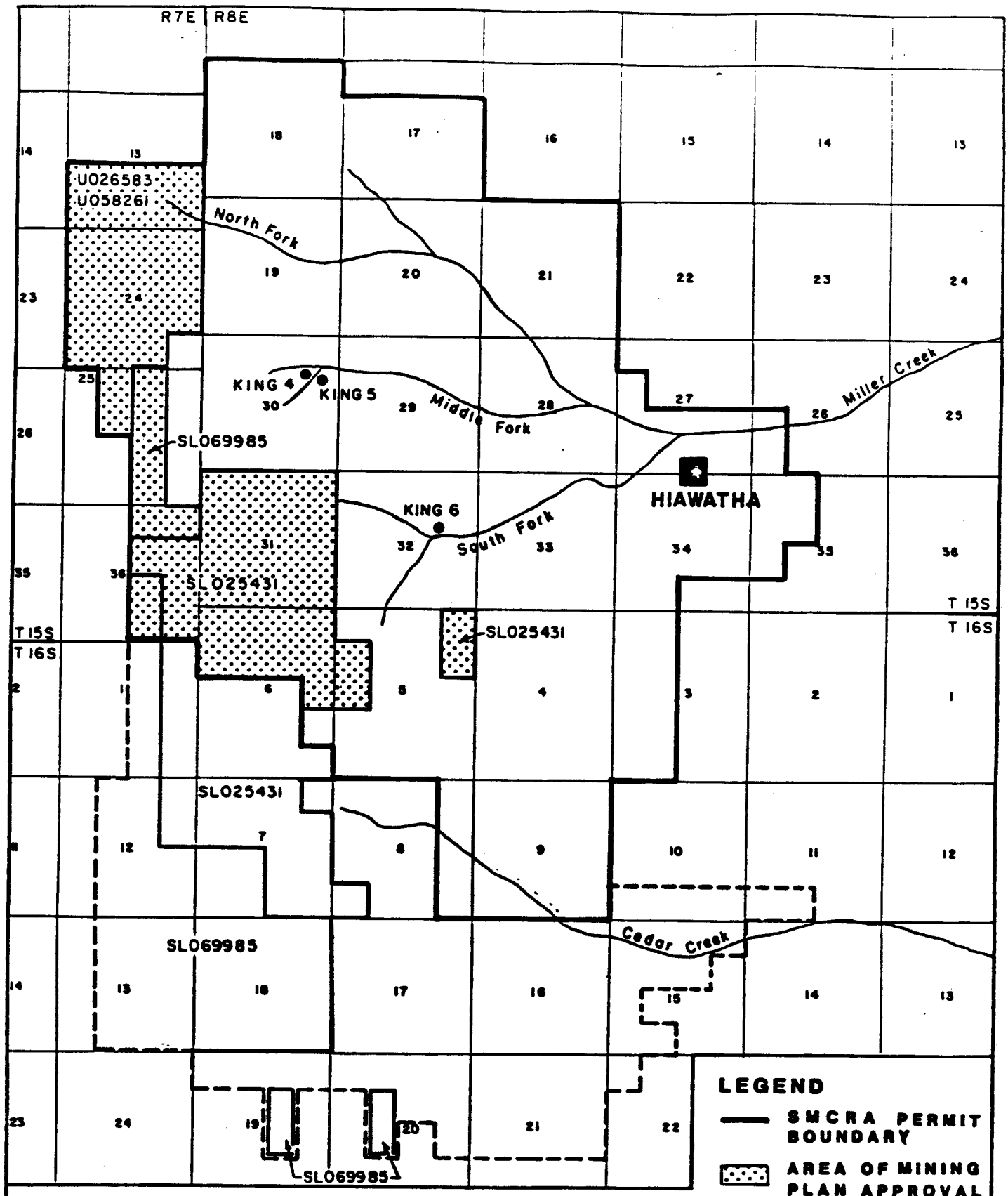


Figure 2

HIAWATHA MINES COMPLEX

Structurally, the region is not very complex. Strata are fairly flat with dips to the south (sometimes slightly southeast or southwest) at 1 to 3 degrees. Locally, near faults, the dip increases to about 20 degrees.

The Pleasant Valley Fault Zone cuts across the western portion of the study area. It runs from north of Scofield Reservoir to south of Huntington Creek. The Pleasant Valley Fault Zone is 3 to 5 miles wide and displacement is generally between a few feet and 100 feet, although greater displacement occurs locally (Doelling, 1972).

Several localized fault systems have been identified to be associated with the Pleasant Valley Fault. One of these faults of local interest in the study area is the Bear Canyon Fault. The Bear Canyon Fault marks the western limit of mining at the Hiawatha Mines Complex, and it has a displacement of up to 250 feet.

Members of the Mancos Shale, Mesaverde Group, and Wasatch Group all outcrop in the study area. From bottom to top, the geologic units are Masuk Shale (a member of the Mancos Shale), Star Point Sandstone, Blackhawk Formation, Price River Formation, and North Horn Formation (a member of the Wasatch Group). The Star Point Sandstone, Blackhawk Formation, and Price River Formation are members of the Mesaverde Group. Mineable coal seams are located in the lower half of the Blackhawk Formation. Six coal beds have been identified in the Blackhawk Formation in the area of the Hiawatha complex. Four of these seams are thick enough to be economically mined at this time (Hiawatha, A, B, and Upper seams). U.S. Fuel has mined all but the Upper seam.

Climate and Air Quality

The climate of the Hiawatha Mines Complex area is typical of canyon areas of central Utah. Summer temperatures range from 40° to 95° F while winter temperatures average around 25° F. The average annual precipitation is 12 inches. Winds in the mine plan area are affected by the area's topography, although general wind directions over a broader region are from the north-northeast in the winter and the south-southwest in the summer.

Central Utah is primarily rural with some light or dispersed industrial activity. Existing air quality is generally excellent, although high total suspended particulate values result from travel on unpaved roads. Carbon monoxide, ozone, lead, and hydrocarbons are generally not monitored in the region, but it is reported that they are within the National Ambient Air Quality Standards (NAAQS) (BLM 1983).

Hydrology

In the vicinity of the Hiawatha Mines Complex, the Wasatch Plateau is dissected by two drainage systems, Miller Creek and Cedar Creek. The drainage area for Miller Creek, above the confluence with Serviceberry Creek, is about 29,700 acres. Streamflow in Miller Creek is perennial below the confluence with the North Fork of Miller Creek. The left fork of the North Fork of Miller Creek is diverted into an abandoned workings of the Hiawatha No. 2 Mine which contains an underground water storage reservoir. This reservoir provides water for the town of Hiawatha, the mine workings and the coal processing plant. Cedar Creek is also a perennial stream with a drainage area of approximately 5,300 acres. Cedar Creek receives approximately 1 cubic foot per second (cfs) of discharge from the inactive Mohrland portal to the south of the Hiawatha Mines Complex.

Ground water in the region around the Hiawatha Mines Complex is recharged principally by direct infiltration of precipitation in the higher plateau, infiltration from perennial streams that flow down gradient to Mancos Shale lowlands, and, to a limited extent, by infiltration in outcrops.

Contact with the Bear Canyon Fault at several points in old mine workings has resulted in large flows of water and accounts for most of the mine water presently discharged from the inactive Mohrland portal. One water-producing contact with the fault which is accessible in the King 4 Mine is presently used for fire protection and dust suppression in that mine. Generally, mine water flows southerly, away from active mining, and is discharged by gravity flow at the inactive Mohrland portal. Some of this water is diverted for culinary and industrial use at Hiawatha, and the remainder flows into Cedar Creek. No other mine discharge or dewatering activities are anticipated by U.S. Fuel.

The data contained in the spring inventory (DOA response November 7, 1984, Volume 1, Part 783.15) indicated more than 75 percent of the seeps and springs found during the survey issue from formations located stratigraphically above the coal-bearing Blackhawk Formation. More than half of the seeps and springs were found issuing from the North Horn Formation occupying the ridges in the western portion of the permit area. Flow rates from springs issuing from these upper formations tend to vary between about 2 and 8 gallons per minute (gpm).

Approximately one-fifth of the seepage points found during the survey are located in the Blackhawk Formation. Flow rates at these points tend to be minimal, with seepage issuing predominantly at the interface between sandstone and shale lenses. Usage is also minimal as a result of the low flow rate and the general inaccessibility of the seeps.

Water Supply

Mine water is used by U.S. Fuel for: 1) fire protection and dust suppression in King 4; 2) the coal processing plant; and 3) by the town of Hiawatha for culinary purposes. Approximately 786,000 gallons per day (gpd) is used by the plant; the town uses approximately 30,000 gpd from the system. These uses are covered by water rights claimed by U.S. Fuel for 4,758 gpm (3,746 gpm in surface-water rights and 1,012 gpm in ground-water rights). Mine water discharge from the inactive Mohrland portal is regulated under National Pollutant Discharge Elimination System (NPDES) permit UT-0023094. Water supply information on the area surrounding the Hiawatha Mines Complex is provided in the cumulative hydrologic impact assessment (CHIA), prepared by OSM.

Water is piped to the town of Hiawatha and the processing plant from the mines. Water is diverted into the mine on the North Fork of Miller Creek. This water together with the water intercepted in the mine is stored in the mined out section of the abandoned Hiawatha No. 2 Mine. Maximum storage volume in this underground reservoir is about 120 milliom gallons (368 acre-feet). Four bulkheads, constructed in 1951, are used to contain the water within the old mine workings. Only about 60 million gallons (194 acre-feet) were normally stored in this reservoir. With the removal of one of the bulkhead seals, the capacity is limited to approximately 24 million gallons. The bulkheads are accessible, however, the underground "pumping system" is not.

Water in excess of that used in the mining operation is routed south through the mine workings by gravity. There is a 125,000 gallon (0.4 acre-feet) underground concrete storage tank and a discharge pipe associated with the King No. 3 Mine, but most of the ground water in the mine is conveyed south to the Mohrland portal where it is collected and piped to the town of Hiawatha. Water volume in excess of the capacity of the pipe is discharged into Cedar Creek. At Hiawatha there are four water storage tanks with a combined capacity of 245,000 gallons (0.75 acre-feet). Water is treated and then stored in a 40,000 gallon (0.1 acre-feet) tank 5A near the preparation plant.

Water Quality

Water in the mine is of good quality, with an average total dissolved solids concentration of about 700 mg/1. Surface water on the top of the Wasatch Plateau has a low total dissolved solids (TDS) concentration usually less than 400 milligrams per liter (mg/1) and a low total suspended sediment (TSS) concentration, usually less than 30 mg/1. Concentrations of dissolved sodium and chloride are usually less than 15 mg/1. The predominant dissolved chemical constituents are calcium and bicarbonate. Water quality during snowmelt runoff tends to be a calcium carbonate type and water quality from ground water discharge tends to have higher concentrations of magnesium and sulfate. Values of pH were fairly constant, ranging from 7.6 to 8.1.

The Utah State Board of Health has established water-quality standards to protect against controllable pollution to beneficial uses of water. For the Miller Creek basin, the pertinent water-quality standards are for nongame fish (Class 3c) and irrigation of crops and watering (Class 4) (Utah State Board of Health, 1978).

TDS levels exceed the water quality-standard for irrigation use immediately below some of the active mine areas, but the effects are diluted by surface water from undisturbed areas. TDS concentrations are within the water quality standards before water in Miller Creek flows out of the Hiawatha Mines Complex permit area. TDS increases by about two-fold when comparing above mining stations and below mining stations.

Dissolved constituents continue to increase in Miller Creek as water flows across the marine Mancos Shale. At the junction of Miller Creek and Utah Highway 10 (about 10 miles east of the permit area) TDS concentrations average more than 3,200 mg/l, and the dominant dissolved chemical constituent is sulfate (Mundorff, 1972). Again, the only parameter to exceed pertinent water-quality standards is TDS.

The sodium adsorption ratio (SAR) for the headwater areas is low. For the headwater areas of the Miller Creek and Cedar Creek drainages, the SAR is less than 0.5. At the base of the plateau, the SAR values are usually between 0.8 and 2.00 In the Mancos Shale, the SAR values range between 1.0 and 4.0. Snowmelt flow usually has a lower SAR value, but as sodium increases during low flow periods in streams crossing the Mancos Shale, the SAR also increases.

Both SAR and TDS combine to become a hazard for irrigation water. All of the water in the study area exhibits a low sodium hazard for snowmelt flows, but Miller Creek at Utah Highway 10 shows a medium sodium hazard during low flow periods. This increase in TDS and SAR as streams cross the Mancos Shale is a natural nonpoint source of pollution.

Soils

Within the proposed permit area the dominant soils at elevations of 7,000 to 8,500 feet have cool temperatures regimes and are moist except for significant periods during the growing season. Slopes generally range from 30 to 60 percent and at times exceed 70 percent. Soils within the proposed permit area generally are cobbly loam in texture and are derived from a variety of sedimentary rock. Some have organically rich surface horizons. The lighter colored soils have significant accumulations of carbonates in the subsoil.

Below 7,000 feet, the soils have moderate temperature regimes and are usually dry during the growing season. Slopes are generally less than 30 percent. Most of these soils are loam to cobbly loam in texture and have developed from alluvium and mass wasting derived from a variety of sedimentary rocks. Many of these soils have accumulations of carbonates in the subsoil. Vegetative production within and adjacent to the Hiawatha Mines Complex is limited by the lack of available moisture during the growing season. Natural sediment production is high.

Very little topsoil has been salvaged for reclamation purposes because the majority of disturbance occurred prior to the enactment of SMCRA. Instead, soil will be borrowed from areas below 7,000 feet in elevation for reclamation at the coal waste disposal sites and portal areas above 8,000 feet. The borrow areas will yield sufficient material to reclaim previously disturbed areas as well as the borrow areas themselves.

Vegetation

The U.S. Fuel SMCRA permit area includes 12,605 acres and incorporates a large diversity of elevation, topography, aspect, temperature, and moisture conditions. As a result, a large number of plant community types have developed. Ten vegetation types have been identified and mapped within the permit area. The ten types are: (1) mixed conifer forest (41.1 percent); (2) pinyon-juniper woodland (15.4 percent); (3) mixed conifer-aspen forest (13.9 percent); (4) mountain brush (11.8 percent); (5) high elevation sagebrush-grassland (7.2 percent); (6) grassland (5.5 percent); (7) sagebrush (1.8 percent); (8) aspen (1.8 percent); (9) riparian woodlands (1.4 percent); and, (10) barren land (0.1 percent). As these characteristics indicate, the basic vegetation of the permit area is forests and shrublands. Conifer, mixed conifer-aspen, and aspen stands occur at high and intermediate elevations on northern exposures, while pinyon-juniper, sagebrush, and mountain brush stands generally occur at lower mountain and foothill elevations with southern or western exposures. Riparian woodlands are confined to narrow corridors flanking Miller Creek and it's tributaries.

Of the 12,605 acres in the permit area, approximately 435 acres of vegetation have been lost or disturbed by past, as well as current, mining activities. Past mining activities were concentrated in the stream valleys and lower mountain slopes. Consequently, only mixed conifer, mountain brush, sage brush, pinyon-juniper woodlands, and riparian woodlands were affected. Future reclamation activities will disturb an additional 46 acres of pinyon-juniper woodlands as substitute topsoil sources are used. There are no known occurrences of threatened or endangered plant species or designated critical habitats for such species in the permit area.

Wildlife and Fisheries

The mine permit area occurs in the Transition and Canadian life zones and provides habitat for approximately 234 species of wildlife, including 6 amphibian species, 18 reptilian species, 139 bird species, and 71 mammal species.

Miller Creek and Cedar Creek drainages are the major perennial stream systems present. However, neither drainage supports fish populations. Cedar Creek supports an aquatic invertebrate community. There is no information on the existence of aquatic life in Miller Creek.

The permit area contains approximately 8,305 acres of critical deer and elk winter range, 3,335 acres of high-priority deer and elk summer range, and 1,017 acres of high-priority elk winter range. Some of these areas overlap within the permit area. Past and current mining activities have affected the critical and high-priority deer and elk winter ranges.

Springs and seeps are scattered throughout the area and provide an important habitat feature for many wildlife species. Riparian habitats are restricted to the narrow floodplains of major streams like Miller and Cedar Creeks. Riparian woodlands constitute about 1.4 percent of the permit area.

The golden eagle, great horned owl, and sparrow hawk are probably the most common raptors in the permit area. No known active nest or roost sites are present. The bald eagle and American peregrine falcon may occasionally visit the area. There are no known occurrences of threatened or endangered species or designated critical habitats present in the permit area.

Land Use

Land uses in the permit area include mining, logging, livestock grazing, wildlife habitat, watershed, oil and gas exploration, and recreation. Most of these uses have existed since early in the 20th century and are expected to be maintained without disruption by continued mining at the Hiawatha Complex.

Cultural Resources

The cultural resources of the Hiawatha Mines Complex impact areas have been partially inventoried. To date, no historic or archaeological sites have been recorded within the permit area. The applicant has agreed to provide an historical background study of the town of Hiawatha and to complete a pedestrian inventory of proposed direct impact areas associated with the processing plant, waste disposal sites, and substitute topsoil locations. The applicant has proposed measures to ensure that no adverse effects to any significant cultural sites which may be located within the permit area will occur as a result of mining operations. The Utah State Historic Preservation Office (SHPO) has concurred with OSM's finding of no adverse effect for the project in a letter to OSMRE dated July 9, 1984. The three sites identified in the SHPO letter are in areas that have been removed from the permit area. The letter lists 3 eligible sites within the permit area. However, the permit area has been changed since the letter was written, and those sites are no longer included.

Transportation

The permit area is accessible from Utah Highway 122, County Road 338, and existing paved haul roads up the Middle Fork and the South Fork of Miller Creek. The town of Hiawatha is the terminal point of Utah Highway 122 and the lower portions of the haul roads also receive use by the public. The haul roads also provide access to water diversion, storage and service facilities for potable water for the town of Hiawatha and the coal processing plant. Coal which is mined is hauled by truck to the processing plant site at the town of Hiawatha. There the coal is loaded on rail cars for shipment by the Utah Railroad.

Four roads are currently used at the Hiawatha Mines Complex. All four roads were built prior to the passage of SMCRA by U.S. Fuel or their predecessor. Three of the roads parallel the forks of Miller Creek to active coal mining operations and the fourth goes south to the inactive coal mining operations along Cedar Creek.

The roads up the Middle Fork and South Fork of Miller Creek are paved Class I roads used to haul coal to the preparation plant. The road up the North Fork of Miller Creek is a Class III dirt road used for maintenance of a ventilation portal and a water diversion. The fourth road is an unpaved county road between Hiawatha and the Mohrland portal. Carbon County allows U.S. Fuel to maintain the road through an informal agreement. Emery County maintains their part of the road.

Socioeconomics

The Hiawatha Mines Complex straddles the Carbon-Emery County line in central Utah in the midst of an area commonly referred to as "Coal Country" or "Castle Country". Coal mining has occurred in the vicinity of the Hiawatha Complex since the late 1890's. Today, the entire region is linked to mining and energy resource development. The 1980 population of the two counties was about 33,650, a 62 percent increase over 1970. Most of this growth was a result of the renewed energy development. In 1983, nearly one-third of the total employment in the two counties was involved in the mining, transportation and utilities sectors.

The nearby town of Hiawatha, owned by U.S. Fuel, was developed during World War I. The current population is about 200. At one time, the town's population reached nearly 1,500, but in the mid-1950's and 1960's the population declined to about 150, in response to the diminished national importance of coal as an energy source.

All housing and land in the town is owned by U.S. Fuel and rented to residents. At least one member of a household must be employed by U.S. Fuel in order to rent a dwelling in the town. Of the 68 homes and 10 mobile home spaces in Hiawatha, 8 to 10 are vacant. A report issued by the Southeast Utah Association of Local Governments (SEUALG) on housing stock in Hiawatha indicated that, in 1981, 19 percent were rated "acceptable", 74 percent were "deficient", and 17 percent were "deteriorating." The company has indicated that there are no plans to undertake additional residential or commercial construction in the town (ACR response, 1981), therefore, it is unlikely that the quality or quantity of housing stock in Hiawatha will improve over the next 30 years.

Residency information for the current workforce reveals that 24 percent reside in Hiawatha while 46 percent live in the Price area. Of the remaining 30 percent, 18 percent live in other communities in Carbon and Emery Counties, with the place of residence not known for 12 percent of the workforce.

The prospects for the town of Hiawatha through the year 2014 (life-of-mine) depend on the operation of the Hiawatha Mines Complex. Approximately 80 percent of the town's budget ($35,000) is provided by property taxes on the mine's $1.8 million assessed valuation. Once reclamation occurs, the tax base will significantly diminish. The majority of public services are provided by U.S. Fuel.

The postmining future of Hiawatha is dependent on U.S. Fuel. The company could destroy the town, maintain the town, or divest itself of the property.

III - SUMMARY OF THE OPERATIONS AND RECLAMATION PLAN

Because of poor market conditions, only the King 4 Mine is currently producing coal at approximately 700,000 tons per year. U.S. Fuel has utilized the room-and-pillar method with both full and partial extraction, depending on roof characteristics. Longwall mining is proposed for part of King 5.

King 4 and 5 Mines share the same surface facilities in the Middle Fork of Miller Creek and were opened in 1974 and 1978 respectively. From the loading facility, coal is hauled 3 miles to the processing plant in Hiawatha. The access corridor from the town of Hiawatha to the Middle Fork facilities contains a Class I haul road and a powerline. The applicant may propose to build an overload conveyor system from the mine to the processing plant; however, this proposal is not included within this permit action.

Facilities for the King 6 Mine are located in the South Fork of Miller Creek mine yard. Coal is transported by an overload conveyor approximately 2,400 feet from the mine mouth down South Fork Canyon to a coal stockpile where it is loaded onto trucks and hauled 3 miles to the processing plant.

The processing plant, built in 1938, is located immediately north of the town of Hiawatha. It has the capacity to wash, size, and thermal dry 400 tons of coal per hour. Slurry discharged from the plant is channeled through a froth flotation resin recovery process. The slurry is then discharged into impoundments constructed of coal washing refuse material where it is stored, allowed to dry, and eventually reclaimed for shipment to coal markets. The applicant has filed notice of intent with the Utah Bureau of Air Quality to construct and operate a new unit train loadout facility adjacent to the existing preparation plant at the town of Hiawatha. The planned capacity of the facility is one million tons of washed coal per year. Washed coal will be transported on covered belt conveyors to two new storage piles at the railroad siding and then re-hauled by covered conveyor into the new rail car loading facility. An additional third storage pile will be used for reclaimed coal slurry which will be blended with the processed coal and included in the rail shipments. In order to accommodate the unit train loadout system, a portion of State Highway 122 and County Road 338 must be relocated. The applicant proposes to build an overpass for the train, thereby allowing uninterrupted movement of vehicles to and from the town of Hiawatha.

The applicant proposes to continue to operate the underground water-supply reservoir. The existing and long-term stability of the underground reservoir, during operation of the mine has been demonstrated in a response dated January 23, 1985. The proposed retention of the water system, during operations, can be approved if the applicant accepts a permit condition to physically inspect the three remaining seals on an annual basis.

The existing 8' X 20' breakout in the left fork of the South Fork will be plugged upon completion of mining and reclamation by hand, since there is no access to the portal area. [All other areas affected by surface operations will be backfilled, stabilized and graded within two years following the cessation of mining (year 2014).] Diversion ditches, berms, and sediment ponds will be maintained until revegetation is complete. Some disturbed areas will be returned to the approximate original contour as shown on PAP Exhibit III-11 for the Middle Fork yard, while others, as shown on PAP Exhibit III-12a for the South Fork yard will be left as currently graded to prevent erosion, assist plant growth, and provide better access for wildlife and livestock. Cut and fill terraces will be used where flatter slopes are not possible. Revegetation will follow backfilling, grading, and replacement of topsoil using seed mixes developed in consultation with UDOGM. Seeding will be accomplished by hydroseeding, drilling, and broadcast/raking and mulch will be used.

IV - LEGAL, FINANCIAL, AND COMPLIANCE INFORMATION UMC 782.13, 782.14, 782.15, 782.16, 782.17, 782.18, 782.19, AND 782.21.

UMC 782.13 IDENTIFICATION OF INTERESTS

Information required by this rule is provided in the original submittal (Volume I, Chapter II, pages 11-2 to II-5) and the DOA response (Volume I, Chapter II). The applicant is in compliance with UMC 782.13.

UMC 782.14 COMPLIANCE INFORMATION

Information required by this rule is provided in the original submittal (Volume I, Chapter II, pages II-6 to II-7). The applicant is in compliance with UMC 782.14.

UMC 782.15 RIGHT-OF-ENTRY AND OPERATION INFORMATION

Information required by this rule is provided in the original submittal (Volume Exhibits I, Chapter II, page II-8) and the DOA response (Volume I, Chapter II). The applicant is in compliance with UMC 782.15.

UMC 782.16 RELATIONSHIP TO AREAS DESIGNATED UNSUITABLE FOR MINING

Information required by this rule is provided in the original submittal (Volume I, Chapter II, page II-9) and the DOA response (Volume I, Chapter II). The applicant is in compliance with UMC 782.16.

UMC 782.17 PERMIT TERM INFORMATION

Information in permit term is provided in the original submittal (Volume I, Chapter II, page II-10) and the DOA response (Volume I, Chapter II). The applicant is in compliance with UMC 782.17.

UMC 782.18 PERSONAL INJURY AND PROPERTY DAMAGE INSURANCE INFORMATION

The applicant has provided evidence of insurance coverage which complies with the requirements of UMC 806.14 in its DOA response (Volume I, Chapter II, pages 3 and 4).

UMC 782.19 IDENTIFICATION OF OTHER LICENSES AND PERMITS

The applicant has provided information on its other licenses and permits in the original submittal (Volume I, Chapter II, page II-13) and the DOA response (Volume I, Chapter II).

The applicant proposes to modify a coal refuse pile (MSHA I.D. No. 1211-UT.9.0007) in order to construct the coal loadout conveyor system. The technical data submitted by U.S. Fuel concerning the design of the structures and foundations for the unit train loadout facility is considered adequate for review by the Mine Safety and Health Administration (MSHA). Approval by MSHA must be obtained prior to initiating construction.

UMC 782.20 IDENTIFICATION OF LOCATION OF PUBLIC OFFICE FOR FILING OF APPLICATION

The public offices where the application has been filed are listed in the original submittal (Volume I, Chapter II, page II-14). The applicant is in compliance with UMC 782.20.

