CHAPTER 5

R645-301-500 ENGINEERING

HIAWATHA COAL COMPANY
Hiawatha, Utah

TABLE OF CONTENTS

CHAPTER 5 PERMIT APPLICATION REQUIREMENTS: ENGINEERING

LIST OF FIGURES

LIST OF TABLES

TABLE OF CONTENTS (Continued)

CHAPTER 5 PERMIT APPLICATION REQUIREMENTS: ENGINEERING

LIST OF APPENDICES

TABLE OF CONTENTS (Continued)

CHAPTER 5 PERMIT APPLICATION REQUIREMENTS: ENGINEERING

LIST OF EXHIBITS

TABLE OF CONTENTS (Continued)

R645-301-500 ENGINEERING

R645-301-511 GENERAL REQUIREMENTS

This chapter includes descriptions of existing and proposed coal mining and reclamation operations and their potential impacts to the environment. Methods and calculations utilized to achieve compliance with design criteria are given in R645-301-520 (Operation Plan), R645-301-540 (Reclamation Plan) and in referenced appendices to this chapter.

R645-301-512 CERTIFICATION

Maps and cross sections required to be certified under this regulation have been prepared by or under the direction of a qualified, registered, professional engineer whose stamp and signature can be found on the individual documents in question.

R645-301-513 COMPLIANCE WITH MSHA REGULATIONS AND MSHA APPROVALS

513.100 COAL PROCESSING WASTE DAMS AND EMBANKMENTS

Hiawatha Coal Company maintains two slurry impoundments which include coal processing waste embankments. The two impoundments with their MSHA I.D. numbers are listed below.

Slurry Pond No. 1 1211-UT-09-02157-01

Slurry Pond #5 is actually made up of two cells, the main cell and a smaller cell. The smaller cell is referred to as #5A. The embankments are constructed of refuse material derived from the coal washing process at the preparation plant. The location of these impoundments are shown on Exhibit 5-9. Plans for their design, construction and maintenance along with approval letters are given in Appendix 5-1. MSHA does not regulate impoundments with a storage volume less than 20 acre ft. unless they impound water or sediment to an elevation of 20 feet or more above the upstream toe of the structure. None of Hiawatha's ~~U.S. Fuel's~~ sediment ponds exceed these minimum requirements.

Slurry Pond No. 4 has been regraded, topsoiled and revegetated. MSHA has removed this structure and identification number from its mine files.

513.200 IMPOUNDMENTS AND SEDIMENTATION PONDS

Currently four impoundments which exceed the minimum size requirements of 30 CFR 77.216(a) exist within the permit area. Three of these are slurry impoundments as discussed above (513.100) and one is an underground reservoir (currently not in use) maintained in the abandoned Hiawatha No. 2 mine in Middle Fork Canyon. See Exhibit 5-15. A structural analysis and hazard assessment of the reservoir together with communications and approvals are given in Appendix 5-2

513.300 UNDERGROUND DEVELOPMENT WASTE, COAL PROCESSING WASTE AND EXCESS SPOIL

No coal processing waste or excess spoil is proposed to be deposited in underground mine workings. Also, no significant amount of underground development waste is proposed to be deposited on the surface. Temporary storage of small amounts of underground development waste is discussed under R645-301-520 (Operation Plan). In the past, underground development waste generated from excavations in rock, such as rock tunnels and vent shafts between coal seams, was placed in adjacent mined out openings underground. Future excavations in rock, within the mine, will be disposed of in a similar manner. The disposal of any waste or spoil underground will be done in accordance with a plan approved by MSHA and the Division and current practices will not be in violation of MSHA regulations.

513.400 REFUSE PILES

One refuse pile exists within the permit area. It is located in the vicinity of the preparation plant and is shown on Exhibit 5-9. This structure was given an MSHA identification number and it complies with the requirements of 30 CFR 77.214 and 77.215. It is identified as follows:

Refuse Pile No. 1 1211-UT-09-02157-04

Plans for it's design, construction and maintenance along with correspondence and approvals are given in Appendix 5-3. Refuse Pile No. 1 has been determined to be non-

hazardous by MSHA and no special calculations or stability analyses have been required. See MSHA approval letters in Appendix 5-3.

Refuse Pile No. 2 has been regraded, topsoiled and revegetated. MSHA has removed this structure and identification number from its mine files.

513.500 CAPPING AND SEALING OF MINE OPENINGS

There are no shaft openings within the permit area. All slope or drift openings to mines which have been permanently closed or abandoned have been sealed with solid, substantial, incombustible material such as dirt, concrete blocks, bricks or tile as specified in 30 CFR 75.1711. Openings to mines which have not been permanently closed or abandoned are sealed, adequately fenced or posted with conspicuous signs prohibiting the entrance of unauthorized persons.

513.600 DISCHARGES INTO UNDERGROUND MINES

The Hiawatha No. 2 mine, abandoned in 1926, can be used as a water storage reservoir for culinary and mining purposes at the King 4, 5, and 6 mines. Water can be diverted into this mine from a stream diversion in the North (Right) Fork of Miller Creek. This diversion is approved under Certificate of Appropriation No. 2159 on file with the Division of Water Rights. A structural analysis and hazard assessment of the reservoir is given in Appendix 5-2.

513.700 MINING WITHIN 500 FEET OF AN ACTIVE UNDERGROUND MINE

No surface coal mining or reclamation activities are proposed to mine closer than 500 feet to an active underground mine.

513.800 COAL MINE WASTE FIRES

Appendix 5-4 gives a plan for extinguishing coal mine waste fires. Also included is MSHA's approval under 30 CFR 77.215(j) and 77.216(c).

R645-301-514 INSPECTIONS

514.100 EXCESS SPOIL

No removal or placement of excess spoil (as defined under R645-100-200) is anticipated, therefore, HCC commits to not generating any excess spoils.

514.200 REFUSE PILES

There is one refuse pile for the purpose of storing coal processing wastes and other noncombustible materials. This pile has been given MSHA identification number 1211-UT-09-02157-04 and can be seen on Exhibit 5-9. MSHA does not require routine inspections for this structure, but does require annual certification by a registered engineer that the structure has been constructed and maintained in accordance with approved plans. In compliance with DOGM requirements, the

refuse pile will continue to be inspected quarterly by a specialist experienced in the construction of such structures, until such time as they are removed by MSHA from its mine files. The quarterly inspection report will be certified by a registered professional engineer. Copies of the reports will be retained in the engineering office at Hiawatha.

514.300 IMPOUNDMENTS

Two slurry impoundments, one underground reservoir and eight sediment ponds are inspected on a regular basis as discussed below:

Two slurry impoundments identified by MSHA as Slurry Impoundment No. 1, I.D. No. 1211-UT-09-02157-01, and Slurry Impoundment No. 5, I.D. No. 1211-UT-09-02157-03 (which includes two cells, the main cell and 5A) are inspected on a weekly basis by a specialist experienced in the construction of impoundments. These impoundments are shown on Exhibit 5-9. Inspections are conducted as outlined in U.S. Fuel's MSHA approved plan given in Appendix 5-5. An annual report, certified by a registered professional engineer, describing any changes in the geometry and configuration of the impounding structures is submitted to both MSHA and DOGM.

When in service, an underground reservoir in the Hiawatha No. 2 mine in Middle Fork Canyon is inspected according to a DOGM approved plan given in Appendix 5-2. Inspections are conducted monthly except during winter months and results

are submitted to the Division annually. This impoundment is referenced on Exhibits 5-15, 5-16 and 5-17.

Eight sediment ponds located throughout the permit area and identified by EPA NPDES numbers are depicted on Exhibits 5-5, 5-6, 5-7 and 5-9. These ponds are inspected quarterly for signs of structural weakness by a qualified person. Copies of all inspection reports are retained at the engineering office at Hiawatha.

R645-301-515 REPORTING AND EMERGENCY PROCEDURES

515.100 SLIDES

At any time a slide occurs which may have a potential adverse effect on public property, health, safety or the environment, Hiawatha Coal Company will notify the Division by the fastest available means and comply with any reasonable remedial measures required by the Division.

515.200 IMPOUNDMENT HAZARDS

If any examination or inspection discloses that a potential impoundment hazard exists, the permittee will promptly inform the Division of the finding and of the emergency procedures formulated for public protection and remedial action. If adequate procedures cannot be formulated or implemented, the Division will be notified immediately.