UMC 782.21 NEWSPAPER ADVERTISEMENT AND PROOF OF PUBLICATION

Information on the required newspaper advertisement and proof of publication are provided in the original submittal (Volume I, Chapter II, page II-15) and the DOA response for all parts of the operation except the proposed unit train loadout. UDOGM published a public notice regarding the proposed unit train loadout and relocation of State Highway 122 and County Road 338 in accordance with UMC 786.11(5), 761.12(d), and 784.18. The applicant is in compliance with UMC 782.21.

V - LAND USE - UMC 783.22, 784.15, AND 817.133

Information on land use for the proposed permit area is located in the original submittal (Volume I, Chapter IV), the July 1983 ACR response (Chapter VI), and the DOA response (Volume I, page 85). The applicant is in compliance with UMC 783.22.

VI - CULTURAL AND HISTORIC RESOURCES - UMC 761.11(a)(3), 783.12(b), AND 784.17

Cultural and historical resources information is presented in Volume I, Chapter V, of the original submittal, in the ACR response, and the January and February 1984 DOA responses.

At present, no archaeological or historical sites are known to exist within proposed direct impact (ground surface disturbance) areas in the permit area. However, the applicant has committed to complete the following studies which are or may be necessary to assess the effect of the proposed mining on the cultural environment:

- Historical background survey of the town of Hiawatha and archaeological assessment of the processing plant and waste disposal sites;

- Cultural resources inventory of substitute topsoil locations (Exhibit VII - 4A);

- Additional cultural resources studies as may be determined necessary in the future by OSMRE, UDOGM, and/or the Utah SHPO to assess the effects of subsidence on cultural sites in the areas over the underground workings.

On the basis of the information submitted by the applicant, and the following condition, OSMRE requested SHPO concurrence with a Finding of No Adverse Effect. The SHPO has provided this concurrence in a letter dated July 9, 1984. The proposed operation will be in compliance with the requirements of UMC 761.11(a)(3), 783.12(b), and 784.17. The following condition is included as a requirement of this permitting action.

Condition No. 1

Prior to the initiation of any ground disturbance activities, the permittee shall contact OSMRE, UDOGM and SHPO concerning the need for a cultural resources inventory of the impact area. If an inventory is required, the operator shall ensure that all cultural resources are properly evaluated in terms of National Register of Historic Places eligibility criteria. Where a significant site will be affected by mining, the permittee will consult with OSMRE, UDOGM, and the SHPO to develop and implement appropriate impact mitigation measures according to a mutually agreed upon schedule.

VII - GEOLOGY - UMC 783.13 AND 783.14

The description of geology can be found in the PAP in Volume II, Chapter VI, and in the volume containing the 1983 ACR Response, Chapter VI. The description of geology provided in the previously mentioned volumes of the PAP defines the geologic strata down to the lowest aquifer that may be affected by mining (i.e. the Star Point Sandstone). In addition, the primary geologic structure in the area, the Bear Canyon Fault, is also thoroughly discussed. The description of geology is sufficient to support the description of ground-water resources in UMC 783.15 (See Chapter IX.) Therefore, the PAP is in compliance with UMC 783.13 and 783.14 with regard to geology in the vicinity of the Hiawatha Mines Complex.

VIII - HYDROLOGIC BALANCE: SURFACE WATER - UMC 783.16, 784.16, AND 784.22

UMC 783.16 SURFACE WATER INFORMATION

Baseline surface-water information is provided in the original submittal (Volume II, Chapter VII, pages VII-9 through VII-16) and the ACR and DOA responses. This information has been determined to be complete.

Completeness was evaluated with regard to section UMC 783.16 and 783.24(g) (Maps: Cross-sections, Maps, and Plans). Compliance was determined as it relates to the technical adequacy of surface water, section UMC 817.52 (Hydrologic Balance: Surface-and Ground-Water Monitoring) and 817.54 (Hydrologic Balance: Water Rights and Replacement).

Surface-water monitoring data have been collected since June 1978 for seven stations. The applicant expanded the surface-water monitoring network to include an additional six stations. The applicant committed to making these six additional stations become a permanent part of the surface-water monitoring program in the November 1983 DOA response.

According to the applicant's existing surface-water monitoring program, water quantity and quality are monitored once a month when accessible. Water quality is currently being sampled under two analytical schedules: a comprehensive analytical schedule for the month of August (See Table VII-7 Volume II.) and an abbreviated analytical schedule for all other months (See Table VII-3, Volume II.)

In addition to the surface-water monitoring program, the Hiawatha Mines Complex has eight sedimentation ponds, three mine water discharge points, and a discharge for the town's excess water all under the NPDES monitoring system.

U. S. Fuels has agreed to follow surface-water monitoring procedures established by UDOGM. The surface-water monitoring program includes monthly monitoring during the period from April through October according to an abbreviated analytical schedule (i.e. sodium, calcium, magnesium, potassium, sulfate, bicarbonate, carbonate, chloride, total dissolved solids, total suspended solids, pH, field specific electrical conductance, field temperature, and stream flow). Twice a year (snowmelt and low flow) the full scale of water quality parameters will be analyzed (i.e., aluminum, cadmium, boron, chromium, lead, mercury, molybdenum, nickel, ammonia, phosphate, and sulfide).

U.S. Fuel proposed a modification to their surface-water monitoring program (DOA response of March 16, 1984). In that proposal, U.S. Fuel requested reduction of the current monthly monitoring to quarterly monitoring. U.S. Fuel argues that these changes are justified because there have been no significant changes or variations in the monitoring results and that the major water quality problem in the basin is salt production rather than heavy metals.

OSMRE agrees that dissolved salts and suspended sediment are major water quality concerns. In the CHIA for Miller Creek, OSMRE has documented an increase in dissolved salts and suspended sediment due to coal mining activities. The increases do not exceed water-quality standards established by the Utah State Board of Health; therefore, are not to the level of material damage, and U.S. Fuel has designed their mining and reclamation plan to minimize impacts on the hydrologic balance. However, quarterly monitoring will not be sufficient to provide the necessary data to analyze these changes in water quality; therefore, Condition No. 2 is necessary.

U.S. Fuel has accepted OSM's and UDOGM's required analytical schedule which does not include total and dissolved iron, alkalinity, and oil and grease. Analyses in the Miller Creek CHIA documented that dissolved iron is naturally high throughout the study area, and the dissolved iron and oil and grease concentration are sometimes higher below the mine disturbance than above it. The CHIA concluded that more long-term data are needed for dissolved iron and oil and grease. Therefore, dissolved iron and oil and grease must be included in the routine sampling analytical schedule (See Condition No. 2.)

In previous correspondence (letter dated July 23, 1981), the Manti-LaSal National Forest requested that U.S. Fuel include alkalinity in the Hiawatha Mines Complex water monitoring program. Therefore, alkalinity must be included in the surface water monitoring program. (See Condition No. 2.)

U.S. Fuel also proposed to delete radioactivity (gross alpha and gross beta). This is acceptable because radioactivity has not been found to be a problem either at the Hiawatha Mines Complex or for the Wasatch Plateau Coal Field.

U.S. Fuel has committed to sampling a suite of heavy metal and other parameters in the comprehensive analytical schedule. These parameters are aluminum, cadmium, boron, chromium, copper, lead, mercury, molybdenum, nickel, ammonia, phosphate, and sulfide. The dissolved constituent of all of these parameters will be measured. U.S. Fuel needs to commit to monitoring using the comprehensive analytical schedule twice a year (high and low flow) and to performing the abbreviated schedule monthly from April through October. (See Condition No. 2.)

All of the records from the surface-water monitoring program indicate that surface-water monitoring is being conducted according to the existing plan. Modification of the surface-water monitoring program as proposed by U.S. Fuel should not reduce the quality of the monitoring data if Condition No. 2 is followed. Therefore, U.S. Fuel will be in compliance with UMC 817.52(b) for the Hiawatha Mines Complex with the following condition. In addition, U.S. Fuel is in compliance with UMC 783.16, 784.16, 894.22, 783.24(g), 817.52, and 817.54.

Condition No. 2

Within sixty (60) days of the effective date of this permit, the permittee must submit a revised surface-water monitoring program to include alkalinity, dissolved iron, and oil and grease. Streams will be monitored monthly during the period of April through October in accordance with UDOGM's abbreviated sampling analytical schedule. Measurements of turbidity may be substituted for the measurement of total suspended solids following the development of an adequate site-specific relationship between the two parameters. Twice per year, the full suite of water-quality parameters will be analyzed using the comprehensive analytical schedule developed by UDOGM.

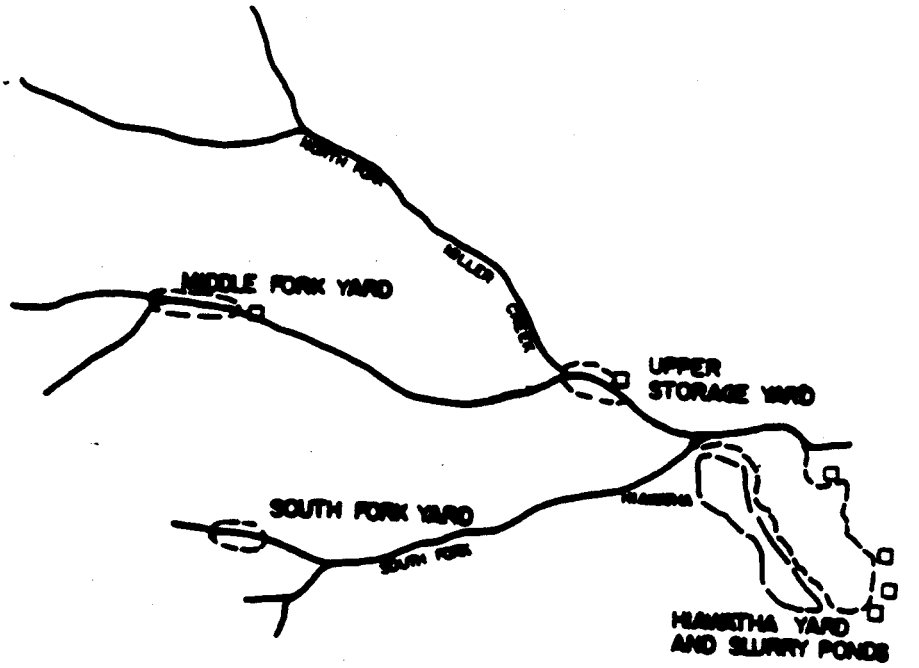
The samples can correspond to one of the monthly high flows (May or June) and the low flow (September or October). Flow measurement will be taken at the same time that any water quality samples are taken. The data collected shall be sent to UDOGM on a quarterly basis and may be incorporated into the data reports required by Condition 2. The annual report shall contain a summary of the quantity data and analytical interpretations. In addition, the applicant must submit a postmining surface-water monitoring program to include, in addition to the current stations, water-monitoring stations immediately upstream of all existing sedimentation ponds and will measure flow, rate, specific conductance, and total suspended solids for all runoff producing events.

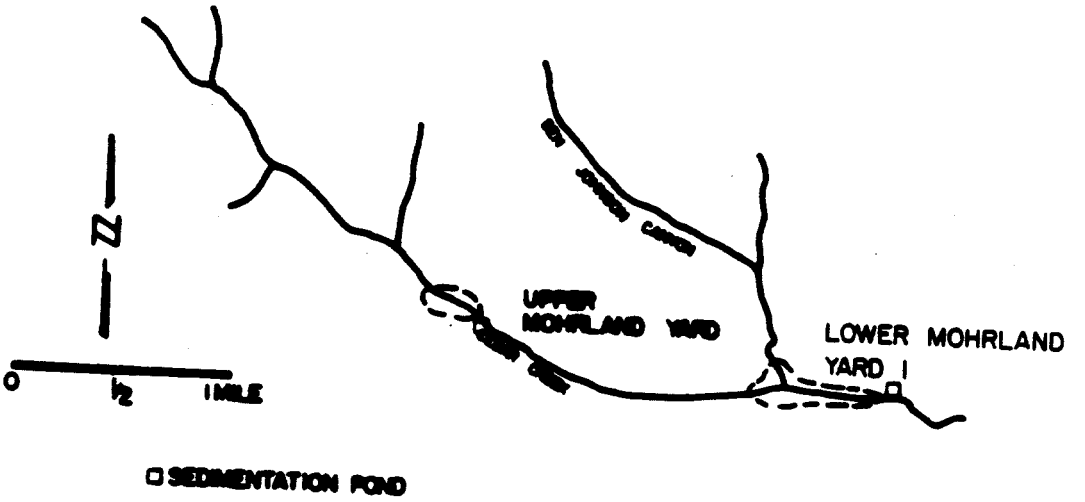
UMC 784.16 RECLAMATION PLAN: PONDS, IMPOUNDMENTS, BANKS, DAMS, AND EMBANKMENTS

(b)(1) Sedimentation Ponds

The Hiawatha Mines Complex currently contains eight sedimentation ponds (see Figure 9). Most of these ponds were constructed in 1978 or 1979 to achieve on-the-ground compliance with the drainage and sediment control rules and regulations of OSM's interim regulatory program. All sedimentation ponds were analyzed during this review for compliance with UMC 817.45 (Hydrologic Balance: Sediment Control Measures); 817.46 (Hydrologic Balance: Sedimentation Ponds); 817.47 (Hydrologic Balance: Discharge Structures); 817.49 and 817.56 (Hydrologic Balance: Postmining Rehabilitation of Sedimentation Ponds, Diversions, Impoundments, and Treatment Facilities); and, 817.57 (Hydrologic Balance: Stream Buffer Zones).

Information used in the review was obtained primarily from four studies: Vaughn Hansen Associates (1978), Rollins, Brown and Gunnel, Inc. (1979), U.S. Fuel (1980), and a series of correspondence from U.S. Fuel dated February 1979 through July 1979 for a sedimentation pond associated with reconstruction of Slurry Pond No. 1. Other studies were provided by the applicant in their DOA responses of November 1983 and July 1984 for sedimentation ponds associated with topsoil borrow areas A, B, C, and D. Sediment removal, pond maintenance, and pond inspection procedures are presented in the ACR response (Volume 1, Chapter III, pages III-14A and III-29A).





SEDIMENTATION PONDS - LOCATION MAPS

Runoff and sediment volume estimates were made by the applicant using acceptable methods and were checked by OSMRE for accuracy using the SEDIMOT program. There was agreement between the results cited by the applicant and those of the SEDIMOT program; therefore, the runoff and sediment volume estimates are acceptable.

The runoff and sediment volumes estimated in the Vaughn Hansen Associates study (1978) were different from the corresponding estimates in the Rollins, Brown and Gunnel study (1979). The Vaughn Hansen study consistently required a larger pond size because of higher runoff and sediment volume estimates. This discrepancy was pointed out in a letter from Sharon Steel to UDOGM dated October 28, 1981. It appears that the Vaughn Hansen study designed the sedimentation ponds for a larger disturbed area and a higher sediment contribution per disturbed area. The higher sediment volume per disturbed area was required under the interim program regulations but was revised to a lower sediment volume per disturbed area in the permanent program regulations. The Rollins, Brown and Gunnel report simply used the more current regulations to design the sedimentation ponds.

Pond designs for top width, embankment slopes, relative elevations of the principal and emergency spillways, sizing of the principal and emergency spillways, sediment removal, bank stabilization, erosion control, and inspection procedures, were evaluated as they relate to 817.46 and 817.47 and 817.49 and were found to be in compliance for all existing and proposed sedimentation ponds. Four special cases were identified that need to be discussed in more detail.

First, all of the sedimentation ponds and sediment control structures needed during this permit term are already in place. Since the submittal of the as-built designs in the original permit application, approximately 18 minor changes have been approved for these ponds and structures. All of the sedimentation ponds and sediment control structures are affected. Because of the number and complexity of these modifications, it has become increasingly difficult to identify the on-the-ground sediment control plan in the PAP.

The sediment control structures, built in 1978 and 1979, were submitted as as-built designed structures in the original permit application package. The subsequent minor changes to those approved structures were also approved. Therefore, the minor changes only strengthen the sediment control plan previously approved. The minor changes, as individually approved, were not included as part of the permit application submitted for approval, but as individual approvals entered into the administrative file. The sediment control plan with all of the minor changes is in compliance with all appropriate regulations. However, that plan is difficult to follow and evaluate to show the on-the-ground sediment control plan from different sources. The applicant is currently consolidating all the approved and up-to-date designs for all sediment control structures and has committed to submit consolidated sediment control plans by July 23, 1986.

Second, U.S. Fuel was in error in sizing the slurry pond. Their submittal stated that the pond was 900 feet by 300 feet by 35 feet using 1 foot of freeboard. Performance standards for coal processing waste dams and embankments (UMC 817.93) require that these ponds have at least 3 feet of freeboard. Therefore, the active storage volume is 6.2 acre-feet.

The seepage rate of the slurry pond is sufficient to allow for the daily wastewater from the preparation plant without any cumulative storage (letter of February 29, 1984). Therefore, the only concern is whether the volume of voids in the waste rock can be used as storage for surface runoff.

When in use, the slurry ponds have standing water in them, which indicates that the voids in the waste rock are filled with water. Therefore, the only available storage is the 6.2 acre-feet of active storage. This storage volume is sufficient for runoff from the disturbed area and wastewater from the processing plant, but not enough to contain the design event from the undisturbed areas. Therefore, Condition No. 3 is necessary for future long-term use of Slurry Pond 5A. U.S. Fuel is not currently using Slurry Pond 5A.

Condition No. 3

Within sixty (60) days of the effective date of this permit, the permittee must submit to the RA a revised plan demonstrating adequate runoff storage for Slurry Pond 5A. Slurry Pond 5A is not to be used to contain runoff from the undisturbed areas flowing through culverts Nos. 2 and 12 until a revised plan is submitted and approved by the regulatory authority.

The third special case deals with reclamation of portal area ponds. Sedimentation ponds for King Mine Nos. 4, 5, and 6 will be removed when the portal areas are reclaimed after mining. Removal of the ponds will be in the summer when stream flow is low and chances of increasing the suspended sediment load are minimal. Prior to removal of the ponds, a series of three sediment traps measuring approximately 15 feet square and five feet deep, will be constructed below the existing sedimentation pond. The traps will be left in place after mining to minimize subsequent disturbance. These traps will not be removed and will eventually fill in and revegetate.

The fourth special case involves leaving the existing sedimentation ponds for the preparation plant, slurry ponds, and coal refuse embankments in place until the revegetation requirements are met and drainage entering the pond meets effluent limitations.

Exhibit III-3 shows an equipment storage yard about 500 feet east of Slurry Pond 5 North. Information was submitted on May 17, 1984, (p. 85) that adequately describes acceptable sediment control for the equipment storage yard for both during and after mining. Sediment control will be achieved by berms and a silt fence.

The applicant has constructed a small (about 1 acre) ventilation pad on the right fork of the North Fork of Miller Creek. (See Figure 9.) Because of the small area of disturbance, a small area exemption was allowed (UMC 817.42 (a)(3)), and the applicant is using straw bales to control sediment from the area. This is in compliance with UMC 817.42 and 817.45.

Slurry Pond 5 will receive the runoff from the proposed unit train loadout. All drainage and sediment control facilities for the proposed unit train loadout are existing and are in compliance if Condition No. 4 is met.

A small ventilation breakout currently exists in the South Fork of Miller Creek. The breakout was excavated from within the mine and surface disturbance associated with the breakout is only about 300 square feet (DOA response, May 17, 1984, p. 55). Access to the site by vehicular traffic is impossible without causing significant damage to the surface. Because of the remoteness and small size of the disturbed area, no sediment control measures are required. The applicant has proposed to build a berm to aid in sedimentation control during reclamation of the portal area (9/84 submittal).

Two of the existing sedimentation ponds, the upper coal storage yard pond and the sedimentation pond associated with Slurry Pond No. 1, are within 100 feet of Miller Creek. Miller Creek is a perennial stream. In order to evaluate the worst case, it is assumed that Miller Creek contains a biological community. Data from the surface-water monitoring reports do not indicate that any adverse effects on water quantity or quality are associated with these two ponds. Therefore, minimal impacts to biological communities are expected. In addition to the existing ponds, two other sedimentation ponds will be within the Miller Creek buffer zone. These ponds are associated with the postmining topsoil borrow areas A, B, and C. Because the topsoil will be removed from these areas before the sediment ponds will be built, initial sediment control will be achieved through use of straw bales. This will be adequate since U.S. Fuel has committed to building the sediment ponds during the first construction season following disturbance (DOA response, July 17, 1984, p. 43) and to maintain a 50-foot buffer zone (DOA Response, July 17, 1984, pp. 46 and 47). The 50-foot buffer zone will insure that all new disturbance is outside of the 100-year flood plain (response to Nov-N84-4-8-8, No. 1, July, 1984). Disturbances have occurred within the 100-year flood plain of of the South Fork and North of Miller Creek prior to the enactment of SMCRA. The company has committed to minimize impacts to those channels using adequate sediment control measures. Variances are hereby granted for all inplace structures within the 100-year flood plain of both the North and South Forks of Miller Creek. Therefore, the applicant is in compliance with UMC 817.57.

The North Fork diversion has been proposed and approved by UDOGM on October 21, 1984, as a permanent structure. The applicant has provided the required information necessary to approve the retention of this structure as a postmining land use feature in accordance with UMC 817.133 and 817.49.

In summary, with Conditions No. 3 and 4, the applicant will be in compliance with UMC 817.42, 817.45, 817.46, 817.47, 817.49, and 817.57.

UMC 784.22 DIVERSIONS

Each of the portal pads, the upper coal storage yard, the preparation plant area, and the slurry pond areas have small, temporary diversions for overland flow associated with them. Information on these diversions is presented in the original submittal, Chapter VII, and in "Surface Hydrology and Culvert Adequacy of the Hiawatha and Mohrland, Utah, Areas" (Vaughn Hansen Associates, 1978). Information on the design of these diversions is presented in Chapter XII, Exhibit III-1A, and Exhibit III-4A, respectively. Additional information on the permanent stream diversion adjacent to Slurry Pond No. 1 is presented in a letter from U.S. Fuel to UDOGM dated February 20, 1979. Information on the reclamation of the Middle Fork and South Fork diversions is presented on Exhibit III-11, III-12A, and III-12A1.

Miller Creek and its tributaries are diverted from a point adjacent to Slurry Pond No. 1, from under the portal pad for the King No. 4 and 5 Mines (Middle Fork), and from under the sedimentation pond for the King No. 6 Mine (South Fork). Only the diversion adjacent to Slurry Pond No. 1 is a permanent diversion. The other stream diversions will be reclaimed when the portal pad area(s) are reclaimed.

Some of the surface-water flows of the left fork of the North Fork of Miller Creek have been diverted into the underground mine workings. This subject is discussed in Chapter XII, UMC 817.55.

The PAP is complete and technically adequate in regard to UMC 784.22. Compliance has been evaluated as it applies to UMC 817.43 (Hydrologic Balance: Diversions and conveyance of Overland Flow, Shallow Ground Water Flow, and Ephemeral Streams), 817.44 (Hydrologic Balance: Stream Channel Diversions), 817.47 (Hydrologic Balance: Discharge Structures), and 817.56 (Hydrologic Balance: Postmining Rehabilitation of Sedimentation Ponds, Diversions, Impoundments, and Treatment Facilities). All temporary overland flow (runoff) diversions were checked by OSMRE to ensure adequate flow capacity, freeboard, and erosion control.

Since the approval of the ditches (letter from UDOGM dated May 30, 1980), the Hiawatha Mines Complex has received three inspection violations for breached diversion ditches (NOV Nos. 82-2-10-1, 83-4-2, and 83-4-9-2). All of these violations were terminated and no proceedings were initiated.

Miller Creek was diverted into a new channel adjacent to Slurry Pond No. 1 in 1979. The original slurry pond embankment was too steep, and to make room for the flatter embankment slopes the creek was moved approximately 50 to 150 feet to the north. The permanent diversion length is approximately 600 feet, about 10 feet short of the natural channel length. The diversion channel was designed to safely carry the runoff resulting from the 100-year, 24-hour storm (letter from U.S. Fuel dated March 19, 1979), and UDOGM stipulated that the channel be riprapped for the entire length of the diversion to protect against erosion (letter from UDOGM dated March 29, 1979). U.S. Fuel has received a notice of violation on May 11, 1984, (N84-4-8-8, No. 1) for not riprapping the entire length of the diversion. The applicant has submitted plans which have been approved by Utah DOGM.

Temporary diversions have been constructed for the Middle and South Forks of Miller Creek. The Middle Fork diversion conveys the undisturbed drainage under the portal yard and sedimentation pond for the King No. 4 and 5 Mines and the South Fork diversion conveys the undisturbed drainage under the upper sedimentation pond at the King No. 6 Mine. Both culverts are adequately sized for the runoff from the 50-year, 6-hour precipitation event. Reclamation of these channels will occur at the time of reclamation of the portals. Both reclaimed channels are adequately sized to safely convey the runoff resulting from the 100-year, 24-hour precipitation event. The applicant's calculations were checked by OSMRE using the SEDIMOT model. Both reclaimed channels were checked for erosion control, longitudinal stream profiles, and channel cross-sections.

Six temporary diversions will be constructed to channel drainage associated with the postmining topsoil borrow areas. All diversions are adequately sized for the runoff resulting from 10-year, 24-hour precipitation event. The applicant's calculations were checked by OSMRE and the designs are in compliance with UMC 817.43.

In summary, all diversion ditches, temporary or permanent, are currently in compliance with UMC 784.22, 817.43, 817.44, 817.47, and 817.56.

IX - HYDROLOGIC BALANCE - GROUND WATER - UMC 783.13 AND 783.15

The ground water resources in the permit and adjacent area of the Hiawatha Mines Complex are described in the following parts of the PAP:

1. Original submittal, Volume II Chapter VII;
2. DOA response, Volume I, Part 783-15 and 784.14; and
3. DOA response, 16 March 1984.

The description of ground-water resources in the sources mentioned above has been reviewed and has been found to be complete and technically adequate. The information from these sources has been used to define the ground-water flow system as part of the CHIA.

The most significant ground-water resources that may be affected by the Hiawatha Mines Complex include:

1. springs in hydraulic connection with the Bear Canyon Fault where the fault has been intercepted by the mine; and

2. springs overlying the Hiawatha Mines Complex in areas where mine subsidence may reach the surface.

A spring inventory has been provided in the PAP (DOA response, November 7, 1983, part 783.15) in both tabular and map form. In addition, spring monitoring has occurred at 10 spring locations twice annually (spring and fall) beginning in 1979. Other ground-water well information includes a discussion of water inflow to the Hiawatha Mines Complex, which has been minimal except for the flows as great as 100 to 200 gpm that were encountered at the Bear Canyon Fault. The PAP is in compliance with UMC 783.13 and 783.15.

X - ALLUVIAL VALLEY FLOORS - UMC 785.19 AND 822

The applicant has delineated the extent of areas meeting the alluvial valley floor (AVF) geomorphic criteria in the permit and adjacent area of the Hiawatha Mines Complex (Exhibit VI-7). The valleys of Cedar Creek and Miller Creek are the only valleys meeting the geomorphic criteria. There is no history of flood irrigation activities in the Cedar Creek or Miller Creek valleys in the vicinity of the Hiawatha Mines Complex, although irrigation is practiced approximately two miles downstream from the Hiawatha Mines. The PAP discusses the difference between the valley floor characteristics of the lower irrigated area and the upper valley. The upper valley is narrow, has steep slopes (10 to 15 percent), cobbly soils, and is of limited areal extent (50 to 100 feet wide and up to 10 acres in size) (DOA letter response, Volume I, page 93). There is no precedent for developing irrigation agricultural activities in areas similar to the upper valleys of Cedar and Miller Creeks for a 30 mile radius around the Hiawatha Mines Complex; therefore, it is concluded that the valleys of Cedar Creek and Miller Creek are AVFs in their lower reaches (i.e., approximately 2 miles downstream from the Hiawatha Mines Complex). However, in close proximity to the mines, the valley bottoms are not suitable for developing flood irrigation.

Regarding subirrigation agricultural activities, test pits installed on representative terrace areas in the valleys of Cedar Creek and Miller Creek (that meet the AVF geomorphic criteria), revealed that on-site vegetation is subirrigated. However, the vegetation present on these terraces is not agriculturally useful (permit application, Volume I, page 94 and Table IX-7). It is, therefore, concluded that subirrigated agricultural activities are not occurring on the valleys of Cedar and Miller Creeks.

Based on the preceding discussion, it is concluded that the valleys of Cedar Creek and Miller Creek in the vicinity of the Hiawatha Mines Complex are not AVFs. The PAP has provided adequate information to make the AVF determinations mandated by UMC 785.19 and the PAP is, therefore, in compliance with this action.

The PAP also provides a surface-water and ground-water monitoring program that will document the preservation of the essential hydrologic function of flood irrigation both during and after mining for the AVFs downstream from the Hiawatha Mines Complex. (See Chapter XII of this TA, Part UMC 817.52.)

XI - WATER RIGHTS AND REPLACEMENT - UMC 783.17, 817.53, AND 817.54

Chapter XII (Part UMC 787.14) discusses the applicant's assessment of probable hydrologic consequences of the proposed mining. The following commitment by the applicant is adequate to deal with all potentially affected water sources identified as part of the probable hydrologic consequences.

In Volume I of the DOA responses (pages 23 and 23A) the applicant has identified the following alternate means to replace existing water sources that may be interrupted:

1. Transfer water rights using U.S. Fuel's available water rights; (See Volume I, Appendix VII-5.)

2. Collect spring flow at a remote location and pipe water to the vicinity of the lost water sources;

3. Install a guzzler (and possibly truck the water to the site); and/or

4. Develop a surface-water retention pond.

The applicant's commitment to replace affected sources of water using the procedures described above is considered adequate to find compliance with UMC 783.17 and 817.54.

The applicant does not propose to transfer any wells to any other surface owner. Therefore, UMC 817.53 is not applicable.

XII - PROBABLE HYDROLOGIC CONSEQUENCES OF MINING - UMC 784.14, 817.50, 817.55, AND 817.52

UMC 784.14 RECLAMATION PLAN: PROTECTION OF THE HYDROLOGIC BALANCE

Surface Water

Information to describe water rights and measures to minimize the disturbance to the hydrologic balance are presented in Chapter VII of the original submittal and the ACR and DOA responses. This information is determined to be complete regarding surface water.

Compliance was evaluated with respect to UMC 817.41 (Hydrologic Balance: General Requirements), 817.42 (Hydrologic Balance: Water Quality Standards and Effluent Limitations), 817.48 (Hydrologic Balance: Acid-Forming or Toxic-forming Materials), and 817.54 (Hydrologic Balance: Water Rights and Replacement).

Bath houses and associated sewage drain fields are used at both the King No. 4, 5, and 6 Mines. No problems, either related to water quality or to use, have been identified with either septic drain field. Location and size of the septic drain fields are shown on Exhibits III-1A and III-4A.

Surface-water rights are discussed in the November 1983 DOA response (pages 23 through 32). U.S. Fuel has sufficient water rights to satisfy their demands for mine water on both Miller Creek and Cedar Creek. There will be interbasin diversions of water both into and out of Miller Creek and Cedar Creek, but neither the probable hydrologic consequences (PHC) completed by the operator nor the CHIA by OSMRE have identified any adverse impacts to surface-water quantity. Therefore, the applicant is in compliance with UMC 817.54.

Water-quality analyses of standing water in the slurry ponds indicate that the slurry pond water quality is similar to the surface-water quality. In addition, the data indicated that neither the surface water nor the slurry pond water is acidic or in violation of pertinent water-quality standards for Miller Creek. Therefore, the Hiawatha Mines Complex is in compliance with UMC 817.48.

Sanitary sewage from the town of Hiawatha is discharged into culvert no. 2 and conveyed to slurry pond 5. Slurry pond 5 then acts as a large leach field. The situation was identified in a 1978 surface hydrology study (Vaughn Hansen Associates, 1978) and a recent inspection by UDOGM confirmed its presence (Inspection Memo from Dave Lof, UDOGM, dated July 5, 1984). The town of Hiawatha has a permit from the Utah State Health Department to dispose of the sewage in this fashion. OSM's analysis for the surface-water monitoring program has not documented any health threat as a result of this sewage discharge. Therefore, the sewage discharge is in compliance with UMC 817.41 and 817.42.

All of the sedimentation ponds have gated valves on the principal spillways. The NPDES self monitoring reports show that none of the sedimentation ponds have ever discharged. Ponds for the King No. 4, 5, and 6 Mines will be removed and replaced by sediment traps. Therefore, sediment contribution outside of the permit area will be minimized.

Mine water discharges from three points: Mohrland portal, Hiawatha overflow tank, and King No. 4 Mine. The Environmental Protection Agency has reviewed the NPDES self-monitoring reports and has determined that discharges from the mine are acceptable.

In summary, runoff and sediment control facilities at the Hiawatha Mines Complex are designed to minimize impacts on the hydrologic balance both during and after mining. The applicant is in compliance with UMC 817.41, 817.42, 817.48, and 817.54.

Ground Water

The probable hydrologic consequences with respect to ground-water resources in the area adjacent to the Hiawatha Mines Complex is presented in the following parts of the PAP:

- Volume II, Chapter VII, part 7.1.7;
- ACR response, Chapter VII;
- DOA response, November 7, 1983, Volume 1, part UMC 784.14; and
- DOA response, March 15, 1984, Attachment No. 2.

Mining at the Hiawatha Mines Complex has had unknown previous impacts to the ground-water resources in the area. In 1972, the most significant ground water inflow to the Hiawatha Mines occurred when mining tapped into ground water moving along the Bear Canyon Fault. At the present time flow from the fault continuously yields 100 gpm. This water is discharged at the Mohrland portal and is conveyed in part to the town of Hiawatha for their domestic water supply. The remaining water is discharged to Cedar Creek. It is apparent that the Bear Canyon Fault is acting as a conduit for ground water flow in the vicinity of the Hiawatha Mines Complex. Numerous springs issue from the Bear Canyon Fault where the stratigraphically lower Star Point Sandstone has been fractured. It is unknown what the hydraulic connection is between the ground water that currently discharges from the faulted Blackhawk Formation and the lower, fractured Star Point Sandstone. No effects of mining have been observed at down gradient springs when they were studied several years after the interception of Bear Canyon Fault water in the Hiawatha Mines. This is interpreted to mean that the discharge of ground water from the Bear Canyon Fault is at a steady state discharge with respect to the surrounding ground water systems. Therefore, because the Hiawatha Mines Complex will not be mining near the Bear Canyon Fault over the remaining life-of-mine, there will be no additional impacts to surrounding hydrologic resources associated with the fault.

By comparison, only 25 gpm of ground water inflow occurs in the remainder of the extensive Hiawatha King No. 6 Mine for four isolated points in the mine. The range of ground water inflow varies from 3 gpm to 7 gpm. This is considered to be a relatively dry mine (with the exception of the Bear Canyon Fault) that has encountered isolated, more permeable zones in the Blackhawk Formation. With the discontinuous nature of the more permeable zones in the Blackhawk Formation, it is doubtful if the ground water inflow in the mine is in strong hydraulic connection with other hydrologic resources in the area.

The subsidence effects of the Hiawatha Mines Complex are predicted to be the primary mechanism that will cause additional impact to ground water resources in the permit and adjacent areas. The applicant has developed several assumptions in order to support the projection of springs that may experience declines in flow as a result of mine subsidence:

- Only those areas where pillars will be removed are expected to subside;

- Subsidence fractures may reach the surface within an angle of draw of 70 degrees of the mine;

- Surface subsidence effects will be limited to fully extracted areas beneath the Blackhawk Formation, Castlegate Sandstone, and Price River Formation;

- No diversion of spring flow is expected as a result of subsidence effects to the North Horn Formation; and

- Subsidence effects will be limited by the Bear Canyon Fault to the west of the Hiawatha Mines Complex.

Based on these assumptions, the applicant provided a map showing the extent of projected surface subsidence and springs with water rights. (See Exhibit VII-1c in the DOA response, updated January 9, 1984.) In addition, seeps and springs within the subsidence zone can be determined from Exhibit VII-1D in the DOA response, updated January 9, 1984. Therefore, subsidence effects are projected for the area in which coal will be fully extracted and the area within the 70 degree angle of draw that occurs stratigraphically below the contact of the North Horn-Price River Formation contact. Within this zone, three springs with water rights may be impacted (Water rights 91-103, 91-104, and 91-1633). Two of these springs (91-103 and 91-104) have water rights belonging to U.S. Fuel for domestic use which are not currently used. Water rights in the third spring belong to the U.S. Forest Service. It is not possible to determine the amount of flow of these springs because the water right for each of the potentially affected springs is accumulated with several other nearby springs.

Several other small springs also occur within the zone that may be affected by subsidence (see Exhibit VII-1D in the DOA response, updated January 9, 1984). These springs do no have water rights associated with them, although the water sources are used for stock and wildlife watering. The total number of springs within the subsidence zone is 11, which includes the 3 springs having water rights. The cumulative flow of the springs is approximately 24 gpm (DOA response, January 1984, p. 80).

The applicant will be required to replace water demonstrated to have been lost according to condition .

Please refer to Part UMC 817.54 in Chapter XI of this TA for the discussion of alternate sources of water available to replace the USFS water right that may be affected. Alternate sources of water have been identified and the applicant has committed to replace all affected water supplies.

The PAP also discusses the potential impacts of mine subsidence in relation to overlying streams. Subsidence in the North Horn Formation is predicted to be very gradual, with no abrupt changes in slope. For this reason, erosional instability in the North Horn Formation is not expected to change noticeably. For the Price River and Castlegate Sandstone Formations, subsidence effects are predicted to be abrupt with changes in elevation of approximately 3 feet. The slopes and stream channels representative of these potential subsidence areas are, however, quite rocky with abundant competent rock ledges. Therefore, conditions of erosional instability are not expected in relation to mine subsidence in the Price River or Castlegate Sandstone Formations.

Subsidence will affect stream flow quantity in areas where surface cracks develop. In areas experiencing trough subsidence, no stream flow impacts have been documented. Areas on the ridge of Gentry Mountain and within Gentry Hollow subjected to subsidence should not experience any changes in stream flow attributable to mining. Well defined stream flow does not exist along Gentry Mountain. Stream channels that cross the upper, west-facing slopes of Gentry Hollow are ephemeral. Ephemeral stream flow originates and flows across the North Horn Formation which is subject only to trough subsidence and not cracking, hence, no impacts are expected to occur to stream flow crossing the ridges of Gentry Mountain and the upper slopes of Gentry Hollow.

Potential impacts to perennial stream flow resulting from subsidence should be limited to the Miller Creek watershed where streams cross formations stratigraphically below the North Horn Formation. The results of the spring inventory conducted in the permit and adjacent areas in October 1983 indicate that base flow within the zone of potential subsidence in the Miller Creek watershed is about 7 gpm in the north branch of the North Fork of Miller Creek, 12 gpm in the south branch of the North Fork of Miller Creek, 16 gpm in the Middle Fork of Miller Creek, and 6 gpm in the South Fork of Miller Creek. This based flow originates as springs issuing from the North Horn Formation and the Castlegate Sandstone. Only minor seepage issues from the Price River Formation within the potential subsidence zone of the Miller Creek watershed.

Losses of stream flow may result by interception of the stream channel by subsidence cracks which occur downstream from source springs issuing either from the North Horn Formation or the Castlegate Sandstone. Potential losses to base flow from subsidence could occur in the North Fork of Miller Creek. Available data indicates that natural seepage into the stream channels depletes the spring flow above the monitoring stations in the other forks of Miller Creek. The applicant shall provide protection to the stream channel in accordance with Condition UMC 817.126(4) to ensure no adverse impacts from subsidence occur.

The control of mine discharges is discussed under Part UMC 817.50 in this chapter. The PAP is in compliance with regard to UMC 784.14.

UMC 817.50 HYDROLOGIC BALANCE: UNDERGROUND MINE ENTRY AND ACCESS DISCHARGES, UMC 817.55 HYDROLOGIC BALANCE: DISCHARGE OF WATER INTO AN UNDERGROUND MINE, AND 786.21 CRITERIA FOR PERMIT APPROVAL OR DENIAL: EXISTING STRUCTURES

At the present time water from the North Fork of Miller Creek is diverted into the Hiawatha No. 2 Mine (DOA response updated January 9, 1984, Exhibit III-17). This water is conveyed via underground workings into a reservoir in the Hiawatha No. 2 Mine, with a storage capacity of 120,000,000 gallons (368 acre-feet). Discharge from the mine is regulated by pressure valves in bulkheads located in the Middle Fork Miller Creek. In addition, water is piped across the Middle Fork drainage into the Hiawatha No. 1 Mine. This water is conveyed through underground workings to the South Fork portals. At this location, water is piped from the mine to the town of Hiawatha and to the coal processing plant. This water is considered a secondary source of culinary water for the town. The coal processing plant utilizes approximately 786,000 gpd while the town uses 30,000 gpd from the water system.

The primary source of culinary water for the town of Hiawatha is combined ground water discharge from the Bear Canyon Fault/North Fork Miller Creek water conveyed through the mine workings that is discharged from the Mohrland portal in Cedar Canyon. This water is piped from the mine outlet to the town. Excess water is discharged to Cedar Creek.

The volume of water stored in the underground reservoir in June, 1984, was 34,000,000 gallons (about 104 acre-feet). The U.S. Mine Safety and Health Administration (MSHA) was requested by OSMRE to review the safety aspects of the underground dam according to UMC 786.21 and UMC 817.55(g) which requires MSHA concurrence for the underground impoundment. MSHA responded with a list of deficiencies on January 26, and May 2, 1984. A meeting was held between all interested parties on June 8, 1984, during which it was agreed to reduce the water level in the mine below the fourth bulkhead and drill the bulkhead to determine the as-built specifications on the 3 remaining bulkheads. The applicant submitted a plan on June 15, 1984 to address MSHA and OSM's concerns the plan proposes to: 1) reduce the reservoir capacity to 15,000,000 gallons until the analysis of the bulkheads is completed; 2) remove the uppermost seal and perform the appropriate stability analysis of the structure; and 3) provide a plan to maintaining a maximum storage limit in the reservoir of 24,000,000 gallons. The removed bulkhead will not be replaced and the entry will be chained or fenced to prevent access. This will limit the storage volume of the reservoir to 24,000,000 gallons (about 73.6 acre-feet).

OSMRE and MSHA reviewed the June 15 plan and agreed that the plan was consistent with what was agreed upon at the June 8 meeting. The applicant has proposed using the underground water supply system (diversion, bulkheads, piping network) during operation at the Hiawatha Mine. OSMRE has determined, based upon core data submitted on January 23, 1985, that the long-term stability of the structures can be assured. UMC 817.49(3) requires adequate safety and access to the impounded water be provided for water users. The bulkheads and diversion are accessible; however, the majority of the underground plumbing system (pipes, valves, connections) are not. UMC 817.50(b)(iii) requires consistent maintenance of the water facility.

OSMRE has reviewed the test results and the computations for the curved bulkheads in the Hiawatha coal mine for the underground water storage in the mined out coal mine. The core test results confirm the calculations that the installation is safe with a safety factor of over two. The testing reveals a safe installation, with construction in the early 1950s. This report presents the physical conditions that exist within the coal mine in relation to the underground water storage. The report presents detailed tests with computations that reflect the actual field conditions resulting in a safety factor of over two. The report indicated some deterioration of one of the bulkheads resulting apparently from the freezing and thawing cycles occurring in this particular area of the mine. Periodic monitoring of each closure structure is necessary to make certain that deterioration does not cause failure. This inspection should be on an annual basis with a certified report to the RA. OSMRE has reviewed the applicable requirements of UMC 817.55 ((b), (e), (f) and (g)) for discharge of water from the North Fork of Miller Creek into the underground reservoir and finds that, with acceptance of Condition No. 4, the applicant is in compliance.

Condition No. 4

Within sixty (60) days of the effective date of this permit, the permittee must submit to the RA a plan for a physical inspection of each seal impounding the underground reservoir and a contingency plan if inspections identify a possibility of failure. Starting in September 1986, each curved bulkhead must be inspected at least annually using the following as a minimum:

1) Photo monitor each curved bulkhead abutment using permanent picture points and camera mounts.

2) Establish a survey net to monitor horizontal and vertical movement at several selected points in and around each bulkhead. This net should be to second order survey accuracy.

3) Establish a bulkhead leakage monitoring system that measures the water flow through each bulkhead and adjacent materials to measure leakage. This escaping water must be less than 0.25 gallons of water per bulkhead per 24 hour period. This item must be monitored monthly.

UMC 817.52 HYDROLOGIC BALANCE: GROUND WATER MONITORING

The ground-water monitoring program associated with the Hiawatha Mines Complex can be found in the original submittal, (Volume II, Chapter VII, page VII-7 and VII-8); the DOA response updated January 9, 1984, (Volume I, pages 131 and 132 and Attachment No. 4).

The applicant has committed to conduct an in-mine ground water monitoring program (DOA response, July 20, 1984, pg. 131F); however, revisions are necessary in order to conform to the recently developed OSM/UDOGM guidelines. Condition No. 7 defines the requirements of the in-mine ground water monitoring program.

No wells are available to monitor changes in ground water resources. Springs are monitored instead to indicate if mining impacts are occurring. At the present time 10 springs (Springs SP-1 to SP-10; See Map M02 in the DOA response updated January 9, 1984.) are monitored twice annually at low flow and high flow. Spring water quality samples are proposed to be analyzed for a list of parameters including temperature, specific conductance, total dissolved solids, and the major cations and anions. The applicant also proposes to delete monitoring springs SP-3, SP-7, and SP-10. Springs SP-11, SP-12, and SP-13 (i.e. springs 15-8-19-2, 15-8-30-4, and 15-8-31-4, respectively, on Exhibit VII-1D in the DOA response updated January 9, 1984) are proposed as replacement monitoring springs because the applicant feels they are more representative of springs that may be affected by mining.

The OSMRE Cumulative Hydrologic Impact Assessment (CHIA) concludes that previous mining adjacent to the water bearing Bear Canyon Fault has already had a maximum impact on water resources associated with the fault zone. These impacts occurred years ago and remain quantified, and there is no point in monitoring springs associated with the fault when maximum impacts have already occurred; therefore, springs SP-3, SP-7 and SP-10 can be deleted from the monitoring program as proposed by U.S. Fuel.

Subsidence is considered the mechanism most likely to affect flow to springs. The assumption has been made in the PAP (DOA response updated January 9, 1984, Volume I, page 74) that subsidence will only occur in areas within the angle of draw of workings that will be fully extracted. The maximum extent of potential subsidence is delineated on Exhibit VII-1C (DOA response updated January 9, 1984). Within this zone it is possible that some spring flow may be diminished or dry up as a result of mine subsidence. While the 10 springs proposed to be monitored by the applicant (i.e., SP-1, SP-2, SP-4, SP-5, SP-6, SP-8, SP-9, SP-11, SP-12, and SP-13) represent the variability of springs issuing from the potentially affected geologic sources, it is also likely that very localized ground water flow paths may be responsible for individual springs. In other words, local ground water flow systems that are not related to areally extensive flow systems may be disrupted by subsidence fractures.

Because the effects of mining cannot be documented totally by monitoring the 10 springs, and because it is not practical to monitor all springs (See Exhibit VII-1D, in the PAP.), it is reasonable to require that in addition to the 10 springs that U.S. Fuel has committed to monitor, the most important springs in the subsidence zone should also be monitored. To meet this requirement, U.S. Fuel must also monitor the sole spring with water rights (not belonging to U.S. Fuel) in the area and located within the subsidence zone as depicted on Exhibit VII-1C. The water right (91-1633) belongs to the USFS and is used for stock watering. U.S. Fuel was required to adopt this monitoring plan in January and March 1984, but has not included this spring to date.

OSMRE and UDOGM are developing an agreement concerning the ground water monitoring program that will be implemented at Utah coal mines. U.S Fuel must also change their spring monitoring program to agree with the new ground water monitoring guidelines. It should be noted that this request was previously made by U.S. Fuel in the February 13, 1984 letter.

With acceptance of Conditions No. 5 and 6 the application will be in compliance with UMC 817.52.

Condition No. 5

Within sixty (60) days of the effective date of this permit, the permittee must revise and submit to the RA for approval a revised spring monitoring schedule and must include in its monitoring program the USFS spring (Water Right 91-1633).

Condition No. 6

Within sixty (60) days of the effective date of this permit, the permittee must revise the in-mine ground water monitoring program in consultation with UDOGM. This monitoring program shall be submitted to the regulatory authority for final approval.

XIII CLIMATOLOGICAL INFORMATION AND AIR RESOURCES - UMC 783.18 AND 784.26

UMC 783.18 CLIMATOLOGICAL INFORMATION AND AIR RESOURCES

The applicant was not requested by the regulatory authority to provide information on the climate or air resources of the permit area. Therefore, the applicant is in compliance with UMC 783.18.

UMC 784.26 AIR POLLUTION CONTROL PLAN

The applicant filed a notice of intent to construct a unit train loadout facility on May 10, 1984, with the Utah Bureau of Air Quality, which was approved July 23, 1984. The applicant was not required by UDOGM or Utah Department of Health to develop an air pollution control plan. The applicant is, therefore, in compliance with UMC 784.26.

XIV - TOPSOIL - UMC 783.21, 784.13(b)(3 and 4), AND 817.21 THROUGH .25

UMC 784.13(b)(4) and UMC 817.21 - TOPSOIL: GENERAL REQUIREMENTS

The applicant has provided results of chemical and physical analyses for topsoil, subsoil, and substitute topsoil (topsoil/subsoil/overburden mixtures) for disturbed areas to be reclaimed. The document and page number where information on sampling methodologies and analytical results are listed by area of disturbance in the table below. Chemical and physical data for soils prior to disturbance exist only for the new portal breakout area in the Middle Fork of Miller Creek and borrow areas A, B, C, and D.

Disturbance Area	Sampling Methodologies	Analytical Results
North Fork area[1]	DOA response, Vol. I, pp. 125A-129	DOA response, Vol. I, Table VIII-1
Middle Fork area		
Portals	DOA response, Vol. I, pp. 47-48	DOA response, Vol. I, Table VIII-9
Breakout	DOA response, Vol. I, pp. 47, 140	DOA response, Vol. I, Table VIII-14
South Fork area		
Portal	DOA response, Vol. I, pp. 47-47A, 54-55	DOA response, Vol. I, Table VIII-9
Conveyor/Load-out sediment pond[2]	ACR response, Chap. VIII, Table VIII-1 and Bio/West report	ACR response, Chap. VII, Bio/West report
Preparation plant area		
Coal refuse area	DOA response, Vol. I, pp. 125A-129	DOA response, Vol. I, Tables VIII-1, VIII-2
Nonrefuse area	---	DOA response, Vol. I, Table VIII-21
Slurry ponds		
Topsoil[1] Subsoil/substrate	DOA response, Vol. I, pp. 125A-129	DOA response, Vol. I, Table VIII-1
Pond No.1		
Sampling 1	DOA response, Vol. I, p. 134	DOA response, Vol. I, Tables VIII-11&12
Sampling 2	15 March 1984 DOA response, Attachment 1	---
Pond No. 3	DOA response, Vol. I, p. 134	DOA response Vol. I, Tables VIII-11, VIII-12, VIII-13
Pond No. 4	DOA response, Vol. I, p. 134	DOA response Vol. I, Tables VIII-11&12
Pond No. 5	DOA response, Vol. I, p. 134	DOA response, Vol. I, Tables VIII-11&12

Area	Composition	Areal Extent and Available Volume
North Fork area	DOA response, Vol. I, pp. 54 and 125C-129	DOA response, Vol. I, p. 40A and Vol. III, Exhibit VIII-4A
Middle Fork area		
Portal	DOA response, Vol. I, pp. 47-47A	DOA response, Vol. I, p. 47A and Vol. III, Exhibit IX-3B
South Fork area		
Portal	DOA response, Vol. I, pp. 54-55A	DOA response, Vol. I, pp. 55-55A and Volume III, Exhibit IX-4A
Conveyor/load-out sediment pond[2]	ACR response, Chap. VIII, Bio/West report	DOA response, Vol. I, p. 55A and Vol. III, Exhibit VIII-4
Preparation plant area coal refuse area	DOA response, Vol. I, pp. 40A and 125C-129	DOA response, Vol. I, p. 40A and Vol. III, Exhibit VIII-4A.1
Non-refuse area		
Railroad underpass	DOA reponse, Vol. I, pp. 131-132	No map but DOA response, Vol. I, pp. 131-132
Preparation plant	DOA response, Vol. I, pp. 55A-56 and 125A-129	DOA response, Vol. I, pp. 40A-42 and Vol. III, Exhibit VIII-4A
Slurry ponds		
Substitute topsoil	DOA response, Vol. I, pp. 55A-56, 125-129 133-136	DOA response, Vol. I, pp. 40A-42 and Vol. III Exhibit VIII-4A
Substitute subsoil	DOA response, Vol. I, pp. 133-136	DOA response, Vol. I, p. 136 and Vol. II Exhibit III-3
Borrow areas		
A, B, C, D	DOA response, Vol. I, pp. 101-102, 125C-129	DOA response, Vol. I, pp. 42-44 and Vol. III, Exhibit VIII-4A.1

Borrow areas		
Area A	DOA response, Vol. I, pp. 125A-129	DOA response, Vol. I, Table VIII-1
Equipment storage yard addition	---	---
Area B	DOA response, Vol. I, pp. 101-102, 125c-129	DOA response, Vol. I, Table VIII-20
Area C	DOA response, Vol. I, pp. 101-102, 125c-129	DOA response, Vol. I, Table VIII-20
Area D	DOA response, Vol. I, pp. 125c-129	DOA response, Vol. I, Table VIII-1

1 Sources of substitute topsoil are materials from borrow areas A, B, C, and/or D.

2 Additional 806 cubic yards to be obtained from borrow area A.

There is an existing ventilation breakout on the South Fork of Miller Creek. The breakout measures 8' x 20' with a total disturbance of 300 square feet. The portal was constructed from within the mine, hence, there is no access from the outside. There is a two-tracked jeep road leading partially up the canyon that was constructed prior to SMCRA and is rarely used. The applicant proposes to seal the portal from within the mine. Prior to sealing, a berm will be built for erosion control and the small pad seeding by hand broadcasting. OSMRE and UDOGM concur that it would be more environmentally damaging to construct a road to the portal for reclamation, therefore the applicant's proposal is acceptable.