515.300 TEMPORARY CESSATION OF OPERATIONS

In the event of temporary cessation of operations, HCC will effectively support and maintain or seal all surface access openings to underground operations and secure surface facilities in areas in which there are no current operations, but operations are to be resumed under an approved permit. Before temporary cessation of coal mining and reclamation operations for a period of 30 days or more, or as soon as it is known that a temporary cessation will extend beyond 30 days, HCC will submit to the Division a notice of intention to cease or abandon operations. The notice will include a statement of the exact number of surface acres and the horizontal and vertical extent of subsurface strata which have been in the permit area prior to cessation or abandonment, the extent and kind of reclamation of surface areas which will have been accomplished, and identification of the backfilling, regrading, revegetation, environmental monitoring, underground opening closures and water treatment activities that will continue during the temporary cessation.

R645-301-520 OPERATION PLAN

R645-301-521 GENERAL

HCC presently has operations at several different sites near Hiawatha, Utah. Because of the complexity of the entire unit, five separate areas of operation and reclamation will be discussed in

this chapter. The five areas (identified on Exhibit 4-5), all part of the same permit application and included under one mine plan area, are referenced as follows:

Hiawatha Coal Company General Permit Area Components

1. North (Right) Fork of Miller Creek Surface Facilities
2. Middle Fork of Miller Creek Surface Facilities
3. South Fork of Miller Creek Surface Facilities
4. Hiawatha Processing Plant and Waste Disposal Sites
5. Substitute Topsoil Borrow Sites

As described in detail in Chapter 4, Historical and Cultural Resources, the United States Fuel Company was organized in 1915 and commenced operation in 1916 when it took over the properties of the Consolidated Fuel Company, Castle Valley Coal Company, and the Blackhawk Coal Company, whose mines all existed on the current mine plan area. In all, eight significant coal mines have been developed in the area. Coal extraction has been entirely by the room and pillar mining method. Mining continued uninterrupted for a period of over 80 years with a total production of over 56 million tons. Table 5-1 is given to clarify the previous, current and future coal mining operations in the mine plan area. Pre-SMCRA facilities are identified on Exhibit 4-5 and Exhibits 5-6A, 5-7A and 5-9A.

The lands subject to coal mining and reclamation operations over the estimated life of the operations are discussed under R645-301-522, 523, 526, 527, 528, and 540.

521.100 CROSS SECTIONS AND MAPS

Maps and cross sections required to be certified under this section have been prepared by or under the direction of a qualified, registered, professional engineer whose stamp and signature can be found on the individual documents requiring certifications.

521.110 PREVIOUSLY MINED AREAS

521.111 The location and extent of known workings of active, inactive, and abandoned underground mines, including mine openings to the surface within the permit and adjacent areas are shown on Exhibits 5-1 and 5-2.

521.112 There are no existing or previously surfaces-mined areas within the permit area.

Table 5-1

MINE IDENTIFICATION

Mine Location	Mine Name	Coal Seams Mined	Status
South of Hiawatha	Blackhawk Mine King No. 1	Hiawatha, A & B	Abandoned Pre-SMCRA
Cedar Creek Canyon (Mohrland)	Mohrland Mine King No. 2 Castle Valley Coal Co. No. 1	Hiawatha Seam	Abandoned Pre-SMCRA
South Fork of Miller Creek	King No. 3	Hiawatha Seam	Abandoned
Middle Fork of Miller Creek	King No. 4	A & B Seams	Idle
Middle Fork of Miller Creek	King No. 5	B Seam	Idle
Middle Fork of Miller Creek	Hiawatha No. 1 & 2 Consolidated Fuel Co. No. 1 & 2	Hiawatha Seam	Abandoned Pre-SMCRA
South Fork of Miller Creek	King No. 6	Hiawatha Seam	Idle

521.120 Existing surface and subsurface facilities and features are shown on Exhibits 5-1 through 5-18.

521.121 The location of all buildings in and within 1,000 feet of the permit area, with identification of the current use of the buildings are shown on Exhibits 5-4, 5-5, 5-6, 5-7, 5-8, 5-9 and 5-9A.

521.122 The location of surface and subsurface man-made features within, passing through, or passing over the permit area, including, but not limited to, major electric transmission lines, pipelines and drainage tile fields are shown on Exhibits 4-5, 5-4, 5-5, 5-6, 5-7, 5-8, 5-9, and 5-9A.

521.123 Two public roads are located in or within 100 feet of the permit area. One is State Highway 122 which terminates at the Utah Railway railroad crossing near the old town site of Hiawatha. The other is Carbon County Road 338 connecting Hiawatha with Mohrland. These roads are shown on Exhibit 5-9.

521.124 The location and size of existing areas of spoil, waste, coal development waste, and non-coal waste disposal, dams, embankments, other impoundments and water treatment and air pollution control facilities within the permit area are shown on Exhibits 5-4, 5-5, 5-6, 5-7, 5-8, 5-9.

521.125 The location of each sedimentation pond, permanent water impoundment, coal processing waste bank and coal processing waste dam and embankment is shown on Exhibits 4-5, 5-5, 5-6, 5-7, 5-8, 5-9, 5-9A, 5-15 and 5-16.

521.130 LANDOWNERS AND RIGHT OF ENTRY AND PUBLIC INTEREST MAPS

521.131 All boundaries of lands and names of present owners of record of those lands, both surface and subsurface, included in or contiguous to the permit area are shown on Exhibits 4-1, 4-2 and 4-3.

521.132 The boundaries of land within the permit area upon which HCC Company has the legal right to enter and begin coal mining and reclamation operations are shown on exhibits 4-1, 4-2 and 4-3.

521.133 OSM, in its Secretarial Decision document for the Hiawatha Mine Complex (Sept. 27, 1985) makes the following statement concerning this requirement: "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."

521.133.1 See 521.133

521.133.2 No relocation of public roads is proposed.

521.140 MINE MAPS AND PERMIT AREA MAPS

521.141 The boundaries of all areas proposed to be affected over the estimated total life of the coal mining and reclamation operations are shown on Exhibits 4-3, 5-1, 5-2, 5-4, 5-5, 5-6, 5-7, 5-8, and 5-9. The size, sequence and timing of proposed mining operations are shown on Exhibit 5-2. The lands to be affected throughout the operation are shown on Exhibits 5-4, 5-5, 5-6, 5-7, 5-8, and 5-9.

521.142 Underground workings are shown on Exhibits 5-1 and 5-2. The location and extent of areas in which planned subsidence mining methods will be used and which includes all areas where the measures will be taken to prevent, control, or minimize subsidence and subsidence-related damage are shown on exhibit 7-7.

521.143 Temporary disposal sites for placing underground mine development waste are shown on Exhibits 5-5 through 5-9. Permanent disposal sites for placing underground development waste are the refuse disposal sites shown on Exhibits 5-9 and 5-13. No excess spoil is expected to be generated. If it is, it will also be placed at the refuse disposal sites in accordance with refuse disposal plans given in Appendix 5-3.

521.150 All land surface configuration maps in this application give surface contours which adequately represent the existing land surface configuration of the permit area. See Exhibits 2-1, 2-2 and 2-3, Exhibit 4-5, Exhibits 5-4 through 5-13 and Exhibit 7-7.

521.151 Surface contours are used rather than slope measurements. See 521.150.

521.152 See 521.151.

521.160 MAPS AND CROSS SECTIONS OF THE FEATURES OF THE PERMIT AREA

521.161 Buildings, utility corridors and facilities to be used are shown on Exhibits 5-4 through 5-9.

521.162 The area of land to be affected within the permit area is shown on Exhibits 5-4 through 5-13.

521.163 Each area of land for which a performance bond will be posted under R645-301.800 is shown on Exhibits 5-4 through 5-13A.

521.164 Coal storage, cleaning and loading areas are shown on Exhibits 5-5, 5-7 and 5-9.

521.165 Topsoil stockpiles are shown on Exhibits 5-6, 5-8 and 5-9. Coal preparation waste storage areas are shown on Exhibit 5-9. Underground development waste storage areas are shown in Exhibits 5-5 through 5-9. Non-coal waste storage areas are shown on Exhibits 5-5 through 5-9.

521.166 The source of waste related to coal processing was the coal processing plant. Waste disposal facilities related to coal processing are the refuse piles and slurry impoundment embankments shown on exhibit 5-9.