Site-specific soil quality information is not presented in the PAP for existing disturbed areas in the nonrefuse portion of the preparation plant area or the equipment storage yard adjacent to borrow area A confirming that soil material is suitable for reclamation purposes. Analyses should include soil pH, EC, SAR, and texture. The applicant should conduct additional sampling to demonstrate that the projected quantity and quality of soil is available. Therefore, the PAP is not in full compliance with UMC 784. 13(b)(4) and UMC 817.21 and 22. The applicant's acceptance of Condition Numbers 7 and 8 will be necessary to confirm compliance with these regulations.

Condition No. 7

Within sixty (60) days of the effective date of this permit, the permittee must provide results of sampling to a minimum of seven feet and laboratory analyses of soil from the equipment storage yard confirming that the projected quantity and quality of soil are accurate.

Condition No. 8

Within ninety (90) days of the effective date of this permit, the permittee must provide the results of sampling and laboratory analysis of the soils in the nonrefuse portion of the preparation plant area to insure that a minimum of 18 inches of suitable subsoil material is available for redistribution after backfilling and grading.

UMC 784.13(b)(4) and UMC 817.22 TOPSOIL: REMOVAL

The applicant has provided adequate information detailing the timing of topsoil salvage, the materials to be removed, and the area of topsoil salvage for the new breakout portals in the Middle Fork of Miller Creek. This information is presented in the ACR response, Chapter VIII, p. VIII-1 and DOA response, Volume I, page 140.

The applicant has also provided information detailing the sources and characteristics of substitute topsoil material. The document and page number where information on the composition, areal extent, and available volume of material are listed by disturbed area requiring substitute topsoil in the table below. Refer to UMC 784.13(b)(4) and UMC 817.21 Topsoil: General Requirements in this TA for location of chemical and physical analytical results.

In addition, the applicant has committed to conducting field trials to test the suitability of substitute topsoil materials to be used in reclamation. Description of study designs, schedule, and monitoring program are provided for the coal refuse areas, substitute topsoil borrow sites, mining pads and portals and areas of associated disturbance, and riparian areas to be disturbed. The applicant has proposed monitoring field trial studies for ten years (DOA response, Volume 1, pp. 104-125B).

Required information is not presented in the PAP for the nonrefuse portion of the preparation plant area. Therefore, the PAP is not in compliance with UMC 784.13 and UMC 817.22. The applicant's acceptance of Condition No. 9 will be necessary to confirm compliance with these regulations.

UMC 784.13(b)(4) and UMC 817.23 TOPSOIL: STORAGE

The applicant has provided adequate information detailing the need for topsoil storage, the selection of stockpile locations, and the protection of proposed and current topsoil stockpiles for all disturbed areas except the nonrefuse portion of the Hiawatha preparation plant area. The document and page number where pertinent information is presented are listed by stockpile location (area of disturbance) in the table below.

Disturbance Area	Stockpile Locations	Protective Measures
Middle Fork area		
Current stockpile	DOA response, Vol. III Exhibit VIII-4	DOA response, Vol. I, p. 131A
Proposed stockpile	DOA response, Vol. III, Exhibit VIII-4	DOA response, Vol. I, pp. 47 and 140
South Fork area		
Lambs trailer	DOA response, Vol. III, Exhibit VIII-4	ACR response, Chap. VIII, p. VIII-2 and Bio/West report
Equipment storage yard	DOA response, Vol. III, Exhibit III-3	DOA response, Vol. I, p. 56A
Preparation plant Non-refuse area	9/84 submittal	9/84 submittal
Borrow areas	DOA response, Vol. III, Exhibit VIII-4A.1	N/A
Access/haul road corridors	9/84 submittal	9/84 submittal
Pond No. 5	9/84 submittal	DOA response, Vol. I, pp. 131-132

The PAP does not demonstrate compliance with UMC 784.13(b)(4) and UMC 817.23 because of the lack of information specific to the nonrefuse portion of the preparation plant area. Applicant acceptance of Condition No. 10 will be necessary to achieve compliance with these regulations.

Condition No. 9

Within sixty (60) days of the effective date of this permit, the permittee must provide the location (exhibit) and proposed protective measures to be used for any and all substitute topsoil stockpiles in the nonrefuse portion of the preparation plant area.

UMC 784.13(b)(4) and UMC 817.24 TOPSOIL: REDISTIBUTION

The applicant has provided information on regraded surface preparation and topsoil redistribution requirements including achievements of stable, uniform thickness, prevention of excess compaction, and protection from erosion. The document and page number where this information appears is listed by area of disturbance in the table below.

Disturbance Area	Surface Preparation	Redistribution Requirements
North Fork area	DOA response, Vol. I, p. 54	DOA response, Vol. I, p. 54
Middle Fork area		
Portals	DOA reponse, Vol. I, p. 47A	DOA response, Vol. I, p. 47A
Breakout	DOA response, Vol. I, pp. 47A and 141	DOA response, Vol. I, pp. 47A and 141
South Fork area		
Portal	DOA response, Vol. I, p. 55	DOA response, Vol. I, p. 55
Conveyor/load-out/sediment pond	ACR response, Chap. VIII, Bio/West report	ACR response, Chap. VIII, Bio/West report

Preparation plant area		
Coal refuse area	DOA response, Vol. I, pp. 56-56A	DOA response, Vol. I, pp. 56-56A, 131A, p. 136
Nonrefuse area	DOA response, Vol. I, pp. 56-56A	DOA response, Vol. I, pp. 56-56A, 131- no depth 136
Slurry ponds	DOA response, Vol. I, p. 134	DOA response, Vol. I, pp. 136, 131A, 136
Borrow areas		
Area A (equipment storage pond)	DOA response, Vol. I, pp. 41-42	DOA response, Vol. I, pp. 41-42
Areas B and C	DOA response, Vol. I, p. 42A	DOA response, Vol. I, P. 42A
Area D	DOA response, Vol. I, p. 43	DOA response, Vol. I, pp. 42B-43
Access/haul roads	9/84 submittal	9/84 submittal

The PAP is in compliance with UMC 784.13(b)(4) and UMC 817.24

UMC 784.13(b)(4) and UMC 817.25 TOPSOIL: NUTRIENTS AND SOIL AMENDMENTS

The applicant has provided either rates of fertilizer application or a commitment to sample and test for rates of fertilizer application for all areas of disturbance except for the areas indicated below. The document and page number where information on fertilization requirements is listed are presented by area of disturbance in the table below.

Disturbance Area	Nutrients and Soil Amendments Information
North Fork area	DOA response, Volume I, page 43
Middle Fork area	DOA response, Volume I, pages 47-47A
South Fork area	
Portal	DOA response, Volume I, page 55
Conveyor/load-out/sediment pond	ACR response, Chapter VIII, Bio/West report
Preparation plant area	
Coal refuse area	
Borrow A and D materials	DOA response, Vol. I, p. 136, Table VIII-7
Borrow B and C materials	DOA response, Vol. I, p. 136
Nonrefuse area	--
Slurry ponds	
Borrow A and D materials	DOA response, Vol. I, p. 136, Table VIII-7
Borrow B and C materials	DOA response, Vol. I, p. 136
Borrow areas	
Area A	DOA response, Vol. I, p. 42, Table VIII-3
Equipment storage yard	--
Area B	DOA response, Vol. I, p. 42, Table VIII-3a
Area C	DOA response, Vol. I, p. 42A, Table VIII-3A
Area D	DOA response, Vol. I, pp. 43-44, Table VIII-4

The PAP is in compliance with UMC 784.13(b)(4) and UMC 817.25.

XV - VEGETATION RESOURCES - UMC 783.19, 784.13(b)(5), and 817.111-817.117

Information regarding existing vegetation resources and the applicant's proposed revegetation plan are found in the following sections of the PAP.

Section	Date of Submission	Pages
Vegetation Resources:		
Vol. III, Chapter IX	March 1981	1-80
Vol. III, Exhibits	March 1981	IX-1 to IX-4
ACR response, Chapter IX Section 783.19	July 1983	
Vol. I, Chapter III	March 1981	III-31
Vol. III, Exhibits, Response to DOA	November 1983	IX-1 and IX-1A
	February 1984	IX-2A IX-3A and IX-3B IX-4A to IX-4C
Revegetation Plan:		
Vol. I, Chapter III	March 1981	III-35 to III-47
Vol. III, Exhibits, Response to DOA	November 1983	IX-5
Response to ACR, Section 783.13(5)	July 1983	III-31A to III-46
Response to ACR, Attachment 1	July 1983	
Response to ACR, Attachment 2	July 1983	
Response to ACR, Revegetation Plan	July 1983	
Vol. III, Chapter X Appendix 10.4B	March 1981	

No threatened or endangered plant species occur in the proposed permit area and no Federally-designated critical habitats are present (ACR response, Chapter IX, Section UMC 783.19). The U.S. Fish and Wildlife Service (USFWS) did not list any plant species in its biological assessment of August 13, 1984, for the Hiawatha Mines Complex.

Ten vegetation types have been mapped within the permit area as described in Chapter II of this TA. The species composition of these vegetation types are presented in Chapter IX of the ACR response. Exhibits, submitted as Volume III, DOA responses dated November 7, 1983, February 13, 1984, and March 16, 1984, provide a suitable vegetation map of the permit area and the locations of all sampling and reference areas. The appropriate exhibits are IX-1; IX-1A, IX-2A, and IX-3A; IX-3B; and IX-4A to IX-4C. Table X-2, page 89A, presents the disturbed acreage by community type.

The mining complex has disturbed a total of 435 acres of vegetation within the present permit area. Proposed reclamation activities within the permit area will disturb an additional 46 acres of vegetation for substitute topsoil borrow areas, for a total of 481 acres of disturbance. The types of plant communities and the quantities that have been and will be affected are presented in the table below.

Summary of Vegetation Losses at the Hiawatha Mines Complex by Vegetation Type

Vegetation Type	Total Acres Disturbed	Percent of Total Disturbance
Pinyon-juniper	391	81.3
Mountain brush	35	7.3
Sagebrush	25	5.2
Mixed conifer	15	3.1
Riparian wood	15	3.1
Total	481	100.0

Twelve reference areas of 1.03 acres each have been established (ACR response, Chapter IX, p. 3). Nine of these reference areas were established in the present permit area and three were located outside the mine permit area along Cedar Creek (DOA response, February 13, 1984, Exhibit IX-1). At least one reference area has been established for each vegetation type that has been or will be disturbed. Sampling adequacy was achieved for cover, productivity, and woody plant density (ACR response, Chapter IX, Appendix B). However, concerns have been raised concerning the sampling adequacy of the cover values for the reference areas. The company must during the next growing season, in 1985, resample all reference areas and redefine the cover values of each reference area to the vegetation type it represents. The company must satisfy Condition No. 10 to be in compliance.

Condition No. 10

The permittee must, by July 1, 1986, submit the necessary data collected during 1985, that reevaluates the cover value for all vegetation reference areas. Discussions evaluating the new data and how it relates to the vegetation type must also be provided.

The revegetation plan contains technically adequate plans for mulching (proposed rate of one ton per acre, DOA response, p. 119), fertilizer applications (DOA response, Section UMC 784.13(a)pp. 41-44), seed mixtures and rates for broadcast methods (DOA response, Tables IX-1 to IX-4), tree and shrub planting densities and spatial arrangements (DOA response, updated January 9, 1984, pp. 62), and criteria for demonstrating successful revegetation (DOA response, p. 63, updated January 9, 1984). A technically sound field trial design is presented for testing seed mixtures, soil depths, fertilizer types and application rates, and mulching rates (DOA response, updated January 9, 1984, pp. 103-125). The results of these field trials will be used to modify, if necessary, the approaches now described in the PAP.

During the PAP review process, concerns were raised about the suitability of the refuse pile substrates to support future plant growth. Some of the laboratory data indicated a marginal suitability of some chemical and physical properties (e.g., water holding capacity and fertility) of the substrates for sustaining plant growth equivalent to the reference areas. Such concerns were recognized by the applicant and formed the basis for designing the field trial experiments. It has been demonstrated that the substrate materials have the potential capability of supporting some plant growth.

The applicant has proposed a 6-inch cover of substitute soil materials over the coal refuse area. OSMRE and UDOGM found this to be unacceptable until successful reclamation is demonstrated by the field trials. The applicant revised its reclamation plans and field trial designs to test for 6, 12, and 16 inches of substitute soil cover over the coal refuse area (PAP, DOA response p. 40A, Volume I). There is an adequate volume of soil material in borrow area A, B, C, and D to cover the refuse area with 16 inches of substitute material. The bond has been calculated to reclaim the refuse area with 16 inches of substitute material (see TA Appendix B). The applicant intends to demonstrate that 6 inches is sufficient for successful reclamation. When this is demonstrated through the field trials, the bond may be reduced.

Whether the substrates will actually support the proposed revegetation mixtures at suitable production levels remains to be demonstrated by the field trials. Modifications in the proposed substitute topsoil depths, fertilizer rates and types, seed mixtures, and mulching rates may be required as a result of the field trial results. The applicant has recognized that these potential effects may result and has committed to incorporating the findings into a modified revegetation plan, as necessary, to achieve revegetation success equivalent to the reference areas.

XVI - FISH AND WILDLIFE RESOURCES - UMC 784.21 AND UMC 817.97

Information regarding fish and wildlife resources and the applicant's fish and wildlife protection plan are found in the following sections of the PAP.

Section	Date of Submission	Pages
Fish and Wildlife Resource Data		
Vol. III, Chapter X	March 1981	1-46
Vol. III, Chapter X Appendix A	March 1981	1-68
Response to ACR Comments Section 784.21	July 1983	6A-6C
Response to ACR Comments Chapter X, Appendix D	July 1983	1-17
Fish and Wildlife Plan		
Vol. I, Chapter III	March 1981	32
Vol. III, Chapter X Appendix B	March 1981	1-22
Vol. III, Response to DOA	November 1983	Exhibits X-1, X-2, and X-3A
Vol. I, Response to DOA Section 784.21	January 1984	85-90
Vol. I, Response to DOA Section 817.97	January 1984	132-133
Vol. III, Response to DOA	November 1983	Exhibit X-4

No threatened or endangered fish or wildlife species occur on the proposed permit area and no Federally-designated critical habitats are present (original submittal, Volume III, Chapter X). However, in a letter to OSMRE (January 16, 1984), the USFWS identified concern with all Utah mines utilizing and potentially depleting water from the Upper Colorado River system. The agency has identified the need to analyze the impacts of the depletions of water from the river as habitats for the Colorado squawfish and humpback chub. The USFWS feels there is a need for those who deplete the source to contribute to the conservation program designed to compensate for the loss of water from the system. The USFWS currently assesses a one-time fee of $15 per acre/foot to each water user depleting the source. The USFWS provided a biological assessment and Section 7 consultation opinion for the Hiawatha Mines Complex in a letter dated August 13, 1984.

OSM's CHIA concludes, based on the applicant's estimate of evaporative losses and other information collected from nearby mines, that U.S. Fuel depletes approximately 26 acre/feet per year of water. Based on this figure, the applicant would be obligated to contribute a one-time fee of $388 to USFWS study program.

The company must commit to Condition No. 11 in order to comply with regulations protecting threatened and endangered species.

Condition No. 11

As a condition of the U. S. Fish and Wildlife Service's Windy Gap analysis for impacts to threatened and endangered species, the permittee must implement within thirty (30) days of the effective date of this permit the mitigation measures identified in the USFWS letter dated August 13, 1984, and submit proof of such compliance to the regulatory authority.

The bald eagle, American peregrine falcon, and arctic peregrine falcon occur sporadically in the local area but do not nest in the permit area. The permit area has been designated as having substantial value for the bald eagle and American peregrine falcon by the UDWR (original submittal Volume III, Chapter X) and of limited value for the arctic peregrine falcon. The golden eagle is commonly observed in the permit area. A nest site survey (ACR response, Appendix D) conducted within a 0.5 km radius of the disturbance areas revealed no golden eagle nesting activity.

The design and construction of power transmission and distribution lines have been reviewed by the USFWS and have been found acceptable to protect raptors (letter dated March 5, 1984, from UDOGM). The applicant has also committed to designing future power transmission and distribution lines in a manner that protects raptors (PAP, DOA response April 13, 1984, Vol. 1, page 89).

Fish and wildlife issues that developed during the numerous reviews of the PAP include the need for: (1) inventory of raptors and species of high Federal interest; (2) riparian habitat protection and restoration plan; (3) mitigation plan for wildlife habitat, especially big game; (4) survey of electric transmission lines to meet raptor protection standards; (5) survey of springs and seeps and their wildlife use; (6) adequate design of King No. 6 conveyor to allow big game passage; (7) the postmining reclamation of haul roads; and (8) consultation with the USFWS on the presence of threatened and endangered species in the mine permit area. The PAP has provided technically adequate information and/or plans for all of the issues above.

In response to concerns raised about the status of raptors, a raptor survey was conducted in 1983. The results were reported as Appendix D of Chapter X in the ACR response dated July 1983. It was reasonably concluded that mining did not represent a significant hazard to raptors.

The USFWS conducted a survey of electric transmission and distribution lines at the Hiawatha Mines Complex during August 1981 and recommended no structural modifications because existing lines did not represent a hazard to raptors (letter dated October 9, 1981).

Concern was expressed about the protection and restoration of disturbed riparian habitat and/or the riparian zones (OSMRE ACR dated November 8, 1982; UDOGM ACR dated November 8, 1982). The applicant subsequently committed to: (1) restoring disturbed riparian habitat (about 10.5 acres); (2) establishing one acre of new riparian vegetation in the Middle Fork of Miller Creek to mitigate for the net loss of riparian habitat that was disturbed within the town of Hiawatha and that cannot be reclaimed; (3) establishing a riparian habitat buffer zone 100 feet wide; and (4) contacting the appropriate regulatory agency prior to any future disturbance of riparian habitat. The proposed species mixture, buffer zone width, and approach for restoring riparian habitat are appropriate for creating a diverse, self-sustaining, and native community type.

A survey of springs and seeps was conducted, and use by wildlife species, principally deer, was noted (ACR response, UMC 783.15). Using the worst-case assumptions that subsidence would induce reduction in spring and seep flows, U.S. Fuel estimated that a maximum of 11 springs and seeps would be affected. The cumulative flow of these springs and seeps is approximately 24 gpm (DOA response, January 1984, p. 80). U.S. Fuel has committed to providing replacement water sources for wildlife for springs and seeps that are affected by subsidence (DOA response, p. 63). This commitment is considered adequate for compliance with UMC 817.97.

Blockage of mule deer movements by the proposed King No. 6 conveyor system became an important concern of UDOGM (letter dated July 15, 1981, and letter dated July 30, 1981). The applicant provided the required engineering plans and modifications of the conveyor system to accommodate deer passage. The modified conveyor system was approved by the UDWR as representing no barrier to deer movement (letter dated April 19, 1983). The conveyor system complies with UMC 784.21 and 817.97.

The vagueness of the proposed wildlife mitigation measures and the quantity of wildlife habitat that would be affected by mining operations were issues constantly raised by OSMRE, USFWS, UDWR and UDOGM during PAP reviews. Big game habitat restoration was an especially frequent concern. The mining permit area includes critical deer and elk winter range (8,305 acres), high-priority elk winter range (1,017 acres), and high-priority deer and elk summer range (3,335 acres). Some of these areas within the permit area overlap. Mining activities in the Miller Creek and Cedar Creek drainages have affected critical deer and elk winter range, while development of the town of Hiawatha, the processing plant, and waste disposal sites have affected high-priority deer and elk winter ranges. The total area of disturbance is 481 acres. Wildlife habitat mitigation will be accomplished by restoring the plant community that was present before mining began. Revegetation success will be determined by comparisons with reference areas.

Regarding the development and commitment to specific wildlife mitigation measures, the PAP contains 14 measures that are considered to constitute adequate wildlife mitigation. These include commitments to (1) revegetate disturbed areas to approximate pre-mining conditions; (2) establish riparian habitat buffer zones; (3) replace lost springs/seeps with an alternate water source in the form of a guzzler or retention pond; (4) conduct a wildlife education program; (5) enforce poaching regulations; (6) reduce highway speed limits; (7) design any future conveyor systems to allow deer passage; (8) restore big game habitats to original or better conditions; (9) notify UDWR of raptor nests and to conduct surveys in areas of future disturbance; (10) avoid disturbance to aspen, conifer, and mixed aspen-conifer stands; (11) supply water to BLM habitat improvement projects; (12) report discovery of snake and bear dens to UDWR; (13) clear all pesticide use with UDWR and UDOGM; and (14) reclaim all future temporary exploration roads and prevent public access. These commitments are considered appropriate and satisfactory wildlife mitigation that comply with the intent of UMC 784.21 and UMC 817.97.

XVII - PRIME FARMLAND - UMC 783.27, 784.17 and 823

The PAP (DOA response, Volume I, pp. 93-103) states that the permit area of the Hiawatha Mines Complex contains no lands suitable for flood irrigation because of steep slopes (10 to 15 percent), cobbly soils, and limited size of stream terrace deposits. In addition, the U.S. Soil Conservation Service has provided a letter (ACR response, January 17, 1983, Appendix VIII-1) documenting that there are no prime farmlands in the vicinity of the Hiawatha Mines Complex. The PAP is in compliance with UMC 783.27. UMC 785.17 and UMC 823 do not apply since no prime farmlands will be affected.

XVIII - EXPLOSIVES - UMC 784.23(b)(9) AND 817.61 THROUGH .68

The applicant has identified the location of the existing explosives storage structure on Exhibit III-14 and has stated that no surface use of explosives has been made for the past two years, nor is there any anticipated use of explosives. The applicant is in compliance with these regulations.

XIX - OPERATION DESCRIPTION - UMC 784.11 and 784.12

The applicant has provided in the original submittal, Volume I, Chapter III, a description of the mining procedures, techniques, equipment and facilities as well as annual planned production of coal. Also involved are detailed descriptions of the construction, use, and reclamation of slurry and sedimentation ponds; disposal of spoil, mine, and noncoal wastes; and disposal of waste water generated by the mining operations. The applicant has also provided a description of the proposed unit train loadout and its operation in supplemental material submitted on July 11, 1984 and September 7, 1984. The application is in compliance with the provisions of UMC 784.11 and 784.12.

XX - BACKFILLING AND GRADING - UMC 784.13(b)(93), 817.101, 817.72, 817.73 and 817.74

A plan for the backfilling, compaction, and grading of existing mine portals, work yards, sedimentation ponds, and roads has been presented in the original submittal, Volume I, Chapter III. Contour maps and cross sections showing the anticipated final surface configuration have been included for these areas. Plans have been included for the restoration of the existing haul and mine access roads in the North Fork of Miller Creek, Middle Fork of Miller Creek, and South Fork of Miller Creek.

XXI - COAL PROCESSING WASTE AND NON-COAL PROCESSING WASTE - UMC 784.13(b)(6), (b)(7), 784.16(c) AND (d), 784.19, 784.25, 817.71, 817.93, AND 817.103

The applicant has provided information which addresses the issues of handling and disposal of debris (noncoal), acid-forming and toxic-forming materials, and materials constituting a fire hazard, including contingency plans to preclude sustained combustion. A plan for noncoal waste storage and disposal is presented in the ACR response, Chapter III, and August 13, and November 3, 1981, letters from the applicant to UDOGM. The applicant has committed to the burial of acid-forming and toxic-forming materials beneath four feet of the best available nonacid-forming and nontoxic-forming materials (ACR response, Chapter III, page III-52). The applicant has also indicated that no acid-forming or toxic-forming materials occur in any of the disturbed areas, based on data provided in the DOA response, Volume I, pages 133-137. The disposal of combustible materials (coal refuse) is also discussed in the DOA response, Volume I, pages 133-137. Contingency plans for precluding sustained combustion of these materials are presented in the original submittal, Chapter XII, and May 24, 1976, letter from the applicant to MSHA.

The plan for noncoal waste disposal has been approved by UDOGM (ACR response, Chapter III, February 10, 1982 letter). The handling and disposal of potentially combustible materials (slurry pond embankment refuse materials) is in compliance with 817.103 (DOA response, August 17, 1984, Volume I, page 136). The plan for precluding sustained combustion of combustible materials has been approved by MSHA (June 30, 1976 letter). Therefore, the PAP is in compliance with UMC 817.13(b)(7), UMC 817.89, and 817.103.

UMC 784.16(d) and (e) RECLAMATION PLAN: PONDS, IMPOUNDMENTS, BANKS, DAMS, AND EMBANKMENTS

The applicant has provided information addressing coal processing waste banks, dams, and embankments in the original submittal, Volume IV, Chapter XII, and page 133 of the DOA response. MSHA has approved the plans for all currrently active impoundments (Numbers 1, 4, 5 North, and 5 South). Revisions to Slurry Pond No. 1 was approved by OSMRE in March 1979.

Compliance was determined in regard to UMC 817.81 through 817.85 (Coal Processing Waste Banks), UMC 817.86 and 817.87 (Coal Processing Waste: Burning), and UMC 817.91 through 817.93 (Coal Processing Waste). UDOGM approved the design of the slurry ponds without a subdrainage system because the ponds are already built and have been shown to have a static safety factor of greater than 1.5.