521.167 Explosive storage magazines are no longer on the property.

521.168 Does not apply.

521.169 All coal processing waste banks, dams and embankments are shown on Exhibit 5-9.

521.170 TRANSPORTATION FACILITIES MAPS

Primary roads, ancillary roads, railroad corridors and overland conveyor systems are discussed under R645-301-527 (Transportation Facilities). Maps, cross sections, and specifications for road widths, road gradients, road surfaces, road cuts, fill embankments, culverts, bridges, drainage ditches and drainage structures are given in Exhibits 5-6, 5-8, and 5-9. All railroads and vehicle roads were constructed prior to SMCRA and, therefore, are not required to meet the design standards. OSM makes the following statement regarding performance standards in their 1985 Technical Review of the Permit Application: "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.

521.180 Support facilities are discussed under R645-301-526 in Utility Installations and Support Facilities. These facilities are shown on Exhibits 5-4 through 5-9.

521.190 COAL AND COAL WASTE STORAGE AREAS

Six areas are designated for the use of coal storage. The first two areas, shown on Exhibits 5-5 and 5-7, are the South Fork and Middle Fork Coal Stockpile Areas. Coal was conveyed to these areas from the portals and stored until loaded on trucks. Although coal is currently not being produced, the areas still contains coal in parts of these storage areas. These areas will be used for coal storage throughout the operational phase of the South and Middle Fork facilities. The other four areas are shown on Exhibit 5-9. They consist of Slurry Ponds 1 and 5A, the area immediately south of Slurry Pond 1, and the Upper Rail Storage yard. The two Slurry Impoundments currently contain coal fines which are being or will be extracted and sold. The area south of Slurry Pond 1 is used as an intermediate pile between extraction for the slurry pond and the truck loading activities. The coal fines extraction from the slurry ponds and adjacent storage will be and ongoing part of the operational phase of the mine. The upper rail yard also contains coal on the surface of the yard. Historically, it was used for coal storage. Although it is not actively being used, future operational plans may involve the use. Because it contains coal on the surface which may influence the historical status of the area, it has been designated as a coal storage area throughout the operational phase of this area.

The coal waste storage areas are shown on Exhibits 5-6, 5-7 and 5-9. 5-6 and 5-7 show the locations of temporary coal waste storage areas. Coal mine waste is stored in these areas until it can be transported to the coal waste disposal facilities.

Exhibit 5-9 shows five designated coal waste storage areas. These consist of the Refuse Pile No. 1, Slurry Ponds 1, 5 and 5A and their embankment areas, and the Upper Rail Storage Yard. The Slurry Ponds and the Refuse Pile are designed as permanent disposal facilities (see Appendix 5-1 and 5-3), and will continue to be used for this purpose, with the exception of Slurry Pond 5. This pond is currently under reclamation, and no additional coal mine waste will be placed in this area following topsoiling activities.

The upper rail yard currently contains coal and coal waste material. As described above, this material is part of the historical influence of the yard as a part of the historical district. It is not anticipated that additional coal mine waste will be stored here. During the operational phase, any existing coal waste will be added to the coal storage, removed to the permanent disposal sites, or, if necessary, remain in place for the historical value of the area. A determination will be made concerning the post-mining historical value of the material prior to any removal or modification of the existing area.

Any coal mine waste which is currently not within one of these designated areas will be placed in one of the permanent disposal facilities.

521.200 SIGNS AND MARKERS SPECIFICATIONS

521.210 Signs and markers are posted and maintained as required by this regulation. Signs and markers will be removed upon completion of mining and reclamation operations.

521.220 Signs and markers are of uniform design that can be easily seen and read. They are made of durable material and conform to local laws and regulations.

521.230 Signs and markers will be maintained during all activities to which they pertain.

521.240 MINE AND PERMIT IDENTIFICATION SIGNS

521.241 Identification signs are displayed at each point of access from public roads to areas of surface operations and facilities on the permit area.

521.242 Does not apply.

521.243 Identification signs show the name, business address and telephone number of HCC and the identification number of the permanent program permit authorizing coal mining and reclamation operations.

521.244 Identification signs will be retained and maintained until after the release of all bonds for the permit area.

521.250 PERIMETER MARKERS

521.251 The perimeter of all areas affected by surface operations or facilities are clearly marked by perimeter markers.

521.252 Does not apply.

521.260 BUFFER ZONE MARKERS

521.261 Stream buffer zone signs are installed at locations where mining and reclamation operations are conducted in the vicinity of perennial and intermittent streams.

521.262 Does not apply.

521.270 TOPSOIL MARKERS

521.271 Topsoil markers have been installed where topsoil or other vegetation-supporting material is physically segregated and stockpiled as required under R645-301-234.

R645-301-522 COAL RECOVERY

It is in the interest of ~~U.S. Fuel~~ HCC to maximize the recovery of coal resources. As can be readily observed from Exhibit 5-1 the majority of reserves have already been extracted from the permit area. The remaining life of operations is directly tied to the maximum recovery of the remaining reserves. Historically, U. S. Fuel has employed the room and pillar method of coal extraction. Figure 5-1 shows U.S. Fuel's last development and pillar recovery method. This method was designed for maximum safe recovery of coal resources. State of the art room and pillar mining equipment was utilized. Multiple seam mining was employed in numerous locations and will be utilized in the future to recover the remaining reserves.

A large portion of HCC's coal resources are contained in Federal leases. A major condition of each lease agreement is maximum recovery of resources. When accessible, mine workings in each lease are inspected on a regular basis by Bureau of Land Management personnel experienced in underground coal mining methods.

By letter to OSM dated May 8, 1984, the Chief, Branch of Mining Law and Solid Minerals, BLM, Salt Lake City makes the following comments regarding U. S. Fuel's Resource Recovery and Protection Plan: "We have determined that the Resource Recovery and Protection Plan (R2P2) or underground mining part of the subject PAP on file in this office and listed above, conforms with 43 CFR 3482.1(c) rules and regulations. The proposed coal recovery procedures should

safely obtain maximum economic recovery of the coal resource within the plan area by following the planned technology and by using the types of equipment listed in the plan. The R2P2 part of the PAP is adequate for BLM administration of the associated Federal coal leases".

Justification for not recovering coal deposits that may be detrimentally affected in terms of future recovery by the proposed operations include the following:

A. Seams that are too thin to be economically minable given existing or reasonably foreseeable technology.

B. Coal seams separated by insufficient rock intervals to allow safe mining above or below worked out areas.

C. Seams that are relatively thick but not extensive, and isolated by thin coal which would make development cost prohibitive.

R645-301-523 MINING METHOD

Exhibit 5-1 shows mine workings developed in the Hiawatha area from the beginning of mining in the early nineteenth century to the present. Until the U. S. Fuel Co. underground mine in Hiawatha was idled in 1993, it was one of the (if not the) oldest operating coal mines in the West. About the time that its last long term coal sales agreement terminated, U. S. Fuel decided to cease underground

coal production. Shortly thereafter, the mine portals were sealed with incombustible material. Nonetheless, about thirty million tons of coal reserves still remain within the permit boundary. U. S. Fuel sold the property and permit to ANR Company and HCC, consecutively. HCC intends to reopen the King 5 and 6 portals by November 1, 1999.

Until that time, HCC intends to:

1. sell pond fines;
2. maintain the hydrologic structures and controls;
3. monitor and inspect the property as required by the permit; and
4. reclaim those portions of the disturbed area that HCC feels is both unnecessary for and would not be affected by the resumption of underground mining operations.

No maintenance of other structures or facilities is anticipated except as needed to provide for the safety of the employees and protection of the environment.

Prior to the sealing of the mine portals, most of the equipment was brought to the surface. Most of the conveyor belt, high voltage cable and pipe was also extricated. Many of these units have been sold. Due to obsolescence, it is doubtful that very much of the remaining equipment will be utilized if or when the underground mine is reopened. However, it is impossible at this time to surmise which units may or may not be needed by a prospective purchaser. For this reason, the equipment will be stored on the property until the equipment is sold, the property is purchased or underground operations have permanently ceased.

The underground equipment will be stored in areas marked on Exhibits 5-6, 5-8, and 5-9 as long term equipment storage areas.

None of the underground mining equipment is directly associated or connected with any of the mines. Also, much of the underground equipment currently on the property may not be used when the mine reopens. Therefore no underground mining equipment lists have been included in this section. Prior to the initiation of underground mining on the property, this section of the permit will be amended to reflect the proposed mining method and specific equipment to be used.

The current permit boundary reflects the sale of approximately 467 acres of coal lands to Plateau Mining in December, 1985 and approximately 6,500 acres to Intermountain Power Agency in April, 1986.