UMC 784.19 and 817.71 UNDERGROUND DEVELOPMENT WASTE

Information concerning the description and disposal of underground development waste is provided in the ACR response (page III-34A) and in plans submitted to UDOGM dated August 13, 1981 and November 1981. U.S. Fuel has a demonstrated history of producing minimal amounts of underground development waste. The waste that has been produced has been associated with portal entries or vent shafts and in each case the waste has been used in the construction of mine pads. U.S. Fuel's past history of not producing coal process waste and the reclamation plan for mine pads discussed under UMC 784.13 are considered to be an adequate demonstration of compliance with 784.19. The application is in compliance with UMC 817.71 through 817.74.

UMC 784.25 RETURN OF COAL PROCESSING WASTE TO ABANDONED UNDERGROUND WORKINGS

U.S. Fuel does not propose to backfill any coal processing waste to abandoned underground workings. Therefore, UMC 784.25 is not applicable.

XXII - MINE FACILITIES, COAL HANDLING STRUCTURES, AND SUPPORT FACILITIES - UMC 784.11, 784.12, 784.16(a)(2) AND (a)(3), 817.181

Chapter III of the original submittal, paragraphs 3.5.1 through 3.5.4, Tables III-2, III-3, III-6 through III-9, Plate III-1, Exhibits III-1A through 4B, and supplemental submittals dated May 11, 1984 and July 11, 1984 (unit train loadout) describe the existing and proposed mine facilities and surface support facilities. All facilities conform to the requirements of the regulations.

XXIII - ROADS - UMC 784.18, 784.24, and 817.150 THROUGH 817.180 UMC 817.50 THROUGH 817.155 and UMC 817.171 THROUGH 817.175

Descriptions of the existing roads in the North, Middle and South Forks of Miller Creek canyons are contained in the original submittal, Chapter III, and designs of the South Fork Road are contained in Chapter XIII, paragraph 13.2. Culvert spacing for the Middle Fork Road was submitted in 1978 (Vaughn Hansen, 1978) and approved in a letter from OSMRE dated May 30, 1980. U.S. Fuel recently received a notice of violation (N84-4-8-8, No. 8) for not having adequate drainage and erosion control on the Middle Fork road. The applicant submitted a report (dated August 17, 1984) in response to this notice of violation and showed that the culvert spacing and sizing was adequate and committed to check dams, flexible discharge pipes, and riprap for erosion control. The violation has been terminated (phone conversation with Mr. David Lof, August 29, 1984); however, the applicant is still submitting information requested by UDOGM.

During the review of the King No. 6 Mine, OSMRE and UDOGM stipulated (Nos. 7-81-7 and 7-81-8) compliance for the South Fork haul road. The applicant has submitted this information (documented in letter from UDOGM dated July 3, 1982), and the applicant has committed to a road maintenance plan (letter dated June 7, 1984, and the PAP, Chapter XIII, and Exhibits XIII, 1-3E (updated May, 1984), for both the Middle Fork and South Fork haul roads. Therefore, with approval of the final abatement plans for the Middle Fork road, the applicant will be in compliance with UMC 817.151, 817.152, 187.153, 817.154, and 817.155.

Currently, there are no Class II roads in the permit area. Therefore, UMC 817.160-166 are not applicable.

One Class III road is in the permit area. This road was constructed prior to SMCRA, but it is currently being used to service a ventilation portal and a diversion dam on the North Fork of Miller Creek. The road design (letter of August 7, 1979) was approved by OSMRE (letter dated March 21, 1980), and the maintenance plan (letter of June 7, 1984) has been reviewed by OSMRE and found to be in compliance. Therefore, the applicant is in compliance with UMC 817.170, 817.171, 817.172, 817.173, 817.174, and 817.175.

A stream crossing will be necessary when soil salvage activities are initiated in Area D. A stream crossing exists at the present time and is scheduled to be used during salvage activities. It is not known what the condition of the crossing will be or if it will be sufficient to handle the traffic in an environmentally safe manner. Therefore, the applicant must agree to contact the regulatory authority, prior to initiating salvage, to determine if crossing is adequate. The applicant must satisfy Condition No. 12 to be in compliance.

Condition No. 12

Prior to initiating soil salvage activities in Area D borrow area or developing the existing access road through the adjacent riparian zone, the permittee shall consult with the regulatory authority to determine whether any design changes are required due to changes in the condition of the stream crossing. At such time, at a minimum, the disturbance to established riparian vegetation, topsoil salvage, the need for temporary culverts, and spillage into the perennial stream shall be considered.

UMC 784.18 RELOCATION/USE OF PUBLIC ROADS

The applicant proposes to relocate a portion of State Highway 122 and County road 338 in order to build an overpass for the unit train system. The overpass will allow for uninterrupted traffic flow to and from the town of Hiawatha. The Utah Department of Transporation approved the relocation in a letter to the applicant dated May 17, 1984. As required by UMC 761.12(d), UDOGM published public notice of the proposed relocation in the Price, Utah, Sun Advocate. No requests for a public hearing were received. The applicant is in compliance with UMC 784.18 and UMC 761.12(d).

UMC 817.156, 817.166, and 817.176 - ROADS RESTORATION

The existing haul roads in the Middle Fork and South Fork canyons qualify as Class I roads. The current North Fork access road and the borrow areas access/haul roads to be built during reclamation qualify as Class III roads. There are no Class II roads currently existing or proposed. Reclamation of all roads will be accomplished by using plans submitted as part of Chapter 3 of the PAP. All road material will be removed, the roads will then be backfilled and seeded.

The PAP is in compliance with 817.156, 817.166 and 817.176.

UMC 817.180 OTHER TRANSPORATION FACILITIES AND 817.181 SUPPORT FACILITIES AND UTILITY INSTALLATIONS

With regard to the transporation facilities associated with the unit train loadout, designs have been provided as required by these regulations. The applicant proposes to modify an existing coal refuse pile to build the conveyor structure, which requires approval from MSHA.

XXIV - BONDING - UMC 805 and 806

Bonding to cover the reclamation of the Hiawatha Mines Complex was determined to be $4,625,900 (see Appendix B of this TA). These costs are shown below:

Hiawatha facilities area	$ 2,451,000
South Fork area	293,000
Middle Fork area	306,000
North Fork area	11,000
Roads to the facilities	134,000
Borrow areas	147,000
Maintenance	84,400
Total	$ 3,426,400

Additional costs:

Supervision:

One person full time for a year - $31.33/hr X 2080 hr = $65,200
Contingency:

10% of the above total = $349,160
Escalation:

3.79% inflation rate compounded annually for five year permit term (rate currently used by UDOGM) = $785,140

Bond amount = $4,625,900

These bonding estimates were developed by OSMRE using information provided in the PAP and independent estimates developed by OSM. Upon submittal of a bond to cover reclamation costs of $4,625,900.00 prior to permit issuance, the applicant will be in compliance with this section.

XXV - SEALING OF DRILLED HOLES AND UNDERGROUND OPENINGS - UMC 817.14 AND 784.13(b)(8)

The applicant has described and furnished details of the methods proposed for sealing mine portal openings and other openings as part of the reclamation plan (original submittal, Volume I, Chapter III). The applicant is in compliance with UMC 817.14 and 784.13 (b)(8).

XXVI - SUBSIDENCE - UMC 817.124, 817.126 AND 784.20

The applicant has indicated that no subsidence has occurred on the mine plan area since mining began (Vol. I, Chapter III p. 33). Subsidence monitoring will take place in cooperation with the U. S. Forest Service and the applicant as described in detail in Appendix XII-1, refer to Cooperative Agreement Attachment No. 1, signed by Reed Christensen, Forest Supervisor, Manti-Lasal National Forest.

Due to the amount of cover above the mineable coal seams fractures may not become visible. However, in comparing overlays of seams to be mined in the next five year permit term multiple seam mining will take place which compounds the change of subsidence affects. The North Fork of Miller Creek could sustain fracturing from subsidence, see p. 47 of this TA.

To ensure protection to owners and users of surface features from subsidence the applicant must commit to the conditions outlined below.

Condition 14

The applicant shall commit, within 30 days of permit approval, to restoring areas impacted by subsidence-caused surface cracks or other subsidence features such as escarpments (not to include naturally occuring escapments which are not a result of mining) which are of a size or nature that could, in the RA determination, either injure or kill grazing livestock or wildlife. Restoration shall include recontouring of the affected land surface including measures to prevent rilling, and revegetation in accordance with the approved permanent revegetation plan in the MRP. Restoration shall be undertaken after annual subsidence survey data indicate that the surfce has stabilized, but in all cases restoration and revegetation shall be completed prior to bond release.

Condition 15

The applicant shall commit, within 30 days of permit approval, to compensate surface owners (except for land owned by the applicant) for lands which cannot be safely grazed due to hazards caused by surface effects of subsidence, with land (in close proximity) of comparable size and grazing capacity to be used for grazing until restoration of the damaged land is achieved.

Condition 16

The applicant shall commit, within 30 days of permit approval, to compensate, at a fair market value, owners of livestock which are injured or killed as a direct result of surface hazards caused by subsidence.

Condition 17

The permittee shall replace any water demonstrated to have been lose or adversely affected by mining operations with water from an alternate source in sufficient quantity and quality to maintain the current and postmining land uses. The permittee will advise the regulatory authority of the loss or adverse occurrence within two working days of becoming aware that it has occurred, and within 14 days of notification shall submit to the regulatory authority for approval a plan to replace the affected water. Upon acceptance of the plan by the regulatory authority, the plan shall be implemented in the time-frame dictated by the regulatory authority's approval notification.

Condition 18

Existing raptor nests adversely affected by mine related subsidence shall be replaced or otherwise mitigated by the permittee in consultation with the U. S. Fish and Wildlife Service and the Utah Division of Wildlife Resources according to the requirements of UMC 784.21 and UMC 817.97. Notification of the loss to the above named agencies and the regulatory authority shall take place within two working days of the permittee becoming aware that the loss has occurred.

Condition 19

At least 60 days prior to beginning second seam mining inside a perennial stream buffer zone as defined by a 20 degree angle of draw from vertical, measured from the limit of mining in the lowest seam to the center of the strem channel, the permittee shall present a detailed evaluation of the anticipated effects of multiple seam mining on perennial streams to the regulatory authority for review and approval as required by UMC 817.126(a). This evaluation must be based upon subsidence monitoring information collected on multiple seam mining in areas with similar overburden depth and surface topography.

XXVII - SPECIAL CATEGORIES OF MINING OTHER THAN ALLUVIAL VALLEY FLOORS AND PRIME FARMLAND - UMC 827 and UMC 828

All support facilities associated with the Hiawatha Mines Complex are located within the permit area. Therefore, UMC 827 is not applicable.

No in situ processing of coal is proposed at the Hiawatha Mines Complex. For this reason, UMC 828 is not applicable.

XXVIII - MISCELLANEOUS COMPLIANCE

UMC 817.99 SLIDES AND OTHER DAMAGE

The applicant has committed to notifying UDOGM and the U.S. Forest Service should a slide occur which may have a potential adverse effect on life or public property (DOA response, Volume I, pg. 133 July 20, 1984).

UMC 817.100 CONTEMPORANEOUS RECLAMATION

The applicant has conducted interim revegetaion on areas of disturbance including topsoil stockpiles, fill slopes, cut slopes, and sediment pond outslopes. The documents and page numbers where information is presented are the DOA response (Volume I, page 133; Volume II, Exhibits III-12B and III-4B; Volume III, Exhibits IX-4A and IX-4B) and the ACR response (Chapter III, page III-31D and 31E). The applicant is in compliance with this regulation.

UMC 817.106 REGRADING OR STABILIZING RILLS AND GULLIES

The applicant has committed to fill, grade, reseed, and stabilize all rills and gullies deeper than 9 inches (ACR response, Chapter III, p. III-53); therefore, the PAP is in compliance with UMC 817.106.

UMC 817.11 SIGNS AND MARKERS

Personal communication with David Lof (UDOGM inspector for the Hiawatha Mines Complex) on March 21, 1984, indicated that the applicant is in compliance with UMC 817.11.

UMC 784.13(b)(9) COMPLIANCE WITH CLEAN AIR AND CLEAN WATER ACTS

The applicant has a current NPDES permit (UT 0023094) from the Environmental Protection Agency (EPA). The applicant had no outstanding violations on that permit as of March 13, 1984, and, therefore, is regarded as being in compliance with the Clean Water Act by the EPA, UDOGM, and Utah Department of Health.

The Utah Department of Health has not required an air quality control plan for the Hiawatha Mines Complex but does maintain a systematic inspection program for the mines. The applicant is, therefore, considered to be in compliance with the Clean Air Act (personal communication Lynn Menlove, Utah Department of Health, March 20, 1984). The applicant filed a notice of intent to build a unit train loadout facility with the Utah Department of Health, Bureau of Air Quality. It was approved on July 23, 1984. The applicant remains in compliance with the Clean Air Act.

UMC 786.11 PUBLIC NOTICES OF FILING OF PERMIT APPLICATIONS

Information on the required newspaper advertisment and proof of publication are provided in the original submittal (Volume I, Chapter II, p. II-15) and the DOA response (Volume I, Chapter II, UMC 782.21). UDOGM published a public notice of the proposed unit train loadout and road relocation for the railroad overpass in accordance with UMC 784.16 and UMC 761.12(d) (see page 25 of this TA). The applicant is in compliance with UMC 786.11.

SUMMARY OF BOND ESTIMATE FOR THE HIAWATHA MINE

Hiawatha Facilities Area		$2,451,000
South Fork Area		293,000
Middle Fork Area		306,000
North Fork Area		11,000
Roads to the Facility		134,000
Borrow Areas		147,000
Maintenance		84,400
	TOTAL	$3,426,400

Additional costs:

Supervision:

One person full-time for a year = $31.33/hr x 2080 hr = $65,200

Contigency:

10% of the above total = $349,160

Escalation:

3.79% compounded annually for five-year permit term (rate currently used by DOGM) = $785,140

GRAND TOTAL (rounded) = $4,625,900

6360A

APPENDIX A

EXECUTIVE SUMMARY

Under the Surface Mining Control and Reclamation Act of 1977 (PL 94-87), the regulatory authority is required to perform a cumulative hydrologic impact assessment (CHIA) before approving any application to mine. This report assesses the cumulative hydrologic impact of the Hiawatha Mine Complex and all other anticipated mining in the area.

The Hiawatha Mines Complex is located about 14 miles southwest of Price, Utah. The hydrologic system associated with the Hiawatha Mines Complex may interact with the Star Point Mines Complex, both in terms of surface and ground water resources. Therefore, both mines are considered to be within the cumulative impact area for the Hiawatha Mines Complex. Surface disturbances associated with the current mining at the Hiawatha Mines and the Star Point Mines Complexes occur in the Miller Creek watershed. Future mining at the Hiawatha Mines Complex will disturb additional lands in the Cedar Creek watershed.

Because affected watersheds and ground water systems differ in areal extent, the surface and ground water cumulative impact areas (CIAs) have different but overlapping boundaries. The surface water CIA includes Miller Creek to the confluence of Serviceberry Creek and Cedar Creek to the Mohrland loadout. The ground water CIA includes the area over the underground mine workings for the Hiawatha Mines Complex and the Star Point Mines Complex.

Previous studies have documented that the major hydrologic impacts associated with underground coal mining in the area are related to changes in ground water quantity and surface water quality. The levels of impacts on ground water quality are low. Impacts to ground water quantity are usually associated with consumptive use of ground water for dust control and losses resulting from evaporation caused by mine ventilation. Consumptive uses of ground water are regulated by the Utah State Engineer, since they are associated with water rights.

Changes in surface water quality are usually associated with increases in dissolved salts and suspended sediment. Increases in dissolved salt content in the surface water system occur through three mechanisms:

1. Ground water that recharges the surface streams has a naturally higher TDS content than the receiving waters. The major source of TDS increases are associated with ground water discharges from Mancos Shale.

2. Ground water that discharges from underground coal mines frequently has a higher TDS content than the receiving waters. Increases in TDS load will vary, depending on the length of time water contacts the coal seams and dust control measures implemented at the mine.

3. Leaching of salts from freshly disturbed surface mining operations and coal stockpiles results in increases in TDS content to the local ground water which usually recharges the surface water system.

This study defines the magnitude and duration of changes in ground water quantity and surface water quality. Data were obtained from the mining and reclamation plans of those mines in the CIA and from research studies in the area. There was sufficient information from the mine discharge data and description of mine geology to define the probable impacts on ground water quantity with a moderate level of confidence.

Impacts on surface water quality were studied for both Miller Creek and Cedar Creek. There were sufficient data to analyze the impacts on Cedar Creek and Miller Creek above the town of Hiawatha with a moderate level of confidence. However, there was not the same level of information on Serviceberry Creek and Miller Creek below the town of Hiawatha. For these reaches, the lack of data and the heavy influences of the Mancos Shale made prediction of impacts very difficult, and the level of confidence in the results is low to moderate.

The level of confidence in the results can be raised by providing more long-term hydrologic data. The water monitoring programs for the mines in the cumulative impact area may provide these data over time.

Results of the analyses indicate that underground coal mining will not cause a significant transbasin diversion of water from the historic discharge point of the Huntington Creek basin to the Miller Creek basin. This is based on the assumption that the Mohrland Portal will continue to be used as the discharge point for the Hiawatha Mines Complex.

Current mining in the CIA consumptively uses approximately 160 acre-feet per year (100 gallons per minute (gpm)). Total projected consumptive use will be between this level and about 230 acre-feet per year (145 gpm), depending on the ventilation requirements and production levels achieved in the future. All of the water consumptively used is owned by the coal operators through a combination of surface and underground water rights.

Historic mining through the Bear Canyon Fault has produced a significant amount of long-term discharge (100 to 200 gpm) to the mine. Maximum ground water discharge from the cumulative impact area is projected at about 1,900 acre-feet per year (1,170 gpm). All of the discharge will be from the Hiawatha Mines Complex.

Historic mining may have diverted some ground water from the Bear Canyon Fault into the underground mine workings at the Hiawatha Mines Complex. Ground water inflow to the Hiawatha Mines Complex was more than 500 gpm in 1972 and this diversion of ground water may have altered the flow patterns of several springs associated with the Bear Canyon Fault. However, it is difficult to define the level of impacts because there are no historic flow data for these springs. The rate of ground water flow into the Hiawatha Mines Complex has been steady for the past several years, with 100 gpm contributed from the Bear Canyon Fault. With the exception of the Star Point Mines, all future mining will leave a barrier of unmined coal along the fault. In the vicinity of the Star Point Mines the fault has been dry. Therefore, no additional impacts are associated with diverting ground water flows from the Bear Canyon Fault.

The only ground water discharges from mines in the CIA occur from the Hiawatha Mines Complex. Mixing of the ground water with surface water increases the concentration of total dissolved solids (TDS) in the receiving streams.

TDS concentrations in surface water below the coal mining activities are higher than above the coal mining activities. TDS increases are associated with increases in sulfate, chloride, magnesium and sodium concentrations. Current TDS levels do not exceed any set or recommended water quality criteria for the current water uses. Future mining will cause an additional increase in TDS concentration, but this level will also be below the set and recommended water quality criteria. TDS loads (i.e., concentration multiplied by flow rate) are approximately 900 tons per year from nonpoint sources associated with existing mining operations on Miller Creek. Because no new surface disturbances are proposed, the TDS load should not increase in the future. There is no active surface mining operation on Cedar Creek, but an increase of 180 tons per year from nonpoint sources is projected in relation to future mining operations on Cedar Creek.

Water chemistry of surface waters in the CIA naturally change from a calcium carbonate type to a magnesium sulfate type as streams traverse the Blackhawk Formation and the Mancos Shales. Mancos Shales have significant impact on the water quality of streams traversing them. TDS concentrations of streams on the Mancos Shales are as much as 100 times the TDS levels of streams on top of the Wasatch Plateau. Most of these increases are natural and are probably caused by ground water flowing through the formation, leaching available salts from the marine shales, and discharging into the surface waters. Impacts resulting from the surface facilities associated with mining in the CIA are overshadowed by the degradation of water quality from streams traversing the Mancos Shales.

Sulfate levels are presently below established water quality standards, and if projected estimates of sulfate increases are accurate, surface disturbances associated with the King 7 and 8 Mines will cause about a two-fold increase in sulfate concentrations. Projected sulfate concentrations will remain below water quality standards.

Total suspended sediment (TSS) concentrations are also higher downstream from surface facilities associated with mining. Most of the increased suspended sediment naturally settles out before Miller or Cedar Creek leaves the permit area because of relatively flat stream gradients.

The OSM Surface Water Model was used to route the known water quantity and quality of Miller Creek (at the town of Hiawatha) and of Serviceberry Creek (near the town of Wattis) to the confluence of the two creeks. According to the results of the model, the TDS concentration below the confluence of Serviceberry Creek and Miller Creek will exceed the water quality standard for irrigation use during the middle and late summer months. Most of the TDS concentration is caused by Serviceberry Creek traversing the Mancos Shale, however.