The remaining coal reserves held in fee and by Federal lease rights are currently accessible through workings in three mines. These are the King 4, King 5 and King 6 mines which will be discussed separately. The following discussions will focus on the historical mining practices at U.S. Fuel since the underground mines are not currently producing coal.

Table 5-2

MINING METHODS AND ESTIMATED PRODUCTION

Mine	Seam	Mining Method	Production Date	Potential Productivity
King 4	B	Room & Pillar	Idle	500,000 TPY
King 4	A	Room & Pillar	Idle	500,000 TPY
King 5	B	Room & Pillar	Idle	500,000 TPY
King 6	Hiawatha	Room & Pillar	Idle	1,000,000 TPY

KING 4 MINE

The King 4 mine is located in sections 13, 24 and 25, T.15S., R.7E.; and sections 18, 19, 20, and 30, T.15S., R.8E., SLBM. It is bounded by the Bear Canyon fault on the west, property boundaries on the north, coal seam outcrops on the east and the King 1 mine on the south. Portals are located in the Middle Fork canyon of Miller Creek, 3 miles northwest of Hiawatha. The mine was opened in 1974 when haulage and ventilation entries were driven outward from the northern extension of the King 1 mine to the B seam outcrop in Middle Fork. Once portals were established, the King 1 mine was sealed off and abandoned to the south. A set of entries which connect with South Fork were left open and maintained for access and ventilation but are now sealed.

The mine area initially comprised 3,000 acres, but a sale of approximately 467 acres of fee land to Plateau Mining in 1985 reduced this area to 2,693 acres. At the present time the mine contains 1,783 acres of fee land, 720 acres on Federal Consolidated Lease No's. U-026583 and U-05826, 160 acres on Federal lease No. U-51923, and 30 acres on Federal lease No. SL-069985.

In April of 1991 production was cut back from three production shifts per day to less than five

production shifts per week. In April 1993, production from this mine was temporarily suspended. Shortly thereafter, most of the underground equipment was brought to the surface. Later that year, the portals were backfilled with incombustible material. Although this mine remains idle, it is still the most likely access to several million tons of remaining reserves.

Portions of the remaining A seam reserves are beneath mined out B seam workings. A set of three rock tunnels were planned to be driven from the B seam to the A seam. These tunnels would provide ventilation and haulage facilities for A seam mining. The interburden between the two seams at this location is approximately 80 feet. Table 5-2 gives a summary of mining methods and estimated potential productivities for all of HCC mines.

Exhibit 5-5 shows existing and projected workings in the A and B seams. Since the mine is currently idle, the timing is no longer applicable; however, the basic plan remains the same. The mining plan is based upon developing five main entry headings, from which room and pillar panels would be extended. Entries and crosscuts would be driven 20 feet wide and on various centers depending on the geologic, engineering and economic factors prevailing at any given location. Crosscuts would be turned either at 60 or 90 degrees to the entries. Crosscuts at 60 degrees allow for better haulage and equipment mobility; whereas, 90 degree crosscuts provide greater roof support.

In the past, room and pillar panels were developed by driving a set of parallel entries to the boundary of a coal block and extracting pillars in a retreat fashion while picking up two to four

additional rooms on either side of the development entries. Both full and partial extraction methods were employed depending on the local factors (See Figures 5-1 and 5-2). With the full extraction method, coal was mined in step fashion which would allow the roof to cave on a controlled break line across the full width of the mined-out panel. Once the break line was established, pressure was relieved from adjacent abutments allowing mining to proceed in a safe sequence. With the partial extraction method, pillars were mined by splitting from several directions while leaving stumps of coal to support the roof. The size of the stumps would vary from place to place depending on local roof conditions and the judgement of the miners. In recent years, partial extraction was used only in areas of limited size, such as barrier pillars, where it proved to be safer than the full extraction method.

Each mining section used one remote controlled continuous miner served by three battery powered coal haulers. The coal haulers relayed coal from the miner in the face area to a conveyor belt feeder-breaker located 200 to 500 feet back of the face. From the feeder-breaker, coal was transported on a roof-hung, wire rope supported belt conveyor to the haulage portal and truck loading facility. Mining progressed in a sequential pattern, generally beginning on the return air side of the development heading and progressing to the intake air side, while advancing each entry a distance of about 40 feet. This allowed roof bolting and cleanup operations to be carried out in adjacent entries simultaneously with mining.

All conveyor belts were 42 inches wide. Conveyor segments would vary in length from 2,000 to 3,000 feet and were powered by Continental or Long Airdox drives ranging from 75 horsepower

to dual 150 horsepower. From the haulage portal, coal was conveyed to a 13,000 ton storage pile in the Middle Fork mine yard. From there it was reclaimed with a 60 inch conveyor, passed through a hammermill crusher and conveyed to a 100 ton capacity steel truck loading silo. Haul trucks were loaded beneath the silo by means of an automated chute gate. Approximately 22 tons per trailer was loaded into triple trailer haul trucks for transport to the processing plant near Hiawatha. Personnel and supplies were transported underground with diesel pickup trucks. Haulage and other equipment were repaired in a well equipped underground shop located near the manway portal.

Roof support procedures were carried out in accordance with plans approved by the Mine Safety and Health Administration. A copy of an MSHA approved roof support plan and ventilation plan for King 4 are included in Appendix 5-6. A variety of specific approved timbering methods were used in the pillar sections. Roof bolts were installed on a full bolting basis. Resin anchored bolts of 4, 5, and 6 foot lengths were used. Bolts were installed two feet out from each rib and spaced not more than four feet apart in either direction. Where conditions indicated a need, supplementary support such as additional bolts, longer bolts, posts, cribs and crossbars were installed.

The King 4 mine was last ventilated by a Jeffery 350,000 CFM fan that was installed in 1980, but was then removed from the return portal prior to sealing it. Air was coursed through the mine by way of intake and return airways separated by well constructed concrete block stoppings. Overcasts and regulators were installed where needed to insure that each section was served by a separate split of air. Face ventilation was achieved by use of line curtains. Coal dust derived from mining was exhausted away from the face behind the line curtain. No auxiliary face

ventilating fans were used. All ventilation procedures were covered by MSHA approved plans.

Since the idling of the three coal mines, some of the equipment which was brought to the surface has been sold. However, much of the underground equipment utilized in the King 4, King 5 and King 6 mines is still on the property. U. S. Fuel's sold the equipment separate from the mine, utilize the equipment to reopen the mine or sell the equipment as opportunities arise. All of the underground equipment on the surface will be sold or removed from the property prior to completion of final reclamation. In the interim, the underground equipment will be stored in areas designated as long term equipment storage areas on exhibits 5-6, 5-8, and 5-9.

Figure 5-1

Typical Room And Pillar Mining With Full Extraction

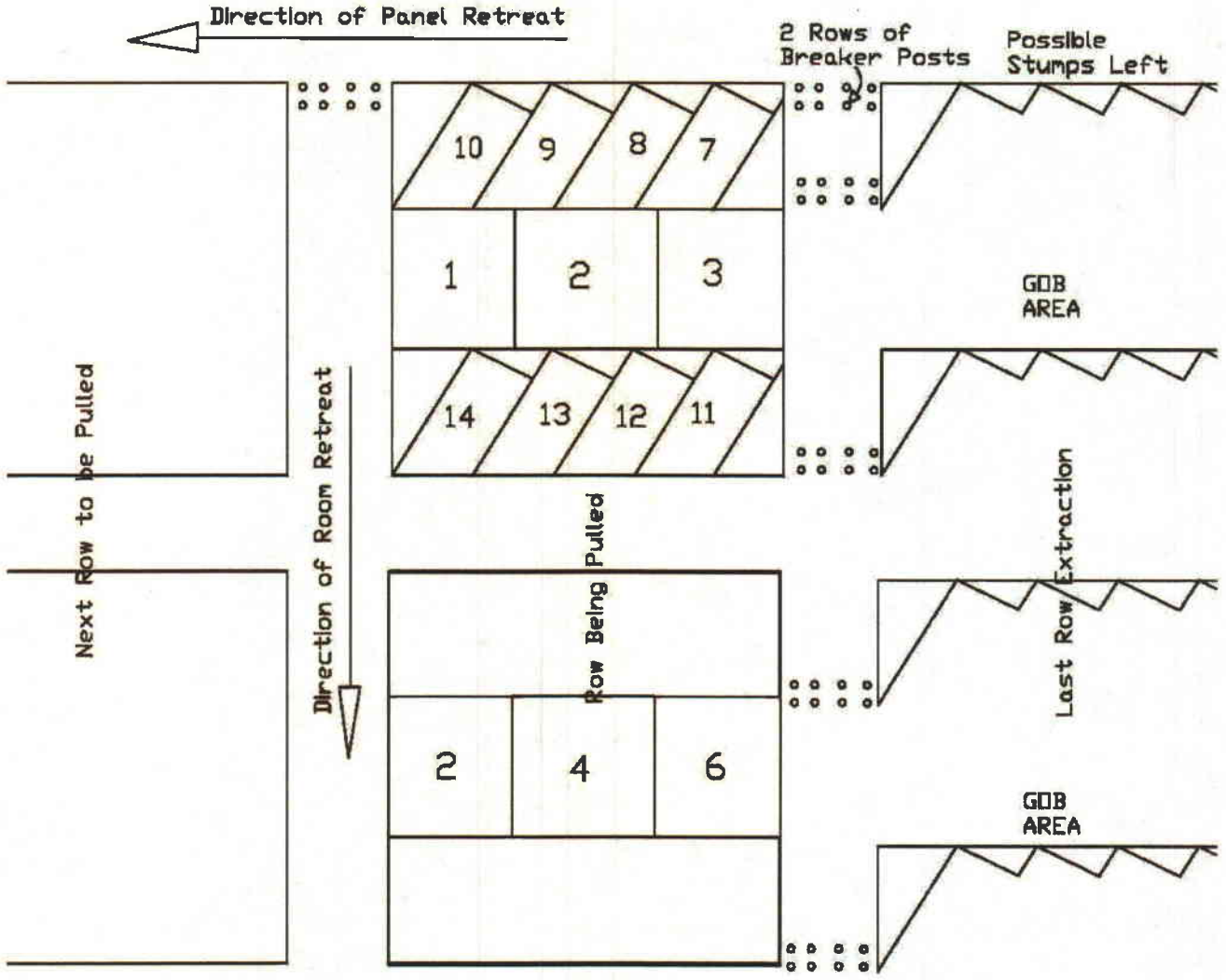
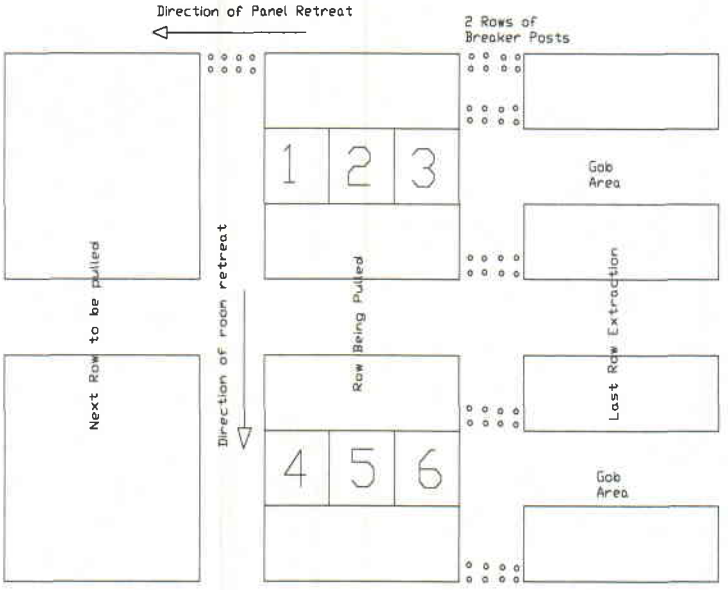


Figure 5-2

Typical Room and Pillar Mining With Partial Extraction



Note: Room centers may vary.
Typical cut sequince is as shown. May vary due to condition

KING 5 MINE

Portals for the King 5 mine are located on the south side of the Middle Fork mine yard adjacent to the King 4 portals. Surface facilities are shared by both mines. The King 5 mine was opened in the spring of 1978. Mine workings are located in sections 29, 30, 31, and 32, T.15S., R.8E., SLBM. An area comprising 900 acres of fee land and 320 acres of Federal lease land (SL-025431) could ultimately be mined.

The King 5 mine was deactivated in 1983 due to poor market conditions and has remained inactive since that time. Conditions within the mine remain fair and it could be reactivated if market conditions warrant. The portals were sealed with incombustible material in 1993.
The King 5 mine had four portal openings: an exhaust fan portal, belt haulage portal and an intake air/manway portal in Middle Fork and an additional intake air portal in South Fork. Five main development headings were driven due south through the center of the B seam coal reserve block between South and Middle Forks. Room and pillar extraction methods were employed similar to those in the King 4 mine. Exhibit 5-2 shows existing workings and projected development. No dates are assigned to development phases at this time since no production is anticipated in the near future.

The B seam thickness in this mine averages about 5.5 feet, requiring the use of low profile mining equipment. Coal was transported on 42 inch wide conveyors powered by 150 horsepower dual drive units. Coal was combined with coal from the King 4 mine at a transfer point near the portal and then conveyed to the 13,000 ton stockpile. Personnel were transported within the mine with diesel powered pickup trucks. Equipment and supplies were transported with diesel powered scoops.

Roof Control was the same as in the King 4 mine with full bolting on 4 foot centers in all entries and crosscuts. The use of remote controlled continuous miners allowed headings to be driven a distance of 40 feet in advance of bolts. Resin anchored bolts of 4, 5, and 6 foot lengths were utilized.

Ventilation was provided by a 6 foot diameter Sturtevant axiflo fan, exhausting 80,000 cubic feet of air per minute at 1.5 inches of water gage. Permanent and temporary stoppings were carried to within 300 feet of the last open crosscut in each section. Face ventilation and dust control were provided by line curtains installed to within 15 feet of the face. Air quality and quantity were monitored by mine personnel on a routine basis. No methane gas was ever detected in the King 5 mine.

KING 6 MINE

The King 6 mine is located in South Fork canyon approximately one mile south of the King 4 and King 5 mines. It was opened in 1981 when two portals existing from the abandoned King 3 mine were reopened for ventilation and one additional portal was constructed for access and coal haulage. Mine workings are located in sections 25 and 36 of township 15 south, range 7 east and sections 31 and 32 of township 15 south, range 8 east. The land area contains approximately 1,240 acres of which 960 acres are on Federal lease lands and 280 acres are on fee lands. See Exhibit 5-2 for details of existing and projected mine workings.

A five entry main development heading was extended to the west in the Hiawatha seam. If economic conditions warrant, two room and pillar continuous miner production sections can be established. One in a westerly direction and one in a due north direction shown on Exhibit 5-2.

The King 6 mine was deactivated in December, 1988. Though inactive, most of the support facilities have been maintained in anticipation of continued operation at some future date. Since it is not known when economic and market conditions will favor reactivation or how much production will be required, no dates or timing sequences are shown on Exhibit 5-2.

Pond Fines

Mining of coal fines has also taken place from Slurry Ponds 1 and 5. The fines were removed from the Slurry Pond 5 main cell and sold. Following the removal of fines from the pond, the main cell was recontoured and reclaimed. Reclamation is discussed in R645-301-541.

No fines were recovered from Slurry Pond 4 prior to reclamation. The reclamation is discussed in R645-301-541.

Recovery of coal fines are on going from Slurry Pond 1. HCC intends to recover all of the coal fines from this pond prior to any reclamation. All fines will be stored in the pond, and will be shipped as they are sold. When they are sold, the fines will be removed from the Pond utilizing a front end loader and/or paddle scraper. The area within and adjacent to Slurry Pond 1 will be used for coal loading onto coal trucks, which will haul the coal to customers or unit train loadouts for shipping to customers. The road passing south of refuse pile No. 1 will be utilized as a haul road from the mine site to SR122.

Generally, the customer arranges the hauling of the coal, so the coal belongs to the customer at the time it is loaded into the trucks.

Some contracts call for the coal to be loaded onto trains at the Utah Railway Loadout adjacent to Hiawatha. HCC may use paddle scrapers to transport the coal to the loadout because of the short distance and impracticality of using trucks. In this case, the coal is sold when loaded onto the paddle scraper. HCC does not intend to store any coal belonging to the mine within the railroad loadout right-of-way.

Occasionally, HCC is contracted by Utah Railway customers for use of their front end loader to load trains at the loadout. This is often more practical than the customer transporting equipment to the loadout because of the close proximity of HCC's equipment. The use of this equipment for that purpose is done on a contract basis and is not part of Hiawatha's mining operation. Therefore, the activities would not be considered mining and reclamation activities.