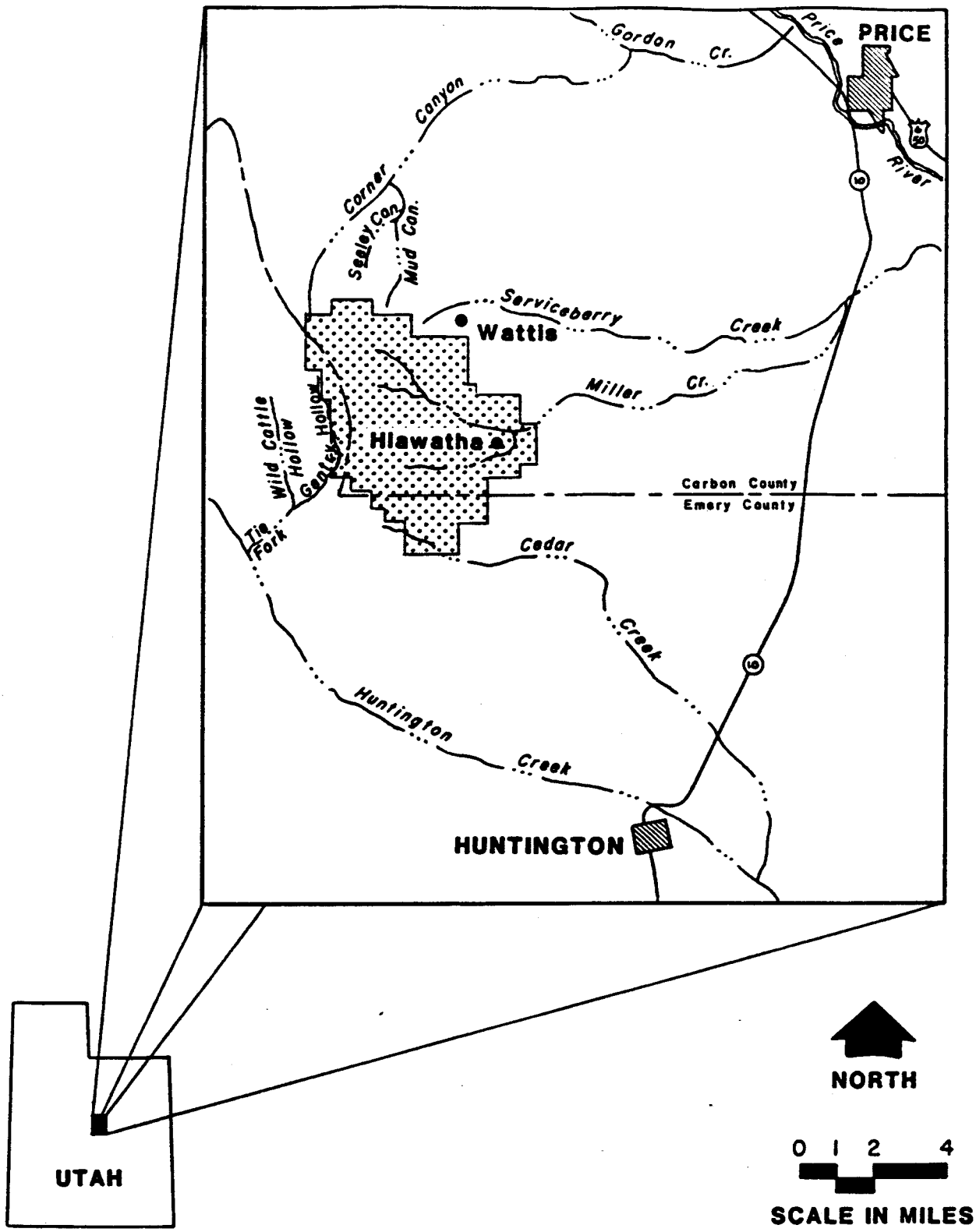


FIGURE 1

LOCATION OF STUDY AREA

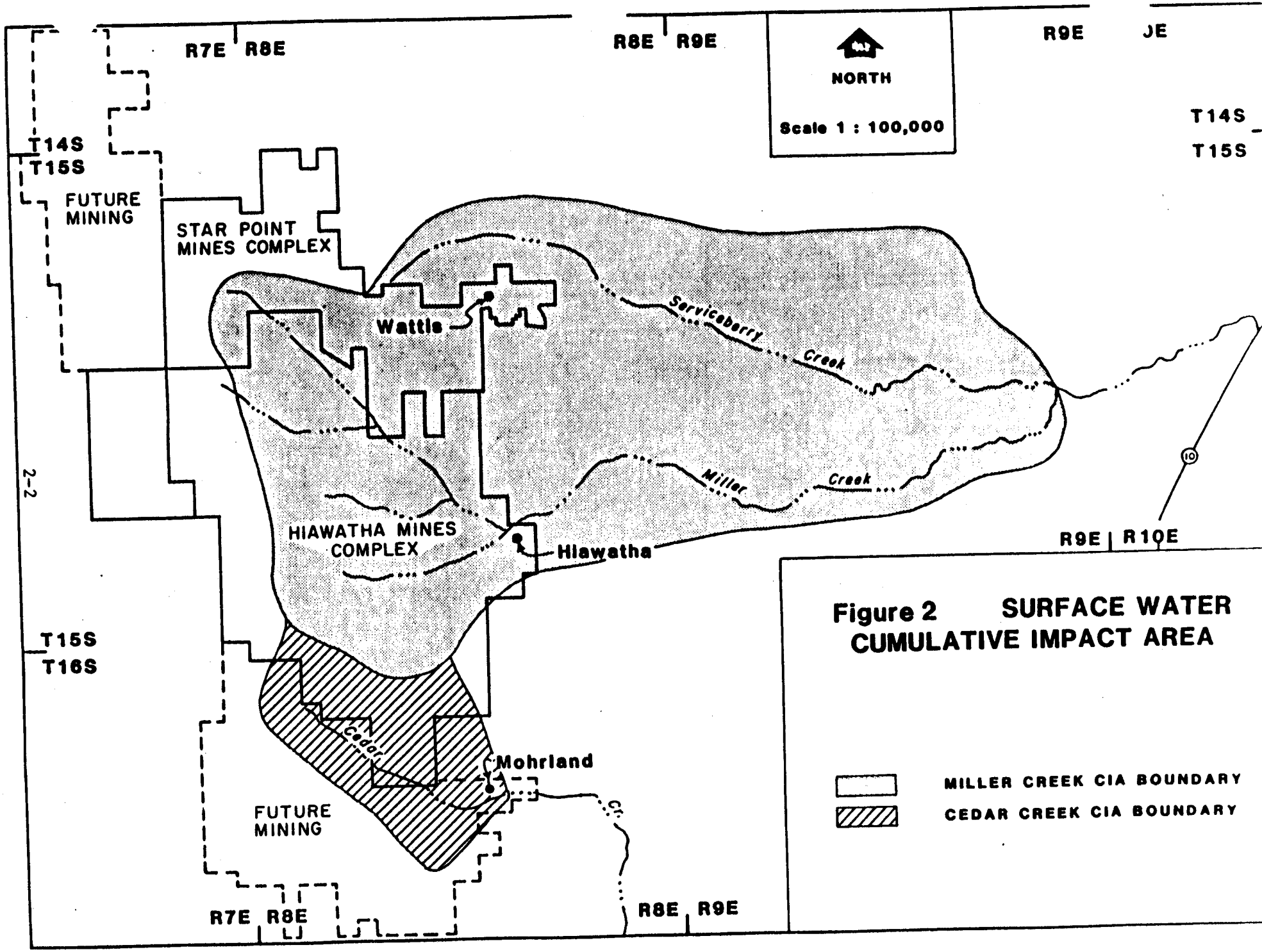


Figure 2 SURFACE WATER CUMULATIVE IMPACT AREA

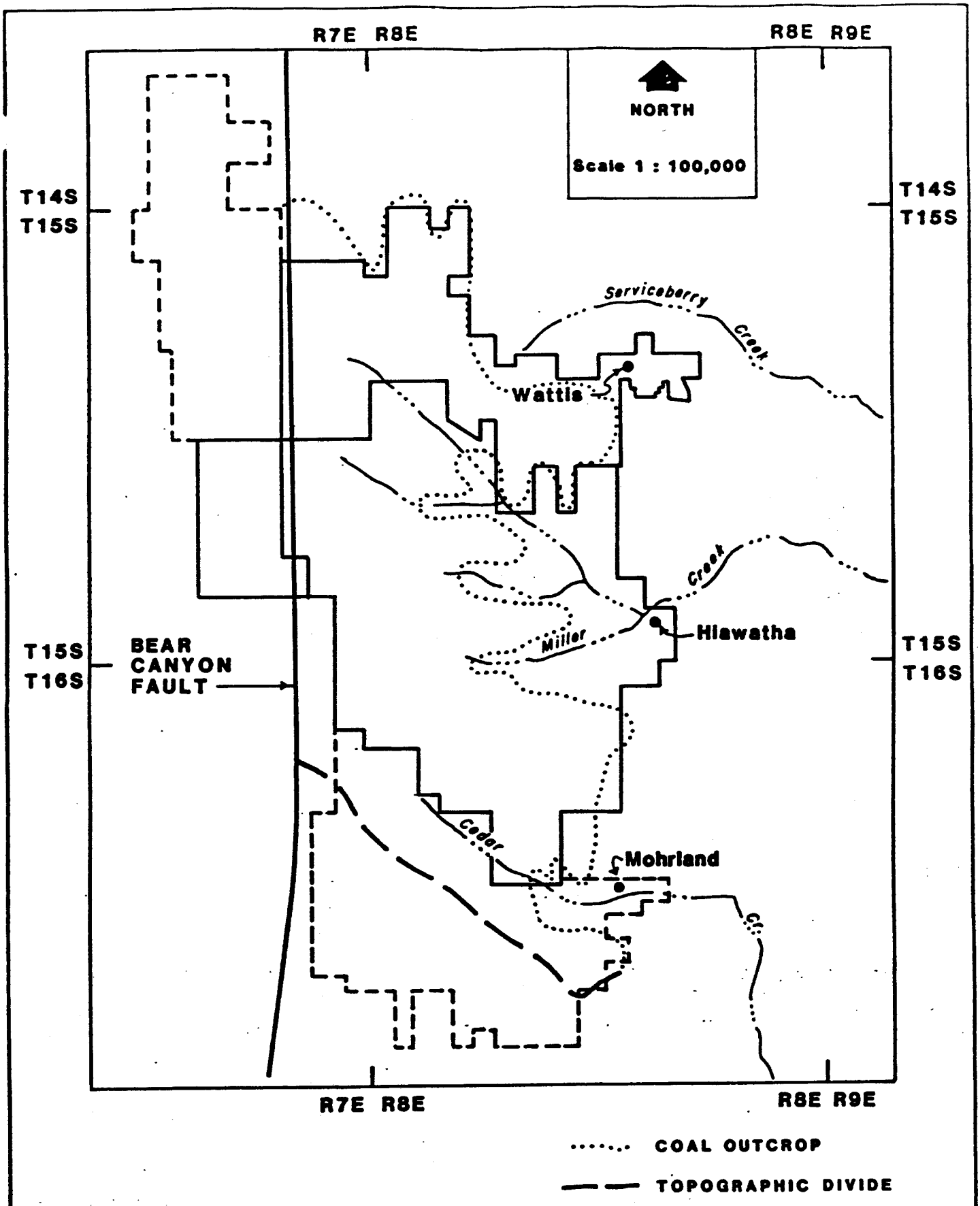


Figure 3 GROUND WATER CUMULATIVE IMPACT AREA

APPENDIX B

PREPARATION PLANT FACILITIES AREA RECLAMATION

Total area = 91.14 acres in the preparation plant area, 111.50 acres in the refuse disposal areas, .34 acres in the area of the coal loadout sile, 7.2 acres in the equipment storage area east of Slurry Pond #5, and .93 acres in the equipment storage area south of the mine office = 211.11 acres. The equipment storage area is not to be removed, so the total area to be reclaimed is 210.18 acres.

STRUCTURE REMOVAL

Structure sizes were estimated from the site maps. The height of structure and material type was estimated from pictures of the area where available. Existance of a concrete slab as a foundation is based upon the use of the building. Unit costs used in this analysis can be found in Attachment 1.

STRUCTURE	SIZE	MATERIAL	COST
Preparation Plant	45900 cy.	steel	185900
	24800 sf. (6 in. slab)	conc. slab	78700
Thickener	1090 cy.	concrete	6180
Concrete Silo (12000 ton) (demo. by blasting)	12658 cy.	concrete	115600
Conveyor from Stockpile to Loadout	1914 cy.	steel	7750
Conveyor in Stockpile Area and under Stockpile	2000 cy.	steel	8100
Concrete Structures at Center of Stockpiles (2)	520 cy.	concrete	2950
Pre-loading Tower	830 cy.	steel	3400
	500 sf.	conc. slab	1140
Pre-storage Tower	830 cy.	steel	3360
	500 sf.	conc. slab	1140
Carpentor Shop	1750 cy.	steel	7090
	3150 sf.	conc. slab	7200
Resin Plant	1780 cy.	steel	7200
	3200 sf.	conc. slab	7320
Heavy Equipment Shop	3330 cy.	steel	13500
	4500 sf.	conc. slab	10300
Electrical Shop	1167 cy.	steel	4730

	2100 sf.	conc. slab	4800
Warehouse	3600 cy. 6500 sf.	steel conc. slab	14600 14900
Shop	7100 cy. 9600 sf.	steel conc. slab	28800 22000
Truck Unloading Facility	220 cy.	steel	890
Misc. Buildings East of Shop	440 cy. 1200 sf.	steel conc. slab	1780 2740
Misc. Bulding West of Shop	300 cy. 800 sf.	steel conc. slab	1220 1830
Substations (2)	5720 cy.	steel	23200
Misc. Buildings South of the Substations	630 cy. 1700 sf.	steel conc. slab	2550 3890
Misc. Buildings North of the Truck Loadout	460 cy. 1250 sf.	steel conc. slab	1860 2860
Misc. Building Northeast of Prep. Plant	220 cy. 600 sf.	steel conc. slab	890 1340
Equipment Storage Yard	2050 ft. of fence	-	2320
Powerlines	4320 ft.	-	15600
Sediment Ponds (5)	66,000 cy.	earth	54100
Road to the Truck Loadout	4100 ft., 24 ft. width paved		15100

Note: this cost does not include removal of the railroad spurs that go through the preparation plant area. Since this area will be extensively graded, it is assumed here that the rail will be removed by the D9 dozer and pushed into the slurry impoundment area as part of the backfilling and grading operation.

Total Facilities removal cost = 689,000

BACKFILLING AND GRADING OF THE FACILITIES AREA

The cross-sections provided by the applicant were reviewed to evaluate the amount of material requiring handling in the refuse disposal and preparation plant area. The volumes determined by the applicant were found to be correct. The amount of material which will require handling is 1,653,855 cubic yards. This yardage assumes that the coal refuse in Slurry Impoundment #5 will be removed, and other coal contaminated material in the area can be backfilled into this site along with the demolished structures. Although the applicant will be continuing to dispose of refuse at the site,

this material will be placed in abandoned slurry impoundments, and will not create a situation where additional material will require grading over the permit term.

The preparation plant facilities area can generally be broken down into three areas: 1) the upper rail yard area north of the preparation facility, 2) the preparation plant area and Slurry Pond 1, and 3) the remaining slurry ponds across the railroad tracks from the preparation plant. For each of these areas, most of the material requiring grading can be backfilled within that area. However, there is excess material in the Slurry Pond No. 5 and the upper rail yard area which will require hauling to the Preparation Plant area. These volumes were estimated from the Area Volume-Balance Sheet provided by the applicant and included in Attachment 2 (the balance sheet volumes were reviewed found to be reasonable). From Slurry Pond No.5, 53199 CY will require haulage of 3750 feet. From the railroad area, 33492 CY will require haulage of 4350 feet. It is assumed that this material will be moved using on-highway trucks since material will be moved along roads near the town. Within each of the areas, D9U bulldozers will be used and the average push distance is estimated to be 300 feet.

Since the entire coal refuse disposal site and the coal contaminated areas in the Preparation Plant area are being covered with 16 inches of soil material, it is not necessary to special handle any of the coal contaminated material.

The disposal of buildings, road pavement, etc., is included in the cost determined above for facilities removal. Disposal was assumed to occur in the slurry impoundment areas.

Backfill of Material Removal in the Facilities Area:

I. Loaders (will be required to load the trucks to carry the material to the Preparation Plant area from the Railroad area)
cycle time = .64 min. (basic cycle)
bucket capacity = 7 CY x 80% fill factor = 5.6 CY
hourly production = 50 min/hour x (5.6 CY/cycle / .64 min/cycle) = 437 CY/hr.
hours required = 33492 CY / 437 CY/hr = 76.6 hr. or 77 hr (assume that there will be enough trucks to keep the loader continuously operating)
cost = $145.06/hr x 77 hours = $11200

Trucks (assume that a 20 CY on-highway truck will be used, average speed will be 25 MPH)
production = [(4350 ft./5280 ft/mile) / 25 MPH] x 2 x 60 = 3.95 min. for the round trip haul. Add .64 min. for the load and .50 min for the dump, and 84% job efficiency, the total cycle is 4.28 min. to haul 20 CY. 6 trucks will be required to keep the loader busy.
cost = $78.12/hr x 77 hours x 6 trucks = $36100

II. Loaders (will be required to load the trucks to carry the material to the Preparation Plant area from the Pond #5 area)

cycle time = .64 min. (basic cycle)
bucket capacity = 7 CY x 80% fill factor = 5.6 CY
hourly production = 50 min/hour x (5.6 CY/cycle / .64 min/cycle) = 437 CY/hr.
hours required = 53199 CY / 437 CY/hr = 121.7 hr. or 122 hr (assume that there will be enough trucks to keep the loader continuously operating)
cost = $145.06/hr x 122 hours = $17700

Trucks (assume that a 20 CY on-highway truck will be used, average speed will be 25 MPH)

production = [(3750 ft./5280 ft/mile) / 25 MPH] x 2 x 60 = 3.41 min. for the round trip haul. Add .64 min. for the load and .50 min for the dump, and 84% job efficiency, the total cycle is 3.82 min. to haul 20 CY. 4 trucks will be required to keep the loader busy.
cost = $78.12/hr x 122 hours x 4 trucks = $38100

Bulldozers (will be required to grade the entire volume of material, use a D9 since the job is very large)

hourly production = 675 CY/hr x .75 average operator x .84 job efficiency = 425 CY/hr
hours required = 1653855 CY / 425 CY/hr = 3891 hours
Cost = $163.54/hr x 3891 hours = $636000

Total Material Removal, Backfilling and Grading Costs = $739000

TOPSOIL REPLACEMENT

The applicant has proposed to cover 37.69 acres of the preparation plant area and the coal refuse disposal sites with 16 inches of topsoil substitute material which is 312836 CY. This material will be obtained from borrow areas east of Slurry Pond No.5. A total of 377882 CY is available from the borrow areas of which 887 will go to the North Fork area. It has been assumed that the rest of the material will go to the preparation plant and slurry pond areas, which is 376995. Though only 312836 CY are required, due to the uncertainties associated with the insitu material that the applicant proposes to use in the preparation plant area, it has been decided to utilize all available material from the borrow areas.

Trucks and loaders will be used to handle the material. The trucks will be 20 CY on-highway trucks since they will have to go near the town area part of the time.

Topsoil replacement in the Equipment Storage area east of Pond #5 is included in reclamation of the Borrow Areas. Essentially this will consist of ripping of the in-place material.

Equipment Production and Cost:

Loader (will be required to load the trucks to carry the material)
cycle time = .64 min. (basic cycle)
bucket capacity = 7 CY x 80% fill factor = 5.6 CY
hourly production = 50 min/hour x (5.6 CY/cycle / .64 min/cycle) = 437 CY/hr.
hours required = 376995 CY / 437 CY/hr = 863 hr. (assume that there will be enough trucks to keep the loader continuously operating)
cost = $145.06/hr x 863 hours = $125000

Trucks (assume that a 20 CY on-highway truck will be used, average speed will be 25 MPH, average haul is estimated to be 5100 ft.)
production = [(5100 ft./5280 ft/mile) / 25 MPH] x 2 x 60 = 4.64 min. for the round trip haul. Add .64 min. for the load and .50 min for the dump, and 84% job efficiency, the total cycle is 4.86 min. to haul 20 CY. 7 trucks will be required to keep the loader busy.
cost = $78.12/hr x 863 hours x 7 trucks = $472000

Tractor (assume that a tractor will be used to roughen the backfilled material prior to placement of the soil material to ensure bonding of the soil material to the backfill. It is estimated that the tractor can grade an acre in 2 hours)
production = 203.91 acres x 2 hours per acre) = 408 hr.
cost = [($80.00/day / 8hr/day) + $21.95/hr labor] x 408 hrs. = $13000

Bulldozer (assume that a D6LGP (low ground pressure) bulldozer will be used to spread the topsoil. Average push distance is estimated to be 50 feet from locations where the trucks could have dumped it)
hourly production = 550 CY/hr x .75 average operator x .84 job efficiency = 346 CY/hr
hours required = 376995 CY / 346 CY/hr = 1090 hours
Cost = $76.87/hr x 1090 hours = $83800

Note: Although the above calculations show only single pieces of equipment for the most part, it can be assumed that multiple pieces of equipment will be used to decrease the time required to finish the job. The total number of hours needed, and therefore the cost, is still the same.

Total Topsoil Replacement Costs = $694000

REVEGETATION

Revegetation of the Equipment Storage area east of Pond #5 is included in reclamation of the borrow areas.

Scarification: (a tractor will be used for this operation. scarification will occur along the contour)

(202.98 acres x 2 hours per acre) = 406 hours

Cost = [($80.00/day / 8 hr/day) + $21.95/hr labor] x 406 hr = $13000

Soil Nutrient Tests: (assume 60 samples at the site to be collected using hand labor. Sample collection will take three days.)

Cost = [(21.95/hr. labor x 8 hr.) + ($48/day for four wheel drive pickup) + ($5.05/hr operating cost x 8 hours)] x 3 days + (60 samples at $100/sample) = $6790

Fertilization:

2 hours per acre for tilling using the tractor, therefore $13000
125 lbs of fertilizer per acre (estimate) at $42 x 202.98 acres = $8520
Cost = $21600

Seeding:

Drill seeding at $1200 per acre (applicant's estimate) x 202.98 = $244000

Mulching:

1.5 tons per acre (from the PAP) @ $150 for hay mulch x 202.98 acres = $30400
use the tractor to crimp the mulch = $13000
Cost = $43400

Total Cost for revegetation = $329000

TOTAL COST FOR RECLAMATION OF THE PREPARATION PLANT FACILITES AREA = $2,451,000

SOUTH FORK FACILITIES AREA RECLAMATION

Total area = 9.3 acres in the portal area and 3 acres in the truck loadout. The access road outside of the facilities area is bonded separately.

STRUCTURE REMOVAL

Structure sizes were estimated from the site maps. The height of structure and material type was estimated from pictures of the area where available. Existance of a concrete slab as a foundation is based upon the use of the building. Unit costs used in this analysis can be found in Attachment 1.

STRUCTURE	SIZE	MATERIAL	COST
Watertank	200 cy.	steel	810
	314 sf.	conc. slab	720
Change House	4400 cy.	steel	17800
	6000 sf,	conc. slab	13700
Heating Plant	92 cy.	steel	370
	250 sf.	conc. slab	570
Storage Shed	780 cy.	steel	3160
	1050 sf.	conc. slab	2400
Shop	2700 cy.	steel	10900
	3600 sf.	conc. slab	8200
Fan	360 cy.	steel	1460
	975 sf.	conc. slab	2200
Pump Station	20 cy.	steel	80
	64 sf.	conc. slab	150
Conveyor Portal Steel Arch Cover	400 ft. @ 20 ft. diam.	steel	9400
Intake Air Portal Structure	50 ft. @ 20 ft. diam.	steel	1180
Portals (5) (estimated at $2700 per portal, includes backfilling of the breakout from within the mine)	20 ft. x 10 ft. backfill 25 feet into the portal against a	earth concrete stopping	13500
Substation Shed	330 cy.	steel	1300
Substation	890 cy.	steel	3600

Conveyor Shed	670 cy.	steel	2700
Conveyor	10400 cy.	steel	42100
Retaining Wall	180 cy.	steel	730
Stacker	2200 cy. foundation to be covered	steel	8910
Reclaim	740 cy. foundation to be covered	steel	3000
Misc. Buildings in Loadout Area (2)	278 cy.	steel	1120
Coal Pile Retaining Wall	890 cy.	steel, wood	3600
Culverts - 24 in. diam.	60 feet. (assume incidental to road removal)		
Culvert - 96 in. diam. (will be uncovered during backfilling operation)	310 ft.	steel	2520
Culvert - 42 in. diam. (will be uncovered during backfilling operation)	245 ft.	steel	350
Sewage Drain Field	2400 sf. (assume removal will occur during the backfilling operation)		
Sediment Pond (facilities area)	5600 cy.	earth	4590
Sediment Pond (loadout area)	4600 cy.	earth	3770
Powerline (to junction with the line to Middle Fork)	10520 feet.		38100
Water Line	3320 feet		2990
Roads (in the facilities area)	1800 feet 24 ft. paved width 39 ft. subbase (6 in., assume material is pushed against the side of the road to be backfilled with a dozer)		6600
Parking Lot	32500 squ. ft., 50% paved, 4 in. thick		2470
Misc. Equipment	2000 cy.		8100
		TOTAL	$223,000

BACKFILLING AND GRADING OF THE FACILITIES AREA

The cross-sections provided by the applicant were reviewed to evaluate the amount of material requiring handling in the portal area. The volumes determined by the applicant were found to be incorrect. The revised volumes are shown on the Area Volume-Balance Sheet provided by the applicant and shown in Attachment 2. The amount of material which will require handling is 23,132 cubic yards in this area. In addition, material will require backfilling in the truck loadout area. From the cross-sections provided by the applicant, it appears that 23860 CY of material will require handling in this area. It is assumed that a D9U bulldozer will be used to grade both sites. Average push distance is estimated to be 250 feet. Sediment traps will be constructed during grading, and diversion ditches will be removed during this operation.

A frontend loader with a heaped capacity of 7 cubic yards will be used to move coal contaminated material, gravel, etc., to areas to be covered by backfill. Average haul distance is estimated to be 250 feet. Disposal of these materials in the portals is not provided for since MSHA regulations require that the portals be backfilled 25 feet with incombustible material.

The disposal of buildings, road pavement, etc., is included in the cost determined above for facilities removal. Disposal was assumed to occur in the Hiawatha area in the slurry impoundment areas.

Volume of Material Requiring Special Handling:

Road subbase = 1800 ft. x 39 ft. wide x 6 in. thick = 1300 CY
Parking lot = 32500 squ. ft. x 6 in. thick x 50% of the lot is graveled (assumed) = 300 CY
Coal loadout area = 3 acres x 75% of the area will need scraped to a depth of 6 inches average (assumed) = 1815 CY
Portal area = 9.3 acres x 30% of the area will need scraped to a depth of 6 inches (assumed) = 2250 CY
Total Volume = 5670 CY

Equipment Production and Cost

Loader

cycle time = .64 min. (basic cycle) + .55 min. loaded + .57 min. unloaded = 1.76 min.
bucket capacity = 7 CY x 80% fill factor = 5.6 CY
hourly production = 50 min/hour x (5.6 CY/cycle / 1.76 min/cycle) = 159 CY/hr.
hours required = 5670 CY / 159 CY/hr = 35.7 hr. or 36 hr.
cost = $145.07/hr x 36 hours = $5220

Bulldozer

hourly production = 830 CY/hr x .75 average operator x .84 job efficiency = 523 CY/hr
hours required = 46992 CY / 523 CY/hr = 89.8 hours or 90 hours
cost = $163.54/hr x 90 hours = $14700

Total Backfilling and Grading Costs = $19900

TOPSOIL REPLACEMENT

The applicant has proposed to cover the South Fork site with 6 inches of topsoil substitute material. This material will be obtained from the facilities area by segregating the substitute material in the backfill during backfilling operations. Some topsoil material was salvaged during the construction of the truck loadout area. This material will be returned to that area. The topsoil is stored a distance of 6500 feet from the truck loadout along the access road to the South Fork area. To cover the entire truck loadout area with six inches will require that additional material be obtained from the South Fork facilities area also. This distance is 3000 feet.

Volume of Material to be Handled:

Facilities Area: 9.3 acres x 6 in. = 7502 CY
Loadout Area: 3 acres x 6 in. = 2420 CY
Total = 9922 CY

The applicant has stated on page 55A of the PAP that 7545 CY of material will be obtained in the South Fork area including material from the loadout construction. Therefore, if the entire site is to be covered with six inches, an additional 2377 CY of material will have to be found. It is assumed that this material will be available in the existing backfill. A total of 9922 CY - 1206 CY in the storage area, or 8716 CY must be obtained in the facilites area.

Equipment Production and Cost:

Loader (assume that the loader will have an average haul of 250 feet to segregate the required material and place it in a storage area or directly over the area requiring topsoil in the facilities area)

cycle time = .64 min. (basic cycle) + .55 min. loaded + .57 min. unloaded = 1.76 min.
bucket capacity = 7 CY x 80% fill factor = 5.6 CY
hourly production = 50 min/hour x (5.6 CY/cycle / 1.76 min/cycle) = 159 CY/hr.
hours required = 8716 CY / 159 CY/hr = 54.8 hr. or 55 hr.
cost = $145.07/hr x 55 hours = $7980

Scraper (assume that a scraper will be used to load, haul and dump topsoil at the truck loadout area. Use a scraper with a 20 CY heaped capacity and use an average haul distance between the stockpile area and the facilities area of 5000 ft.)

production = 100 CY/hr x .84 job efficiency = 84 CY/hr.
hours required = 2420 CY / 84 CY/hr = 28.8 hr. or 29 hr.
cost = $125.55/hr x 29 hours = $3640

Tractor (assume that a tractor will be used to roughen the backfilled material prior to placement of the soil material to ensure bonding of the soil material to the backfill. It is estimated that the tractor can grade an acre in 2 hours)

production = 12.3 acres x 2 hours per acre) = 24.6 hr. or 25 hr.
cost = [($80.00/day / 8hr/day) + $21.95/hr labor] x 25 hrs. = $799

Bulldozer (assume that a D6LGP (low ground pressure) bulldozer will be used to spread the topsoil. Average push distance is estimated to be 50 feet from locations where the loader or scraper could have dumped it)
hourly production = 550 CY/hr x .75 average operator x .84 job efficiency = 346 CY/hr
hours required = 9922 CY / 346 CY/hr = 28.7 hours or 29 hours
cost = $76.87/hr x 29 hours = $2230

Total Topsoil Replacement Costs = $14,600

REVEGETATION

The applicant has proposed slightly different revegetation plans depending upon the steepness of the terrain being reclaimed or if the area is very small. For the South Fork area, all backfill will be graded to 1v:2h or less. From the cross-sections provided by the applicant, it doesn't appear that there will be any terrain than will require steep slope considerations more than those warrented on a 1v:2h slope. The mulching rate proposed by the applicant is 3000 pounds per acre, which should control runoff while the vegetation is reestablishing.

Scarification: (a tractor will be used for this operation. scarification will occur along the contour)

(12.3 acres x 2 hours per acre) = 24.6 hours or 25 hours
Cost = [($80.00/day / 8 hr/day) + $21.95/hr labor] x 25 hr = $799

Soil Nutrient Tests: (assume 20 samples at the site to be collected using hand labor. Sample collection will take one day.)

Cost = (21.95/hr. labor x 8 hr.) + ($48/day for four wheel drive pickup) + ($5.05/hr operating cost x 8 hours) + (20 samples at $100/sample) = $2260

Fertilization:

2 hours per acre for tilling using the tractor, therefore $799
125 lbs of fertilizer per acre (estimate) at $42 x 12.3 acres = $517
Cost = $1320

Seeding:

Drill seeding at $1200 per acre (applicant's estimate) x 12.3 = $14,800

Mulching:

1.5 tons per acre @ $150 for hay mulch x 12.3 acres = $1840
use the tractor to crimp the mulch = $799
Cost = $2640

Tree Planting:

From the PAP, Table IX-8, 5811 nursery plants will be planted in 7.4 acres over the site. Assuming that a laborer can plant one seedling in 20 seconds, and works 50 min/hour to allow time to return to the truck for additional seedlings, etc., then one person can plant 150 plants per hour.

Cost = [(5811 plants / 150 plant/hr) x $21.95/hr labor] +
$.67/plant x 5811 plants = $4740

Total Cost for revegetation = $26,600

RESTORATION OF THE STREAM CHANNEL

Restoration of 1375 feet of the South Fork channel will be required. The applicant has proposed extensive riprapping to prevent erosion in the steep channel. A cross-section of the channel is shown on Exhibit III-12A-1. It is assumed that the coarse material will be able to be obtained on site. The quantity of this material required accounts for approximately 2% of the total amount of backfill. There appears to be substantial quantities of sandstone material in the area to be able to sort out this amount. In addition, it is assumed that the channel will be graded in during the backfilling and grading operation.

Volume of material required:

30 in. of 2 ft. diam. riprap x 12 ft. wide = 1.11 CY/ft
6 in. of gravel x 16 ft. wide = .30 CY/ft
6 in of sand x 20 ft. wide = .37 CY/ft

It is estimated that a D6 bulldozer will spend 3 days sorting out this material and placing it.

Cost = $76.87/hr x 24 hours = $1840

The other material will be purchased and spread on site using the bulldozer. Gravel and sand - cost per cubic yard = $8.00/CY including a five mile haul, placement and spreading.

Cost = (.30CY/ft + .37 CY/ft.) x $8.00/CY x 1375 feet. = $7370

Total cost for channel reconstruction is $9210.

TOTAL COST FOR RECLAMATION OF THE SOUTH FORK AREA = $293,000

MIDDLE FORK FACILITIES AREA RECLAMATION

Total area = 21.07 acres in the portal area including .47 acres for the new portal area.

STRUCTURE REMOVAL

Structure sizes were estimated from the site maps. The height of structure and material type was estimated from pictures of the area where available. Existance of a concrete slab as a foundation is based upon the use of the building. Unit costs used in this analysis can be found in Attachment 1.

STRUCTURE	SIZE	MATERIAL	
Watertank	200 cy. 314 sf.	steel conc. slab	810 720
Change House	8300 cy. 9000 sf,	steel conc. slab	33600 20600
Foreman Building	300 cy. 800 sf.	steel conc. slab	1220 1830
Transfer Building	440 cy. 400 sf.	steel conc. slab	1780 915
Misc. Shacks near Changehouse (2)	300 cy. 800 sf.	steel conc. slab	1210 1830
Fan (2)	740 cy. 1000 sf.	steel conc. slab	3000 2290
Concrete Structure near Belt Portal	40 cy. 100 sf.	concrete conc. slab	230 229
Portals (8 active plus 1 for the new area, estimated at $2700 per portal, also 4 portals with bulkheads, to be reclaimed with drain pipes, assume $2700/portal	20 ft. x 10 ft. backfill 25 feet into the portal against a concrete stopping or existing bulkhead		35100
Switch Stations (2)	170 cy.	steel	688
Substation - 24 KVA	330 cy.	steel	1340
Substations (2)	80 cy.	steel	324
Rock Dust Bin	260 cy. 177 sf.	steel conc. slab	1050 405

Conveyor	3000 cy. foundations to be covered	steel	12200
Rail into the Mine	700 ft. ballast to be removed during grading	-	8160
Stacker	2200 cy. foundation to be covered	steel	8910
Reclaim	740 cy. foundation to be covered	steel	3000
Culverts - 24 in. diam. (will be uncovered during	2200 ft. backfilling operation)	steel	1040
Culvert - 36 in. diam. (will be uncovered during	1300 ft. backfilling operation)	steel	1380
Sewage Drain Field backfilling operation)	10000 sf. (assume removal will occur during the		
Sediment Pond	2700 cy.	earth	2200
Powerline	7600 feet.		27500
Road to Bathhouse	3300 feet 24 ft. paved width 39 ft. subbase (6 in., assume material is pushed against the side of the road to be backfilled with a dozer during backfilling and grading)		12100
Parking and Equipment Area	5900 squ. yards of pavement		8100
Misc. Equipment	2000 cy.		8100
		TOTAL	$202,000

BACKFILLING AND GRADING OF THE FACILITIES AREA

The cross-sections provided by the applicant were reviewed to evaluate the amount of material requiring handling in the facilities area. The volumes determined by the applicant were found to be incorrect. The revised volumes are shown on the Area Volume-Balance Sheet provided by the applicant and shown in Attachment 2. The amount of material which will require handling is 69,541 cubic yards. It is assumed that a D9U bulldozer will be used to grade the site. Average push distance is estimated to be 250 feet in the facilities area. Sediment traps will be constructed during

grading, and diversion ditches will be removed during this operation.

A frontend loader with a heaped capacity of 7 cubic yards will be used to move coal contaminated material, gravel, etc., to areas to be covered by backfill. Average haul distance is estimated to be 250 feet. Disposal of these materials in the portals is not provided for since MSHA regulations require that the portals be backfilled 25 feet with incombustible material.

The disposal of buildings, road pavement, etc., is included in the cost determined above for facilities removal. Disposal was assumed to occur in the Hiawatha area in the slurry impoundment areas.

Volume of Material Requiring Special Handling:

Road subbase = 3300 ft. x 39 ft. wide x 6 in. thick = 2380 CY
Parking lot and facilities area = 106200 squ. ft. x 6 in. thick x 50% of the lot is graveled (assumed) = 983 CY
Coal loadout area = 47600 squ. ft. x 75% of the area will need scraped to a depth of 6 inches average (assumed) = 661 CY
Total Volume = 4024 CY

Equipment Production and Cost

Loader
cycle time = .64 min. (basic cycle) + .55 min. loaded + .57 min. unloaded = 1.76 min.
bucket capacity = 7 CY x 80% fill factor = 5.6 CY
hourly production = 50 min/hour x (5.6 CY/cycle / 1.76 min/cycle) = 159 CY/hr.
hours required = 4024 CY / 159 CY/hr = 25.3 hr. or 26 hr.
cost = $145.06/hr x 26 hours = $3770

Bulldozer
hourly production = 830 CY/hr x .75 average operator x .84 job efficiency = 523 CY/hr
hours required = 69541 CY / 523 CY/hr = 133 hours
cost = $163.54/hr x 133 hours = $21800

Total Backfilling and Grading Costs = $25600

TOPSOIL REPLACEMENT

The applicant has proposed to cover the Middle Fork site with 6 inches of topsoil substitute material or topsoil material. This material will be obtained from the facilities area by segregating the substitute material in the backfill during backfilling operations. Topsoil material will be salvaged during the construction of the new portal area amounting to 1137 CY. This material will be used in the reclamation of the facilities area.

Volume of Material to be Handled:

Facilities Area: 21.07 acres x 6 in. = 17000 CY

Of this volume, 15863 CY will have to be obtained in the facilities area.

Equipment Production and Cost:

Loader (assume that the loader will have an average haul of 250 feet to segregate the required material and place it in a storage area or directly over the area requiring topsoil in the facilities area)

cycle time = .64 min. (basic cycle) + .55 min. loaded + .57 min. unloaded = 1.76 min.
bucket capacity = 7 CY x 80% fill factor = 5.6 CY
hourly production = 50 min/hour x (5.6 CY/cycle / 1.76 min/cycle) = 159 CY/hr.
hours required = 15863 CY / 159 CY/hr = 99.8 hr. or 100 hr.
cost = $145.06/hr x 100 hours = $14500

Tractor (assume that a tractor will be used to roughen the backfilled material prior to placement of the soil material to ensure bonding of the soil material to the backfill. It is estimated that the tractor can grade an acre in 2 hours)

production = 21.07 acres x 2 hours per acre) = 42.1 hr. or 43 hr.
Cost = [($80.00/day / 8hr/day) + $21.95/hr labor] x 43 hrs. = $1370

Bulldozer (assume that a D6LGP (low ground pressure) bulldozer will be used to spread the topsoil. Average push distance is estimated to be 50 feet from locations where the loader could have dumped it)

hourly production = 550 CY/hr x .75 average operator x .84 job efficiency = 346 CY/hr
hours required = 17000 CY / 346 CY/hr = 49.1 hours or 50 hours
cost = $76.87/hr x 50 hours = $3840

Total Topsoil Replacement Costs = $19700

REVEGETATION

The applicant has proposed slightly different revegetation plans depending upon the steepness of the terrain being reclaimed or if the area is very small. For the Middle Fork area, all backfill will be graded to 1v:2h or less. From the cross-sections provided by the applicant, it doesn't appear that there will be any terrain than will require steep slope considerations more than those warrented on a 1v:2h slope. The mulching rate proposed by the applicant is 3000 pounds per acre, which should control runoff while the vegetation is reestablishing.

Scarification: (a tractor will be used for this operation. scarification will occur along the contour)

(21.07 acres x 2 hours per acre) = 42.1 hours or 43 hours
Cost = [($80.00/day / 8 hr/day) + $21.95/hr labor] x 43 hr = $1370

Soil Nutrient Tests: (assume 40 samples at the site to be collected

using hand labor. Sample collection will take one day.)

Cost = (21.95/hr. labor x 8 hr.) + ($48/day for four wheel drive pickup) + ($5.05/hr operating cost x 8 hours) + (40 samples at $100/sample) = $2460

Fertilization:

2 hours per acre for tilling using the tractor, therefore $1370
125 lbs of fertilizer per acre (estimate) at $42 x 21.07 acres = $885
Cost = $2255

Seeding:

Drill seeding at $1200 per acre (applicant's est.) x 21.07 = $25300

Mulching:

1.5 tons per acre @ $150 for hay mulch x 21.07 acres = $3160
use the tractor to crimp the mulch = $1370
Cost = $4530

Tree Planting:

From Table IX-8, 12544 nursery plants will be planted in 4.2 acres over the site. Assuming that a laborer can plant one seedling in 20 seconds, and works 50 min/hour to allow time to return to the truck for additional seedlings, etc., then one person can plant 150 plants per hour.

Cost = [(12544 plants / 150 plant/hr) x $21.95/hr labor] + $.67/plant x 12544 plants = $10200

Total Cost for revegetation = $46100

RESTORATION OF THE STREAM CHANNEL

Restoration of 1950 feet of the Middle Fork channel will be required. The applicant has proposed extensive riprapping to prevent erosion in the steep channel. A cross-section of the channel is shown on Exhibit III-11. It is assumed that the coarse material will be able to be obtained on site. The quantity of this material required accounts for approximately 1% of the total amount of backfill. There appears to be substantial quantities of sandstone material in the area to be able to sort out this amount. In addition, it is assumed that the channel will be graded in during the backfilling and grading operation.

Volume of material required:

30 in. of 2 ft. diam. riprap x 12 ft. wide = 1.11 CY/ft
6 in. of gravel x 16 ft. wide = .30 CY/ft
6 in of sand x 20 ft. wide = .37 CY/ft

It is estimated that a D6 bulldozer will spend 4 days sorting out this material and placing it.

Cost = $76.87/hr x 32 hours = $2460

The other material will be purchased and spread on site using the bulldozer. Gravel and sand - cost per cubic yard = $8.00/CY including a five mile haul, placement and spreading.

Cost = (.30CY/ft + .37 CY/ft.) x $8.00/CY x 1950 feet. = $10400

Total cost for channel reconstruction is $12900

TOTAL COST FOR RECLAMATION OF THE MIDDLE FORK AREA = $306,000

NORTH FORK FACILITIES AREA RECLAMATION

Total area = 1.1 acres in the portal area.

STRUCTURE REMOVAL

There are no structures in this area. Only one portal will require closure at $2700.

BACKFILLING AND GRADING OF THE FACILITIES AREA

The cross-sections provided by the applicant were reviewed to evaluate the amount of material requiring handling in the facilities area. The volumes determined by the applicant were found to be incorrect. The revised volumes are shown on the Area Volume-Balance Sheet provided by the applicant and shown in Attachment 2. The amount of material which will require handling is 3290 cubic yards. It is assumed that a D6 bulldozer will be used to grade the site. Average push distance is estimated to be 50 feet in the facilities area. Sediment traps will be constructed during grading, and diversion ditches will be removed during this operation.

Equipment Production and Cost

Bulldozer
hourly production = 550 CY/hr x .75 average operator x .84 job efficiency = 346 CY/hr
hours required = 3290 CY / 346 CY/hr = 9.5 hours or 10 hours
cost = $76.87/hr x 10 hours = $769

Total Backfilling and Grading Costs = $769

TOPSOIL REPLACEMENT

The applicant has proposed to cover the North Fork site with 6 inches of topsoil substitute material. This material will be obtained from the borrow areas in the Hiawatha facilities area. The haul distance between thse areas is 15,800 feet.

Volume of Material to be Handled: 887 CY

Equipment Production and Cost:

Loader (will be required to load the trucks to carry the material to North Fork)
cycle time = .64 min. (basic cycle)
bucket capacity = 7 CY x 80% fill factor = 5.6 CY
hourly production = 50 min/hour x (5.6 CY/cycle / .64 min/cycle) = 437 CY/hr.
hours required = 887 CY / 437 CY/hr = 2 hr. (even though the loader would have to wait for the trucks to return, it is assumed here that the loader can be working on handling topsoil for

the slurry impoundments.
cost = $145.06/hr x 2 hours = $290

Trucks (assume that a 20 CY on-highway truck will be used, average speed will be 15 MPH up the rough road, two trucks will be used)
production = [(15800 ft./5280 ft/mile) / 15 MPH] x 2 = .4 hours per trip, or 2.5 trips per hour. With 2 trucks, 40 CY can be moved per trip or 100 CY/hr. Total time required is 8.87 hours or 9 hours.
cost = $78.12/hr x 9 hours x 2 = $1410

Since the road to the North Fork area is very rough, it is assumed that upgrading of the road will be required. It is assumed here that the same amount of effort will be required to upgrade the road as to reclaim it. See the reclamation cost estimate for the North Fork road for details on the cost.

cost = $1070

Tractor (assume that a tractor will be used to roughen the backfilled material prior to placement of the soil material to ensure bonding of the soil material to the backfill. It is estimated that the tractor can grade an acre in 2 hours)

production = 1.1 acres x 2 hours per acre) = 2.2 hr. or 3 hr.
Cost = [($80.00/day / 8hr/day) + $21.95/hr labor] x 3 hrs. = $96

Bulldozer (assume that a D6LGP (low ground pressure) bulldozer will be used to spread the topsoil. Average push distance is estimated to be 50 feet from locations where the trucks could have dumped it)
hourly production = 550 CY/hr x .75 average operator x .84 job efficiency = 346 CY/hr
hours required = 887 CY / 346 CY/hr = 2.6 hours or 3 hours
cost = $76.87/hr x 3 hours = $231

Total Topsoil Replacement Costs = $3100

REVEGETATION

The applicant has proposed slightly different revegetation plans depending upon the steepness of the terrain being reclaimed or if the area is very small. For the North Fork area, all backfill will be graded to 1v:2h or less. From the cross-sections provided by the applicant, it doesn't appear that there will be any terrain than will require steep slope considerations more than those warrented on a 1v:2h slope. The mulching rate proposed by the applicant is 3000 pounds per acre, which should control runoff while the vegetation is reestablishing.

Scarification: (a tractor will be used for this operation. scarification will occur along the contour)

(1.1 acres x 2 hours per acre) = 2.2 hours or 3 hours

Cost = [($80.00/day / 8 hr/day) + $21.95/hr labor] x 3 hr = $96

Soil Nutrient Tests: (assume 4 samples at the site to be collected using hand labor. Sample collection will take half a day.)

Cost = (21.95/hr. labor x 4 hr.) + ($24/ half day for four wheel drive pickup) + ($5.05/hr operating cost x 4 hours) + (4 samples at $100/sample) = $532

Fertilization:

2 hours per acre for tilling using the tractor, therefore $96
125 lbs of fertilizer per acre (estimate) at $42 x 1.1 acres = $46
Cost = $142

Seeding:

Drill seeding at $1200 per acre (applicant's estimate) x 1.1 = $1320

Mulching:

1.5 tons per acre @ $150 for hay mulch x 1.1 acres = $165
use the tractor to crimp the mulch = $96
Cost = $261

Tree Planting:

From Table IX-8, 2533 nursery plants will be planted in 1.0 acres over the site. Assuming that a laborer can plant one seedling in 20 seconds, and works 50 min/hour to allow time to return to the truck for additional seedlings, etc., then one person can plant 150 plants per hour.

Cost = [(2533 plants / 150 plant/hr) x $21.95/hr labor] + $.67/plant x 2533 plants = $2083

Total Cost for revegetation = $4434

TOTAL COST FOR RECLAMATION OF THE NORTH FORK AREA = $11000

ROAD RECLAMATION

Reclamation of the road sections located in the facilities areas is bonded with the facilities. Since significant grading will be occuring in those areas, it can be expected that the roads will be graded during that operation. The remainder of the roads will be left open to access the area to conduct maintenance operations during the responsibility period. Therefore, the road lengths identified below are just the lengths of roads between facilities areas.

SOUTH FORK ROAD

length = 9100 feet area = 12.3 acres including the topsoil storage area

Pavement removal:

(9100 feet x 24 feet wide)/9 sf. per sy. x $1.38/sy. = $33500

It is assumed that the subbase will be removed as part of the grading operation.

Backfilling: From the typical cross-section of the road, the amount of material which will require grading on a linear foot basis is 3 cubic yards per foot. It is assumed that a D6 bulldozer will be used to grade the relatively narrow road area, average push distance is 50 feet. Volume of material to be graded is 27300 cubic yards.

Equipment production = 550 CY/hr x .75 avg. operator x .84 job efficiency = 346 CY/hr.

Hours required = 27300 / 346 = 78.9 or 79 hours

Cost = $76.87/hr x 79 hr = $6070

Revegetation: Since there will be no topsoil placed on the road areas, it is assumed that soil amendments will have to be added to a depth of 6 inches to ensure revegetation success. This will occur with scarification of the surface along the contour. A farm tractor will be used for scarification and seed bed preparation.

Scarification: (a tractor will be used for this operation. scarification will occur along the contour)

(12.3 acres x 2 hours per acre) = 24.6 hours or 25 hours
Cost = [($80.00/day / 8 hr/day) + $21.95/hr labor] x 25 hr = $799

Soil Nutrient Tests: (assume 20 samples at the site to be collected using hand labor. Sample collection will take one day.)

Cost = (21.95/hr. labor x 8 hr.) + ($48/day for four wheel drive pickup) + ($5.05/hr operating cost x 8 hours) + (20 samples at

$100/sample) = $2260

Fertilization:

2 hours per acre for tilling using the tractor, therefore $799
125 lbs of fertilizer per acre (estimate) at $42 x 12.3 acres = $517
Cost = $1320

Seeding:

Drill seeding at $1200 per acre (applicant's estimate) x 12.3 = $14,800

Mulching:

1.5 tons per acre @ $150 for hay mulch x 12.3 acres = $1840
use the tractor to crimp the mulch = $799
Cost = $2640

Total Cost for revegetation = $21800

Total Cost for Reclamation of the South Fork Road = $61400

MIDDLE FORK ROAD

length = 8600 feet area = 13.2 acres

Pavement removal

(8600 feet x 24 feet wide)/9 sf. per sy. x $1.38/sy. = $31,650

It is assumed that the subbase will be removed as part of the grading operation.

Backfilling: From the typical cross-section of the road, the amount of material which will require grading on a linear foot basis is 3 cubic yards per foot. It is assumed that a D6 bulldozer will be used to grade the relatively narrow road area, average push distance is 50 feet. Volume of material to be graded is 25800 cubic yards.

Equipment production = 550 CY/hr x .75 avg. operator x .84 job efficiency = 346 CY/hr.

Hours required = 25800 / 346 = 74.6 or 75 hours

cost = $76.87/hr x 75 hr = $5760

Revegetation: Since there will be no topsoil placed on the road areas, it is assumed that soil amendments will have to be added to a depth of 6 inches to ensure revegetation success. This will occur with scarification of the surface along the contour. A farm tractor will be used for

scarification and seed bed preparation.

Scarification:

(13.2 acres x 2 hours per acre) = 26.4 hours or 27 hours
Cost = [($80.00/day / 8hr/day) + $21.95/hr labor] x 27 = $863

Fertilization:

2 hours per acre for spreading, therefore one day = $863
125 lbs of fertilizer per acre (estimate) at $42 x 13.2 acres =$554
Cost = $1417

Seeding:

Drill seeding at $1200 per acre (applicant's estimate) x 13.2 = $15,800

Mulching:

1.5 tons per acre @ $150 for hay mulch x 13.2 acres = $1980
use the tractor for one day to crimp = $863
Cost = $2840

Total cost for revegetation = $20900

Total Cost for Reclamation of the Middle Fork Road = $58300

NORTH FORK ROAD

length = 15,800 feet area = 7.4 acres

Backfilling: From the typical cross-section of the road, the amount of material which will require grading on a linear foot basis is .3 cubic yards per foot. It is assumed that a D6 bulldozer will be used to grade the relatively narrow road area, average push distance is 50 feet. Volume of material to be graded is 4740 cubic yards.

Equipment production = 550 CY/hr x .75 avg. operator x .84 job efficiency = 346 CY/hr.

Hours required = 4740 / 346 = 13.7 or 14 hours

Cost = $76.87/hr x 14 hr = $1070

Revegetation: Since there will be no topsoil placed on the road areas, it is assumed that soil amendments will have to be added to a depth of 6 inches to ensure revegetation success. This will occur with scarification of the surface along the contour. A farm tractor will be used for scarification and seed bed preparation.

Scarification:

(7.4 acres x 2 hours per acre) = 14.8 hours or 15 hours
Cost = [($80.00/day / 8 hr/day) + $21.95/hr labor] x 15 = $480

Fertilization:

2 hours per acre for spreading with the tractor = $480
125 lbs of fertilizer per acre (estimate) at $42 x 7.4 acres = $311
Cost = $551

Seeding:

Drill seeding at $1200 per acre (applicant's estimate) x 7.4 = $8880

Mulching:

1.5 tons per acre @ $150 for hay mulch x 7.4 acres = $1110
use the tractor to crimp = $480
Cost = $1590

Total cost for revegetation = $12800

Total Cost for Reclamation of the North Fork Road = $13900

TOTAL COST OF ROAD RECLAMATION IS $134,000

RECLAMATION OF BORROW AREAS A, B, C, AND D

Total area = 51.45 acres in the borrow areas. Since it is not known what the road access to the areas will be, estimates have been included in the bond estimate reflecting a possible worst-case scenario for their reclamation. This cost is essentially the same cost calculated for the reclamation of the Middle Fork road, minus the cost for pavement removal. Also, an estimated cost has been added for construction of the roads to the borrow areas.

In addition, the location of borrow areas B and C was taken from an old version of Exhibit VIII-4A. The acreages shown on this map for these areas do not match the acreages identified in the July, 1984 submittal and are smaller. However, they are within 10% of the revised acreages so that this map has been used in this analysis. Since this analysis is conservative in other evaluations, this is not expected to be a significant concern.

Because of its overlap with Borrow Area A, the reclamation of the Equipment Storage area has been included in this analysis. The reclamation procedures are in some intances different, and are noted in the analysis. The total acreage in the Equipment storage area is 7.2 acres. Of this. 1.34 acres overlaps with the borrow area. Therefore, 5.9 acres are assumed to require reclamation in the equipment storage area. The remaining 1.34 acres are part of the reclamation of the borrow area.

STRUCTURE REMOVAL

There are no structures to be removed in the borrow areas. Sediment control structures are addressed separately in this estimate.

ROAD CONSTRUCTION AND RECLAMATION

Due to the lack of detailed information in the PAP on roads used to access the borrow areas, the following costs have been assumed to be adequate to upgrade the roads and reclaim them.

Construction: Use the cost of backfilling the Middle Fork Road = $5760 plus $2000 for installation of culverts, ditches, etc., = $7760

Reclamation: Use the cost of reclaiming the Middle Fork road minus the cost of pavement removal = $26600

Total cost for Borrow area roads = $34400

BACKFILLING AND GRADING OF THE BORROW AREAS

Minimal grading will be required to blend the borrow areas in with the surrounding terrain. There will not be any grading required in the equipment storage area. The applicant has not provided a volume of material that will require handling in the borrow areas. It is assumed that an average of 2 CY of material will have to be handled per foot of

perimeter of the borrow areas for regrading. This is based in part on the depth of the excavations, and that some extra grading will have to be done to reestablish proper drainage. Since Borrow Areas B and C are contiguous, the perimeter has been combined for these two areas.

Area A - 3100 ft.
Area B and C - 5100 ft.
Area D - 3000 ft.

Volume of material requiring handling = 22400 CY

Equipment Production and Cost

Bulldozer (an average push distance of 50 feet has been used for the D9U bulldozer)
hourly production = 2400 CY/hr x .75 average operator x .84 job efficiency = 1512 CY/hr
hours required = 22400 CY / 1512 CY/hr = 14.8 hours or 15 hours
Cost = $163.54/hr x 15 hours = $2450

Total Backfilling and Grading Costs = $2450

TOPSOIL REPLACEMNT

Topsoil will be replaced in the on the equipment storage area. At total of 4480 CY were removed during construction of the site and will be replaced.

Bulldozer (assume that a D6LGP (low ground pressure) bulldozer will be used to spread the topsoil. Average push distance is estimated to be 400 feet from the storage area.)
hourly production = 75 CY/hr x .75 average operator x .84 job efficiency = 47 CY/hr
hours required = 4480 CY / 47 CY/hr = 95 hours
cost = $76.87/hr x 95 hours = $7300

Total Cost for Topsoil Replacement = $7300

SEEDBED PREPARATION

The applicant has proposed to utilize the remaining C horizon material in the borrow areas as substitute soil material. The material will be ripped to a depth of 12 inches along the contour. It is assumed that a D9L with 9D single shank will be used.

Using a seismic velocity of 4000 fps (since the subsoil can be expected to be very compacted) and average conditions, production is 1625 CY /hr. The amount of material which will require ripping is 51.45 acres to a depth of 12 inches or 83006 CY.

equipment hours = 83006 CY / 1625 CY/hr. = 51 hours
cost = $163.54/hr x 51 hours = $8340

Total Seedbed Preparation Costs = $8340

REVEGETATION

The applicant has proposed the addition of soil amendments to the ripped C-horizon material to facilitate revegetation and the mulching rate proposed by the applicant in the PAP is 2000 pounds per acre for both the borrow areas and the equipment storage area.