R645-301-524 BLASTING AND EXPLOSIVES

Major surface facilities at ~~U.S. Fuel's~~Hiawatha's operations have already been established. Mine portals, pads and haul roads were constructed in earlier years without the use of explosives. The King 4 excavations in Middle Fork, for example, were constructed in 1974 solely by the use of heavy equipment and mining machinery. No explosives were required.

HCC ~~U.S. Fuel Company~~ does not foresee any need for surface blasting activities at these facilities. Should this change, HCC ~~U.S. Fuel~~ will submit plans to the Division and address all the requirements of R645-301-524 prior to initiating any blast.

Even when the underground mines were producing coal, explosives were used infrequently. After the mines were sealed, the blasting supplies were sold or returned to the seller. Even the blasting magazines have been removed from the property. MSHA regulates the use of explosives underground and both MSHA and the Bureau of Alcohol, Tobacco and Firearms regulate the storage of explosives on the surface.

Hiawatha Coal Company commits to follow all of the regulations in Section R645-301-524 that apply to its operations.

R645-301-525 SUBSIDENCE CONTROL PLAN

Underground mining operations at the Hiawatha property have been ongoing since the turn of the century. All previous mining was done by room and pillar methods. No significant subsidence effects have been observed to date. Other than ancillary roads, fences and stock watering ponds, there are no structures existing above previous or projected mining areas. The majority of existing roads and ponds occur above areas that have been mined out more than ten years ago. No significant effects on these structures are evident.

Future plans include room and pillar mining with full or partial extraction. See Figures 5-1 and 5-2. In the interest of maximum recovery of resources, full extraction is projected wherever possible and planned subsidence is proposed. No longwall mining is planned. Exhibit 5-2 shows life of mine projections for proposed operations and indicates where subsidence might be expected. Where subsidence occurs, it should occur uniformly over mined out panels. Unless pillars are pulled and a section of the mine is fully extracted, conventional room and pillar coal

mining methods do not generally result in surface subsidence if the pillars are adequately stable. Mining within that portion of the King 5 mine that overlies the old Hiawatha No. 1 mine has shown that subsidence would not occur above old room and pillar workings within the permit area where the pillars have been left in place. The King 5 mine is separated from the underlying Hiawatha No. 1 mine by approximately 120 feet of interburden. Most pillars were left in place in the Hiawatha Mine at the completion of mining. Subsequent mining in the overlying King 5 mine has shown none of the compression or tension effects that cause subsidence. As a result, it is assumed that subsidence effects in the permit area will be confined to those areas within the limit angles overlying the fully extracted sections of the mines. When the term "fully extracted" is used herein, it should be noted that barrier pillars may be left in the King mines between extracted panels. On the average, panels will be approximately 500 feet wide, with barrier pillars averaging 150 feet in width.

Section R645-301-724.600 in Chapter 7 (Hydrology) discusses renewable resource lands and the potential effects of subsidence on these lands. Geologic data and a model to support subsidence predictions are included. Exhibit 5-3 ~~VII-7~~ supplements this discussion and shows the vertical projections of those areas that have been fully extracted within the past ten years and that may be fully extracted during the remaining life of the mines.

~~Beginning in 1979 a cooperative agreement to monitor subsidence was signed by U.S. Fuel Company and the U.S. Forest Service. U.S. Fuel maintained ground control survey targets and the Forest Service provided aerial photography. Monitoring was done on a yearly basis. Color and infrared photographs were secured for past years. The Forest Service had difficulty establishing subsidence point readings and in 1987 disclosed its intent to discontinue photogrammetric monitoring. In 1988 U.S. Fuel began its own subsidence monitoring program on lands managed by the Forest Service as outlined below:~~

~~1. Additional ground control survey monuments were established in the area of existing mining areas to provide adequate control for aerial photogrammetric monitoring. These monuments were located on the same coordinate system as the mine workings so that precise correlations could be made between underground workings and surface topography.~~

~~2. Aerial monitoring, including full analytical aero-triangulation and computer digitized point readings to an accuracy of 0.5 feet, was provided by a reputable photogrammetric engineering company. Monitoring was done on a yearly basis until two years after~~

~~completion of underground mining in the area.~~

~~3. New baseline photography covering the entire permit area above the mine workings was taken during the fall of 1988. This photography documented the existing surface configuration and could be used for future comparison.~~

~~4. Subsidence monitoring point readings were taken over areas where retreat mining had occurred during the past two years. Since plans can be subject to frequent change due to a variety of geologic, economic and technological factors, baseline point readings were not taken over a mining panel until after the development had begun but prior to pillar extraction. Once pillar extraction began, point readings were taken annually for a period of two years following abandonment of the panel.~~

~~5. The number and location of point readings taken over a mining panel can be greatly affected by vegetation cover especially in forested areas. Where possible, point readings were taken along a line near the center of a panel and parallel to its long dimension. Enough readings were taken to identify the occurrence and general magnitude of subsidence.~~

Exhibit 5-3 shows the location of ground control monuments and elevation monitoring points in the vicinity of current mining operations. Monitoring data and a current copy of Exhibit 5-3 is submitted to the Division with ~~U.S. Fuel's~~ Hiawatha's annual report. In the steep canyons the slope is great enough that subsidence would not be noticible, it would also be difficult to select a point in these areas that would be representative of the entire area. The main concern is in areas where the topography is relatively flat and where roads and fences are in the subsidence zone. Because of this most of the points have been established these areas. Additional points have been establised around the edges of the subsidence zone, and in areas of maximum subsidence to be used in evaluating the accuracy of our model. There are currently 22 subsidence points being monitored as shown on Exhibit 5-3. They will be monitored using a survey grade GPS. In areas of good satellite visibility we will insure and accuracy of at least 0.1 feet. It should be noted that in these areas it will typically be more accurate then that. In areas of steep canyons and heavy vegetation where satellite coverage is not as good we will insure and accuracy of at least 1 foot. This is more accurate then results from an aerial survey.

~~A comparison of monitoring results obtained for the years 1988 and 1989 shows that measurable subsidence occurred in the vicinity of points 369 and 370, in the vicinity of points 381,382,383 and 384 and in the vicinity of points 390, 391 and 395. Results of 1990 monitoring have not been received from the photogrammetric contractor at the date of this writing. Continued application of this program should reveal the likelihood and extent of subsidence related to current operations.~~

Results of subsidence could have effects on renewable resource lands. However, during the 80 years of mining in this area there has been no evidence of any effects to existing water patterns. Nonetheless, it is conceivable that fractures resulting from subsidence could someday contribute to changes in the water patterns. Although highly unlikely, it is possible that springs, seeps and/or stream flows could be affected. The diminution of existing surface and ground water sources could affect some livestock and wildlife watering sites at higher elevations. Water presently being used for industrial and irrigation purposes should not be diminished to any great extent since water diverted into the ground would most likely return to mine openings, springs and streams near the top of the Star Point sandstone formation. No mining will be done below this horizon which is well above municipal, industrial and irrigation points of use. The affect of mining on the water supply is discussed in greater depth in chapter 7.

All surface lands above existing and proposed mining operations are owned by either ANR Inc.

~~U.S. Fuel~~ or the U.S. Forest Service. There are no other surface owners. In the event subsidence results in significant damage to structures, they will be repaired or replaced to the reasonable satisfaction of the surface owner. Where material damage or significant diminution of value of the foreseeable use of lands occur, it will be restored to the extent reasonably possible to the satisfaction of the surface owner. Where significant livestock or wildlife watering sites are diminished and found necessary to be replaced, they will be mitigated by constructing watering ponds or troughs and pipelines from alternate water sources.

~~In response to the Office of Surface Mining and Reclamation's conditions outlined in it's permit issued March 16, 1987, U.S. Fuel makes the following additional commitments:~~

Additionally; Hiawatha ~~U.S. Fuel~~ commits to restoring accessible areas impacted by subsidence caused surface cracks or other subsidence features which have occurred as a result of mining conducted after 1978 and are of a size and nature that could, in the Division's determination, either injure or kill grazing livestock or wildlife. Restoration shall be undertaken after annual subsidence survey data indicate that the surface has stabilized, but in all cases restoration and revegetation shall be completed prior to bond release.

Hiawatha ~~U.S. Fuel~~ commits to compensate surface owners ~~from the time of permit approval forward (except for land owned by U.S. Fuel)~~ 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. In addition, Hiawatha ~~U.S. Fuel~~ will compensate at fair market value, owners of livestock which are injured or killed as a direct result of surface hazards caused by subsidence.