Scarification: (a tractor will be used for this operation. scarification will occur along the contour)

(57.35 acres x 2 hours per acre) = 115 hours
Cost = [($80.00/day / 8 hr/day) + $21.95/hr labor] x 115 hr = $3670

Fertilization:

2 hours per acre for tilling using the tractor, therefore $3670
221 lbs of fertilizer per acre (applicant's proposal) at $60 (estimate) x 51.45 acres = $3090
125 lbs/acre for the storage area at $42/acre (estimate) x 5.9 acres = $248
Total Cost = $7008

Seeding:

Drill seeding at $1200 per acre (applicant's estimate) x 57.35 = $68800

Mulching:

1 tons per acre @ $100 for hay mulch x 57.35 acres = $5740
use the tractor to crimp the mulch = $3670
Cost = $9410

Total Cost for revegetation = $88900

SEDIMENT CONTROL

The applicant has proposed to install sediment control structures for the borrow areas prior to their utilization (see the surface water control sections of the PAP). Therefore, should a contractor be required to reclaim the Hiawatha operation for the regulatory authority, the contractor would also be responsible for sediment control and would have to install these structures. As such, a cost has been added to the bond for installation and reclamation of the sediment control structures at the operation.

Estimated volume of material to be used in the construction of sediment ponds:

Pond A - 789 CY
Pond B and C - 100 CY
Pond D - 382 CY
Total = 1271 CY

Use $.82/CY for construction = $1040
Triple this amount for construction of weirs, spillways, antiseep devises, etc. = $3126
Assume $1000 for construction of diversion ditches
Total = $5170

The applicant has proposed the construction of a riprapped channel in Borrow Area A as part of the reclamation plan to control drainage through that site. Use riprap costs developed for stream channel reclamation in the Middle and South Fork areas = $6.27 per foot of channel. Assume the drop structure will be 40 feet long. Cost = $250.

Total cost for sediment control is $5420

TOTAL COST FOR RECLAMATION OF THE BORROW AREAS = $147,000

MAINTENANCE

This operation is critical to be able to assess the success of the revegetation efforts and to determine if any repair measures for rills and gullies and/or areas where vegetation did not take are needed. It is assumed that an inspector will be needed to look at the site once a year for the 10 year responsibility period but that the vegetation will be essentially established by the fifth year. Since erosion may be a problem on the refuse disposal sites, maintenance requirements in this area were estimated on the high side.

Inspector:

3 days per year at $31.33/hr for 10 years = $7520
per diem @ $50.00/day = $1500
Assume the car used will be a company car.

Repair of rills and gullies:

5 days per year: labor = $21.95/hr x 40 hr x 5 yr = $4390
tractor = $80.00/day x 5 days x 5 yr = $2000
revegetation = $1000 x 5 years = $5000

Reseeding:

Assume that 20% of the area will require reseeding for the first two years. Total reclaimed acreage is approximately 320 acres. Use hydroseeding at $500/acre.

320 acres x .20 x 2 x $500/acre = $64000

Total cost for maintenance = $84400

ATTACHMENT 1 - SUMMARY OF REFERENCES USED IN THE BOND ESTIMATE

The following costs were taken from the Means 1984 Building Construction Cost Data.

Building Removal
- steel - $4.05/CY
- concrete - $5.67
- concrete slab, 4 in. - $2.23/square foot for demolition plus $4.63/CY for disposal
- concrete slab, 6 in. - $3.09/square foot for demolition plus disposal
- pavement - $1.38/square yard
- concrete blasting for buildings - $3.78/CY plus $5.35/CY for disposal
- chain link fence - $1.13/ft
- railroad - $11.65/ft for rail

Backfilling with a bulldozer, 300 ft. maximum - $.82/CY

Fill material - sand and gravel, $8.00/CY
4-wheel drive pick-up - $48.00/day + $5.05/hr operating

Equipment costs were taken from the 1984 Rental Rate Blue Book. The hourly rates shown below are the monthly rates divided by 176, plus operating expences, and plus an operator at $28.45/hr.

- D9 Bulldozer - $163.54
- D7 Bulldozer - $106.69
- D6 Bulldozer - $76.87
- Frontend loader - 7 CY - $145.06
- Frontend loader - 4 CY - $93.85
- Scraper - 20 CY - $125.55
- Truck - 20 CY, on-highway - $78.12
- 1.5 ton truck - $11.66

Rental rates for the tractor were estimated.

Equipment productivity was determined from the Caterpillar Performance Handbook, Edition 12, except where noted in the analysis as "estimated".

The following unit costs were determined from the above references and estimates for productivity.

Removal of the waterline: assume that the line is laying on the ground and can be lifted in sections and carried out by truck. It is estimated that 300 feet per day could be removed.

(1.5 ton truck @ $11.66/hr x 8 hr) + (8 hr/day x $21.95/hr x 1 laborer) = $269 or $.90/ft.

Removal of powerlines

2 laborers @ $21.95/hr x 8 hr/day	=	$351/day
1 D7 dozer @ $106.69/hr x 8 hr	=	$854/day
20 CY truck @ $94.45/hr x 8 hr	=	$756/day
4 CY loader @ $93.85/hr x 8 hr	=	$751/day

If 750 feet are removed per day, the cost per foot is $3.62

SUMMARY OF BOND ESTIMATE FOR THE HIAWATHA MINE

Hiawatha Facilities Area	$2,451,000
South Fork Area	293,000
Middle Fork Area	306,000
North Fork Area	11,000
Roads to the Facility	134,000
Borrow Areas	147,000
Maintenance	84,400
TOTAL	$3,426,400

Additional costs:

Supervision:

One person full-time for a year = $31.33/hr x 2080 hr = $65,200

Contigency:

10% of the above total = $349,160

Escalation:

3.79% compounded annually for five-year permit term (rate currently used by DOGM) = $785,140

GRAND TOTAL (rounded) = $4,625,900

ATTACHMENT 2

AREA VOLUME-BALANCE SHEETS

Ford, Bacon & Davis Utah Inc.
SALT LAKE CITY, UTAH

ENGINEERING / DESIGN MANUAL

SITE PREPARATION & DRAINAGE

STANDARD FORM

AREA VOLUME—BALANCE SHEET

4-SF-02

REV. 0

4/77

SHEET 1/1

U.S. FUELS - HIAWATHA SITE | JC529 | DJ | [illegible] | OF

PROJECT NAME | JOB NO. | BY | CHECKED | SHEET

CUT END AREA	CUT SUM	CUT FACTOR	CUT DIST.	FILL END AREA	FILL SUM	FILL FACTOR	FILL DIST.	STATION	VOLUME IN CUBIC YARDS CUT	VOLUME IN CUBIC YARDS FILL	FILL + 1.05 % CUT	BALANCE POINT FILL	MASS DATA
0.00				0.00				BEGIN G. 0+00					
22500 22,000.0	22,000.0	11,000	400 400	0 0.00	0.00	0.00	400	SEC. A	162,962.96	0.00			
6600 6,400.0	28,800.0	14,400.0	800 800	30600 29,950.0	[illegible]	14,975.0	800	SEC. B	426,666.67	443,703.70	SLURRY	AREA	
250 250.0	7,050.0	3,525.0	800 800	6600 6,550.0	35,500	17,750.0	800	SEC. C	104,444.44	525,925.93	1244071	1134163	
5100 5,200.0	5,150.0	2,875.0	810 800	1600 1,650.0	6,200.0	3,100.0	800	SEC. D	85,185.19	91,851.85		x1.05= 1190871	extra mat'l = 83199
12700 12,700.0	17,800.0	8,900.0	615 500	0 0.00	650.0	325.0	500	SEC. E	164,814.81	6,018.52			haul = 3750'
3920 3,900.0	16,200.0	8,100	985 1000	3,600	3,600.0	1,800.0	1000	SEC. F	300,000.00	66,666.67			
8700 8,050.0	11,950.0	5,975.0	500	11900 10,900.0	14,500.0	7,250.0	500	SEC. G	110,648.15	134,259.26	PREP PLANT	AREA	
7200 6,650.0	14,700.0	7,350.0	500	2650 2,400.0	20,300.0	10,150.0	500	SEC. H	136,111.11	187,962.96	349814	415967 x	∴ needs 86951
1400 1,400.0	8,050.0	4,025.0	500	12 12.0	9,412.5	4,706.25	500	SEC. I	74,537.04	87,152.78		1.05 =	
1000 600.0	2,000.0	1,000.0	780 770	500 450.0	462.5	231.25	780 770	SEC. K	28,518.52	6,594.91			
200 200.0	800.0	400.0	400	0 0.0	450.0	225.0	[illegible]	SEC. L	5,925.93	3,333.33	RAILROAD	SPUR AREA	
1500 1,450.0	1,650.0	825.0	480	400 450.0	450.0	225.0	480	SEC. M	14,666.67	[illegible]	59707	24961 x1.05	
2000 2,000.0	3,050.0	1525.0	640	1000 1,000.0	1,250.0	625.0	640	SEC. N	36,148.15	14,814.81		=26209	∴ 33492 is extra haul = 4350'
	1,600.0	800	120		200.0	400.0	100		2,962.96	1,481.48			
0.00				0.00				END G.					
									1,653,592.60	1,[illegible]	1,653,855		
	— cut —				— Fill —								

SI-SF-08

U.S. FUELS SOUTH FORK — PROJECT NAME
26,23 — JOB NO.
BY — CHECKED — OF — SHEET

CUT END AREA	CUT SUM	CUT FACTOR	CUT DIST.	FILL END AREA	FILL SUM	FILL FACTOR	FILL DIST.	STATION	VOLUME IN CUBIC YARDS CUT	FILL	FILL + 5 %	BALANCE POINT	MASS DATA
0				0									
310	310 180	.5	190	435	435 730	.5	177		1090 633	1531	1608		
180	950		218 16	435 630	810	.5	218	CC	3835	3270	3499		
240 170	1220			375 767	1050	.5		AA	2482 3136	3196			
529 293	1080		132	685	990	.5	132			2518	2644		
509	765		196	335	1275	.5	196	DD	2120 2157	1944	2041		
265 250	485		180	440 751	1305	.5	180	EE	2125 2325	3342	3719		
770 770	1080		191	365 910	765	.5	191	BB	1168	3142	3299		
860	1155		115 117	400	746	.5	115 117	FF	3820	2713	2849		
295	420		152	345	800	.5	152	GG	2460 1408	1587	1666		
125	435		64	435	870	.5	64	HH	1182	2252	2367		
310 133	310		25	365	365	.5	25	JJ	516	972	1021		
0				0				JJ+	144	169	177		
									21442	23640	24822		
									18638		18,683		

ALL #s on top in Box were calculated by OSM controller

Fort Bacon & Davis Utah Inc.
SALT LAKE CITY UTAH

ENGINEERING / DESIGN MANUAL

SITE PREPARATION & DRAINAGE
STANDARD FORM
AREA VOLUME—BALANCE SHEET

4-SF-02
REV. 0
4/77
SHEET 1/1

United States Fuel Company-Middle Fork 528-301 | R. Connors | 1 OF 1

PROJECT NAME | JOB NO. | BY | CHECKED | SHEET

CUT END AREA	CUT SUM	CUT FACTOR	CUT DIST.	FILL END AREA	FILL SUM	FILL FACTOR	FILL DIST.	STATION	VOLUME IN CUBIC YARDS CUT	FILL	FILL + 1.05 %	BALANCE POINT	MASS DATA
240	240	.5	140	750	750	.5	140	0	622	1944			
0	2800			0	2385				4148	5018			
2560	110	.5	80'	2635	702	.5	80'	L-L	163	990	1040		
110	2610			702	6490				6042	15035			
	430	.5	125	3855	7932	.5	125	C-C	996	6,464	6,187		
320	530		150	2230	8165		150		1472	22680			
1180	370	.5	125	4910	5690	.5	125	D-D	857	12,519	13,171		
50	1610		103	3460	5325		103		3071	10159			
1130	2000	.5	125	1015	4470	.5	125	B-B	4630	9,854	10,347		
1050	3750			1010	1315				13310	8350			
4620	5610	.5	125	0	1010	.5	125	E-E	12,986	2,227	2,338		
4560	10510			0					24306	0			
5890	10,260	.5	125	0	0	.5	125	F-F	23,750	0	0		
5700	12[illegible]0			0					14421	0			
[illegible]	6980	.5	125		0	.5	125	G-G	13,843	0	0		
280	[illegible]0			0	2850				1620	13287			
0	280	.5	250	2850	2860	.5	250	H-H	1796	12,610	13,241		
0	110			2860	2940				509	13611			
110	220	.5	2[illegible]0	70	2970	.5	250	J-J	1019	13,015	13,760		
220	110			110	50				20	12			
0	220	.5	10'	0	110	.5	10'	K-K	41	20	21		
0				0									
	0				0			0					
									69541	84054	88283		
									59,581	57784	60,695		

There are areas where the amount of fill can be reduced i.e. use 69541 BCY for grading.

All #'s on top in box were calculated by OSM Contractor

Ford, Bacon & Davis Utah Inc.
SALT LAKE CITY, UTAH

ENGINEERING / DESIGN MANUAL

SITE PREPARATION & DRAINAGE
STANDARD FORM
AREA VOLUME—BALANCE SHEET

4-SF-02
REV. 0
4/77
SHEET 1/1

BO-SF-16

Ford, Bacon & Davis High Inc.
SALT LAKE CITY UTAH

ENGINEERING / DESIGN MANUAL

SITE PREPARATION & DRAINAGE
STANDARD FORM
AREA VOLUME—BALANCE SHEET

4-SF-02
REV. 0
4/77
SHEET 1/1

PROJECT NAME	JOB NO.	BY	CHECKED	SHEET OF
U.S. Fuels North Fork	UC528	DMW		

CUT END AREA	CUT SUM	CUT FACTOR	CUT DIST.	FILL END AREA	FILL SUM	FILL FACTOR	FILL DIST.	STATION	VOLUME IN CUBIC YARDS CUT	FILL	FILL + 5 %	BALANCE POINT	MASS DATA
0				0				F-F (-)	0	0			
	0	.5	30		0	.5	30						
0				0				F-F	111	352			
	120 144	.5	50		380 370	.5	50		133	343			
120 144				380 370				E-E	413 426	852 754			
	446 460	.5	50		920 814	.5	50						
336 376				540 444				D-D	973 1,036	910 788			
	1094 1,119	.5	48 50		1024 851	.5	48 50						
588 803				484 407				A-A	1128 1,135	944 771			
	1168 1,226	.5	52 50		980 833	.5	52 50						
400 423				491 426				B-B	370 392	505 410			
	400 423	.5	50		546 443	.5	50						
0				50 17				C-C	0	23 5			
		.5	15		17	.5	15						
0				0				C-C+					
									3,122	3,071	3,225		
									2995	3586	3765		
										use an average of the			
										cut and fill volumes = 3290 CY			
										All #s on top in boxes			
										were calculated by OSM Contractor			
				0				F-F (-)		6			
					10	.5	30						
				10				F-F		77			
					83	.5	50						
				73				E-E		140			
					151	.5	50						
				78				D-D		154			
					166	.5	50						
				88				A-A		153			
					165	.5	50						
				77				B-B		87			
					94	.5	50						
				17				C-C		5			
					17	.5	15						
				0				C-C+					
										622			

SI-SF-08

STATE OF UTAH
NATURAL RESOURCES
Oil, Gas & Mining

Norman H. Bangerter, Governor
Dee C. Hansen, Executive Director
Dianne R. Nielson, Ph.D., Division Director

355 W. North Temple • 3 Triad Center • Suite 350 • Salt Lake City, UT 84180-1203 • 801-538-5340

March 11, 1987

Mr. Allen Klein, Acting Chief
Federal Programs Division
Office of Surface Mining
Brooks Towers
1020 15th Street
Denver, Colorado 80202

Dear Mr. Klein:

RE: U. S. Fuel Company, Hiawatha Complex, Lease U-51923, ACT/007/011-86A, Carbon County, Utah

The Division has finished its review of U. S. Fuel Company's (USF) request of February 17, 1987 to mine federal lease U-51923. Under the Utah Program and regulation UMC 788.12 this request is considered to be an amendment to the pending permit application... The Division has found it to be approvable as such, with no conditions.

In order to help OSMRE pursue this lease approval as a Mining Plan Modification (Modification) the Division has prepared an abbreviated Technical Analysis (attached). This discusses only specific sections of the regulations which would apply to the proposed action. It is hoped that this will facilitate OSMRE's approval of the modification and allow USF to begin mining this lease in early April, on schedule.

Please contact myself or Susan Liner if we can provide further assistance.

Sincerely,

L. P. Braxton

L. P. Braxton
Administrator
Mineral Resource Development
and Reclamation Program

SCL:jvb
Attachment
cc: R. Holbrook
D. Darby
W. Hedberg
S. Linner
H. Shepherd
1145R

Technical Analysis
U. S. Fuel Company
Hiawatha Complex
Lease U-51923
ACT/007/011-86A
Carbon County, Utah

March 11, 1987

Background

On February 17, 1987, U. S. Fuel Company (USF) submitted an Addendum to their overall Permit Application Package which is currently pending final federal and state approval. The Addendum deals with plans to mine federal lease U-51923. This lease is within the permit area boundary delineated in the Mining and Reclamation Plan (MRP) for the Hiawatha Complex, originally submitted in 1981. The Permit Application and Approval Package and associated Cumulative Hydrologic Impact Analysis (CHIA) prepared under the direction of the Office of Surface Mining in 1985, therefore cover this lease. Accordingly, this Technical Analysis will not re-review the entire MRP, but rather focus on specific sections of the regulations pertinent to the mining of this lease.

Introduction

USF was granted federal lease U-51923, a 160 acre coal lease, in October of 1985. Due to constrictions by outcrop on the north, east and south side of the lease it must be mined in conjunction with existing workings to the west. Mining is projected to be adjacent to this lease by March 15, 1987.

USF is the surface owner of this lease and the surface and underground owner of adjacent property. No new surface disturbance will be associated with mining this lease. Coal will be extracted through the existing King #4 Mine. Existing facilities will be used for handling and processing of the coal.

Mining operations will occur in both the A and the B seam, but only the B seam will be mined in the next five year permit term.

UMC 817.41 Hydrologic Balance: General Requirements - DD

Existing Environment and Applicant's Proposal

Groundwater

The applicant has established plans for conducting the mining activities within lease tract U-51923. Geologic and hydrologic information and data pertaining to the lease and adjacent areas have been submitted in Volume 3, Chapters VI and VII of the Permit Application Package (PAP).

Mining will not affect the prevailing hydrologic balance. The mining area within the lease is bounded by escarpment on all but the west side. The applicant does not expect to encounter or impact groundwater conditions since no groundwater was encountered adjacent to this lease and because there are no springs on or adjacent to the lease area.

Surface Water

All mining activity in the lease will be above stream channel elevation, and no underground development will be within 500 feet of the stream channels. There will be no portal access within the lease area and hence, no mine water discharge into adjacent streams.

Stream monitoring has been conducted on the north and south forks of the Right Fork of Miller Creek. Both are perennial tributaries. Baseline data for stations ST-2A, ST-2B and ST-1 (see map, Exhibit VII-1) are shown on Table VII-6. Subsequent data has been submitted on a quarterly basis. Monitoring of these sites will continue through the life of mine.

Compliance

The applicant has submitted sufficient information to comply with this section. In analyzing the information for the lease tract the Regulatory Authority (RA) has determined that mining will not degrade aquifers or groundwater resources within or adjacent to the lease tract. Groundwater recharge occurs at higher elevations of the Wasatch Plateau to the west of the lease. Mining has already taken place west of the tract, and any influences would have already occurred. Recharge from direct precipitation on the outcrop amounts to very low percentage. Most water infiltrating the outcrop would tend to discharge along the escarpment. In helping to establish an in-mine monitoring program for the mine Utah Division of Oil, Gas and Mining personnel went underground (January 1985) and examined the areas of mine inflow. The King #4 mine is relatively a dry mine toward the eastern workings. Water production occurs in the western portion of the mine in the vicinity of the Bear Canyon Fault system.

It is not expected that groundwater or surface water quality will change or degrade substantially due to mining of this lease, since very low quantities of groundwater are expected to be intercepted.

Stipulation

None.

UMC 817.52 Surface and Groundwater Monitoring - DD

Existing Environment and Applicant's Proposal

Surface water monitoring has been and will be conducted in the vicinity of the lease tract.

The applicant stated that no springs exist on the lease tract, and mining directly west of the tract has not produced groundwater. It is unlikely that groundwater will be intercepted. Therefore, no groundwater monitoring for this lease is proposed.

Compliance

The applicant complies with the surface water monitoring. From observations in the mine it is not expected that groundwater will be intercepted during mining of the lease. If groundwater is intercepted the applicant has established in mine monitoring procedures consistent with guidelines established by the RA.

Stipulations

None.

UMC 817.59 Coal Recovery - SCL

Existing Environment and Applicant's Proposal

Approximately half of the 160 acre coal lease has mineable coal reserves. Mining in lease U-51923 will take place in both the A seam and the B seam. Approximately 61 acres will be mined in the B seam, with the coal varying in height from 5 to 6 feet. Approximately 68 acres will be mined in the A seam, with the coal varying in height from 10 to 11 feet.

Mining will be conducted using typical room and pillar mining methods. A 200 foot barrier will be left between mined sections and the outcrop. Taking this barrier into account, and projecting a recovery factor of 80 percent, the applicant calculates that 580,000 tons of recoverable coal exists in the B seam and 1,200,000 tons in the A seam. This assumes optimal conditions. The actual recovery rate may be lower.

Compliance

The applicant complies with this section.

Stipulations

None.

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

Existing Environment and Applicant's Proposal

The applicant states that no underground development waste will be generated as a result of mining this lease (Addendum, p.33).

Compliance

The applicant complies with this section.

Stipulations

None.

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

Existing Environment and Applicant's Proposal

The applicant states that no impacts to fish or wildlife populations will occur due to the fact that there will be no surface disturbance associated with mining this lease. No springs or seeps occur above the coal seam. There are no known raptor nests that could be impacted by subsidence. No threatened or endangered species exist in the permit area.. There will be no transmission lines or haul roads developed through the lease area (Addendum, p. 37).

Compliance

The applicant complies with this section.

Stipulations

None.

UMC 817.121 - .126 Subsidence Control - DD

Existing Environment and Applicant's Proposal

The applicant has an established subsidence monitoring plan in cooperation with the U. S. Forest Service (Chapter III, p. 33 A, ACR Response).

U. S. Fuel Company is the surface owner of the lease tract.

A 200 foot buffer zone will be left between the mining area and the outcrop for each seam.

The potential area of impact is depicted on Exhibit VII-1C for the lease area as well as the entire permit area. It is likely that no subsidence effects will occur in the lease area based on the mining plan, cover over the mine workings, and past experience. The channels of North Fork Creek existing on this lease lie out of the potential zone of impact and are lower in elevation than the mine workings, so they would not be affected by underground mining in this lease block. No surface water sources are found to emanate from the lease block area. No water is produced in underground workings adjacent to this lease block.

As U. S. Fuel Company is the surface owner on this block, the question of effecting the rights of the surface owner should not result in litigation.

Compliance

The applicant complies with this section.

Only the Blackhawk Formation overlies the coal seams on and adjacent to the lease area. It is expected that subsidence will occur within the area due to the low cover. It is not expected that the subsidence will have adverse impacts to renewable resources. According to observations made in similar areas adjacent to the property fractures will occur parallel to the slope inside the buffer zone. These fractures could channel snowmelt into the minesite, but only small amounts are expected.

The pre- and postmining land use is wildlife habitat. Subsidence should not impact wildlife since the 200 feet buffer zone will help protect the slope. There are no known active raptor nests in the lease area. Most raptor nesting takes place in the Castlegate Formation to the northwest. The Castlegate Formation exhibits precipitous escarpments suited for aeries.

Stipulations

None.

UMC 817.133 Post Mining Land Use - SCL

Existing Environment and Applicant's Proposal

The applicant states that underground mining activities will not disrupt the present land usage on this lease, as no surface effects of the underground mining will occur. Therefore postmining land use will be the same as premining land use (Addendum p. 32).

Compliance

The applicant complies with this section.

Stipulations

None.

1145R-1

U.S. DEPARTMENT OF THE INTERIOR
OFFICE OF SURFACE MINING
RECLAMATION AND ENFORCEMENT
NOTICE OF A DECISION AND AVAILABILITY
OF BOTH A TECHNICAL ANALYSIS AND AN
ENVIRONMENTAL ASSESSMENT FOR
U.S. FUEL COMPANY
PERMIT AMENDMENT
HIAWATHA COMPLEX MINES
CARBON AND EMERY COUNTIES, UTAH

The United States Department of the Interior, Office of Surface Mining Reclamation and Enforcement (OSMRE), has approved a permit amendment for U.S. Fuel Company to continue to mine coal at its Hiawatha Complex Mines (King 4, 5, and 6).

The Hiawatha Complex is an underground coal mine located in Carbon and Emery Counties, Utah. The mine has been in operation since the early 1900's. The proposed permit amendment area covers 160 acres within a total permit area of approximately 12,605 acres, approximately 435 of which have been disturbed to date. Maximum mine production is at a rate of 1.76 million tons of coal over 30 years.

Any person with an interest which is or may be adversely affected by this Federal permit approval action may request an adjudicatory hearing on the final decision within 30 days after publication of this notice, in accordance with Section 514(c) of the Surface Mining Control and Reclamation Act (SMCRA). Any hearing will be governed by provisions of 5 U.S.C. Section 554. A petition for review of the OSMRE decision should be submitted to:

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

Pursuant to 40 C.F.R. Sections 1501.4(c) and 1506.6, notice is hereby given that OSMRE has completed a technical analysis (TA) and an environmental assessment (EA) for the mining and reclamation plan (mining plan) for the Hiawatha Mines Complex (King 4, 5 and 6), Carbon and Emery Counties, Utah. OSMRE's recommendation to approve U.S. Fuel Company's mining plan modification and the permit amendment is in accordance with Sections 510 and 523 of SMCRA. OSMRE's analysis is that no significant environmental impacts would result from such approval. For information or clarification concerning the approval of the Hiawatha Mines Complex Plan, please contact Megan Estep-Johnston or Richard Holbrook at (303) 844-2451, Office of Surface Mining Reclamation and Enforcement, Denver, Colorado.

Both the TA and the EA are available for public review at the following locations:

Office of Surface Mining Reclamation and Enforcement
Western Technical Center
Brooks Towers
1020 15th Street
Denver, Colorado 80202

Utah Division of Oil, Gas, and Mining
355 West North Temple
3 Triad Center, Suite 350
Salt Lake City, Utah 84180-1203

Office of Surface Mining Reclamation and Enforcement
Albuquerque Field Office
219 Central Avenue NW
Albuquerque, NM 87102

1381M