Existing raptor nests adversely affected by mine related subsidence will be replaced or otherwise mitigated by Hiawatha ~~U.S. Fuel Company~~ in consultation with the U.S. Fish and Wildlife

Service and the Utah Division of Wildlife Resources according to the requirements of R645-301-342 and R645-301-358. Notification of the loss to the above-named agencies and the regulatory authority shall take place within two working days of becoming aware that the loss has occurred.

At least 60 days prior to beginning pillar extraction of 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 stream channel, Hiawatha ~~U.S. Fuel~~ 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 R645-301-525.270. This evaluation must be based upon subsidence monitoring information (where available) collected on multiple seam mining in areas with similar overburden depth and surface topography.

Exhibit 5-3 ~~VII-7~~ shows the maximum extent of potential subsidence expected to occur in the permit area over the term of this permit. Perennial streams are identified in Chapter 7 under 724.200, Surface Water Information and in Table 7-15.

R645-301-526 MINE FACILITIES

The following discussion describes the facilities in their current state. However, due to normal operational evolution and contemporaneous reclamation the facilities have changed in the decades since the original bond was established. Through the years, the reclamation bonding requirement was increased when new facilities were approved, but no adjustments were made when facilities were removed. To rectify this flaw the Division approved U. S. Fuel's request to adjust the reclamation bond on February 13, 1995. However, the bond calculation still includes some additional facilities which may no longer exist and are not mentioned in this discussion. These

facilities will be removed from the bond calculation after completion of regrading for Phase I bond release or as a result of another bond adjustment. The bond calculations can be found in Chapter 8, Appendix 8-4.

NORTH FORK SURFACE FACILITIES

During 1981, a portal was constructed in the North Fork drainage to provide the King 4 mine with intake ventilation. The plan for the construction of this facility is included in Appendix 5-7 of this chapter. Originally, the plan called for return ventilation warranting the construction of a fan and powerline. However, the area was not developed with power so the portal provided an additional intake airway for the mine. Exhibit 5-4 shows the disturbed area, approximately one and a half acres, for the portal facility. A three mile jeep road from Hiawatha to the ventilation portal is the only access. This site is classified as an alternative sediment control area (see Appendix 5-8). Sediment control is provided as specified in Appendix 5-7. The portal is constructed of 14 foot diameter arched steel beams on 4 foot centers covered with 8 gauge preformed liner plates. The portal has been sealed and the area regraded and reseeded. No future disturbance is proposed for this site. ANR Company intends to extend the jeep trail beyond the portal area as part of timbering, recreation and wildlife post-mining land uses, as described in R645-301-412. It is visited infrequently by mine personnel, only to inspect the reclamation and sediment control structures.

A stream water diversion also exists in North Fork which supplies water through a pipeline and to the Hiawatha No. 2 Mine ventilation portal. HCC anticipates that this diversion will be needed unless adequate water is encountered underground to support the mine without the use of the diversion. Reclamation of these facilities are described in R645-301-541.

MIDDLE FORK SURFACE FACILITIES

The King 4 and 5 underground coal mines share the same surface facility located in the Middle Fork canyon of Miller Creek drainage. The King 4 mine opened in 1974, and the King 5 mine opened in 1978, are currently inactive. Surface facilities used in support of mining operations are located on private land owned by ANR Company. The existing surface facility structures and mine yard layout is shown on Exhibit 5-5.

Middle Fork mine yard comprises approximately 12 acres and includes part of the mine site of the old Hiawatha 1 and 2 mines which were abandoned in 1928. Surface openings to the Hiawatha No.1 mine have been sealed and posted with warning signs. Openings to the Hiawatha No.2 mine are sealed with reinforced concrete bulkheads which can be used to store water. A pipe which extends from the bulkhead in Hiawatha No.2 mine manway portal is connected with two 40 horse power centifugal pumps which can deliver water to the 40,000 gallon water tank located above the bathhouse. A pressure gage in the pump room monitors the inmpoundment pressure when water is impounded behind the bulkheads. Surface openings to the Hiawatha No.1, as well as King 4 and 5 mines are in a down dip direction, thus precluding the gravity discharge of mine water in this area. Other hydrologic conditions and abandoned mine workings contribute to the prevention of mine water discharge. These are discussed in Chapter 7, Hydrology.

HCC is not presently using the Hiawatha No.2 mine as a water storage reservoir. However, future operations in King 5 may necessitate the use of it. The structural analysis, hazard assessment and test results of the reservoir dams may be found in Appendix 5-2.

Adverse affects to the existing hydrologic balance are controlled by retaining sediment within

disturbed areas or directing runoff into a sedimentation pond located at the eastern end of the mine yard. Surface runoff from undisturbed areas is channeled past disturbed areas by way of interconnecting bypass culverts beneath the mine yard. The calculations and design of the Middle Fork sedimentation pond can be found in Chapter 7. The sedimentation pond and underground reservoir in Hiawatha No.2 mine are th eonly impoundments that exist in the Middle Fork area. The main substation, water tank and water tank access road east of the mine yard are classified as alternative sediment control areas. See Appendix 5-8.

The access corridor from the town of Hiawatha to Middle Fork mine yard is included in the disturbed area. This corridor contains the coal haulage road and the powerline. Coal handling facilities in the Middle Fork yard consisted of a 750 foot overland conveyor structure extending from the King 4 and 5 haulage portals to a stacking tower, a 13,000 ton storage pile and vibrating feeder which loaded a 60 inch reclaim conveyor. The reclaim conveyor fed a hammermill crusher which discharged on to a 36 inch transfer conveyor to a 100 ton steel truck loading silo. Coal was transported by bottom dump trucks using 22 ton triple trailers from the loading facility to the processing plant. The haul road, which is a primary road, is 24 feet wide and paved with 4 inches of plant mix bituminous material. The haul road has from 1 to 8 foot shoulders on each side, giving the road a total of approximately 35 feet. Drainage structures for the road adequately pass runoff from the upper watersheds into Miller Creek. The road configuration is shown on Exhibit 5-6. Drainage structures are shown on Exhibit 7-18C.

The King 5 portals in Middle Fork will be used to access the King 5 mine for men and supplies. Some initial coal may be extracted in Middle Fork to allow enough development to reach the King 3 development in South Fork. In addition, coal may be extracted from King 4.

To facilitate this, HCC will use the existing surface facilities, including, but not limited to, the Bathhouse, parking lot, access areas, King 5 equipment building, substations and pads, water tank, bulk rock dust bin, fan, power and water lines, storage sheds, sewer systems, switch buildings, and sediment pond. Coal conveying and loadout facilities will be needed for King 4 and the initial re-opening of King 5. In the event that the remaining reserves are accessed from King 6 instead of King 4, the conveying and loading facilities will be reclaimed when they are no longer needed for King 5. Approval will be obtain on Table 5-3 summarizes the existing surface facilities in Middle Fork. Hiawatha Coal Company intends to re-open the King 5 portals to recover the remaining coal reserves in the "B" Seam. Additional coal reserves exist in the Middle Fork area which may be accessed for King 4 or King 6. Therefore, HCC will be using some of the existing surface facilities during the operational phase.

The King 5 portals in Middle Fork will be used to access the King 5 mine for men and supplies. Some initial coal may be extracted in Middle Fork to allow enough development to reach the King 3 development in South Fork. In addition, coal may be extracted from King 4.

To facilitate this, HCC will use the existing surface facilities, including, but not limited to, the bathhouse, parking lot, access areas, King 5 equipment building, substations and pads, water tank, bulk rock dust bin, fan, power and water lines, storage sheds, sewer system, switch buildings, and sediment pond. Coal conveying and loadout facilities will be needed for king 4 and the initial re-opening of King 5. In th eevent that the remaining reserves are accessed from King 6 instead of King 4, the conveying and loading facilities will be reclaimed when they are no longer needed for

King 5. Approval will be obtained from the Devision prior to any modification of the surface facilities.

HCC will use the remaining areas for equipment and supply storage. The existing timber and tire storage sites will not be used and will be reclaimed as described in R645-301-541.

The disturbed area for the Middle Fork mine facilities and storage areas is 14.8 acres. A plan for a portal breakout for intake air and an additional conveyor portal to the coal pile had been approved with the original plan, however, due to subsequent modifications made underground, these facilities were not required and are no longer proposed.

Table 5-3
Summary of Surface Facilities
Middle Fork Mine Yard

Facility	Date Constructed	Size
Middle Fork Mine Yard and Storage Areas		
Parking Lot	1974	2 Acres
Access Areas	1974	4 Acres
Coal Stockpile	1974	1 Acre
Sediment Pond	1980	3.62 Acres
Buildings and Structures		
Bath House - Warehouse	1974	12,000sqft
King 5 Equipment Building	1978	800 sq ft
King 5 Substation	1978	725 sq ft
Water Tank	1974	40,000sqft
Conveyor Structure (stacking tower & reclaim conveyor)	1974	200 ft
King 4 Switch Building	1975	378 sq ft
King 4 Switch Building (2)	1980	480 sq ft
King 5 Switch Building	1978	225 sq ft
King 4 Storage Shed	1976	256 sq ft
Bulk Rock Dust Bin	1975	100 Ton
King 4 Portals (back-filled)	1974	4
King 5 Portals (back-filled)	1978	3
Hiawatha Mine Portals	1909,1916	7
Utilities		
Main Power Line	1974	12 KV / 3
Water Lines	1974	2,500 ft
Sewer Lines	1974	2,685 ft
Drain Field	1974	2,685 ft
Haulage Facilities		
Haul Road	1974	30 ft x 3 miles

SOUTH FORK SURFACE FACILITIES

The South Fork mine yard was constructed in 1947 to facilitate the old King 3 mine. For almost 28 years, from 1948 to 1975, portals at this location supported operations in the King 1 and King 3 mines which were interconnected underground. During that time a pad and three prospect portals were developed on the B Seam outcrop approximately 150 feet above the bath house. These structures have not been disturbed or utilized in connection with mining since the enactment of SMCRA and are not considered to be subject to reclamation under the current permit. In the event these facilities are used, approval will first be obtained from the Division. Beginning in 1981 work was started on upgrading existing structures and construction of a new haulage portal to serve the projected King 6 mine. Old portals of the King 3 mine were rehabilitated and utilized for intake and return air systems. The existing bath house, shop, ventilation fan structure and sewer and water systems were upgraded to support the King 6 mine. A new truck loading facility was also constructed at this time. See Exhibits 5-7 and 5-8 for details of surface structures.

A 42 inch overland wire rope conveyor (now removed) extended from the mine mouth, approximately 2,100 feet down the South Fork canyon to a 5,000 ton coal stockpile. A cross section of the conveyor is shown on Exhibit 5-8. Trucks were loaded by a 42 inch reclaim conveyor extending from beneath the stockpile. Coal was trucked approximately 2.5 miles to the processing plant at Hiawatha.

Water was supplied to the South Fork facilities from a pipe extending through the intake air portal and pumped to a 40,000 gallon tank located up the canyon from the bathhouse. Remaining water

was piped down the canyon to a 130,000 gallon concrete in-ground tank. This water was used at Hiawatha for municipal and industrial purposes. Water conveyance devices for water storage facilities in the King 6 area are shown on Exhibit 5-15. A summary of U.S. Fuel's water rights is included in Chapter 7, Hydrology. A sewage line runs from the bathhouse to a septic tank located in the mine yard. From here it is piped to a drain field as shown on Exhibit 5-7.

The existing surface facilities are summarized in Table 5-4. HCC anticipates that all existing facilities will be needed in South Fork to service the King 6 mine, which will be re-opened. Approval will be obtained prior to the modification of the existing surface facilities.

Impact on the existing hydrologic balance is controlled by berms, diversion ditches and sedimentation ponds. Runoff from the mine yard is channeled to a sedimentation pond at the eastern end of the mine yard. Surface runoff from undisturbed areas is diverted away from disturbed areas. The volume of water retained is the surface runoff only since no water will be discharged from the King 6 mine. Diversion structures and a sedimentation pond also exist to control runoff from the truck loading facility. The access road from the bathhouse to the 40,000 gallon water tank is classified as an alternative sediment control area. See Appendix 5-8.

The disturbed area for the South Fork mine yard, including the sediment pond, conveyor route and water tank access road is 10.4 acres. The truck loading facility, including the coal stockpile, truck loop and sedimentation pond amounts to 3 disturbed acres. The haul road contains 12.3 disturbed acres.

After construction of the King 6 overland conveyor, truck loadout and sediment pond, U.S. Fuel

performed an interim revegetation program at this site. The revegetation activity was performed to establish a permanent and effective vegetation to reduce erosion and stabilize slopes. The program was carried out during October of 1982. Details of this interim revegetation is discussed in Chapter 3. No further disturbance is projected for the South Fork area during the term of this permit.

Table 5-4

SUMMARY OF SURFACE FACILITIES
SOUTH FORK MINE YARD

FACILITY	DATE CONSTRUCTED	SIZE	STATUS
Mine Yard and Storage Areas			
Parking Lot	1981	3.7 Acres	Exist
Equipment and Supply Storage	1981	5.0 Acres	Exist
Upper Sediment Pond	1979	3.75 AcFt	Exist
Lower Sediment Pond	1981	0.78 AcFt	Exist
Buildings and Structures			
Change House	About 1948	6,400 SqFt	Exist
Shop Building	About 1948	3,600 SqFt	Exist
Water Tank	About 1948	40,000 Gal	Exist
Main Substation	About 1948	500 SqFt	Exist
King 6 Mine Portals	1981	4 Openings	Sealed
Storage Shed	1979	1,100 SqFt	Exist
Truck Loading Facility	1982	3.0 Acres	Exist
Utilities			
Main Power Line	1981	2,500 Feet	Exist
Water Lines	1981	1,400 Feet	Exist
Sewer Lines	1981	935 Feet	Exist
Drain Field	1981	1,800 Feet	Exist
Haulage Facilities			
Upgraded Paved Haul Road	1981	30 Ft x 2.5 Miles	Exist
42 Inch Overland Conveyor	1982	2,100 Feet	Pads only

HIAWATHA PROCESSING PLANT AND WASTE DISPOSAL SITES

The town of Hiawatha was excluded from the permit area in OSM's Permit issued March 16, 1987. Therefore, the permit area only includes mine related boundaries.

The processing plant at Hiawatha was located north and east of the town on fee land. The processing plant was dismantled in 1992. In addition, many of the facilities associated with the plant were also reclaimed.

Many of the facilities in the processing plant area were removed contemporaneously with the ongoing activities. The carpenter shop, the resin plant and Tipple II were dismantled. The truck dump and tipple stockpiling conveyors were salvaged. Slurry Pond #4 was regraded, topsoiled and reseeded. The preparation plant was dismantled and the site regraded, topsoiled and reseeded. The main cell of Slurry Pond #5 (not including cell 5A) is currently being regraded and topsoiled.

The preparation plant was built in 1938. It had a capacity to wash, size and dry 400 tons of coal per hour. Initially, it produced seven different washed coal products. In addition, the slurry discharge from the plant was channeled through a resin recovery process where resin was extracted by cyclone separation technology. After the resin extraction, the slurry was discharged into the slurry ponds where it was allowed to dry and eventually sold. Waste rock or refuse derived from the coal washing process was stored in designated refuse piles and was also used to construct embankments for the slurry ponds. In earlier years, refuse material amounted to as much as 20 to 30 percent of the mine run coal. Later, the percentage of refuse generated was reduced

considerably due to better controls on mining underground. Also, and for the same reason, more unwashed coal was marketed directly. Table 5-5 gives a list of the processing plant major capital equipment and facilities.

HCC will continue to use the remaining surface facilities as needed. Slurry Ponds 1 and 5-A will continue to be used for runoff control. The upper rail storage yard will continue to be used for supply storage until no longer needed. Shops, bathhouse and warehouse facilities will continue to be used. Additional facilities, such as coal processing plants and storage site, will be required in the area. Prior to the modification of existing facilities or construction of new facilities, approval will be obtained from the Division.

Table 5-5

List of Major Capital Equipment And Hiawatha Coal Processing Plant Facilities

Yard Areas

Railroad Yards
Slurry Impoundments With Refuse Embankments
#1 - Actively removing dried pond fines
#4 - Regraded, topsoiled, reseeded
#5 Main Cell - Being regraded and topsoiled
5A - Used for sediment control
Refuse Piles
#1 - Idle
#2 - Regraded, topsoiled, reseeded
Five Sediment Ponds - Active
15,000 Ton Coal Stockpile Areas- Regraded, topsoiled, reseeded Haul Truck Maintenance Yard - Used for equipment storage

Buildings and Structures

400 Ton/Hr. Coal Processing Plant (Demolished)
480 Ton/Hr. Truck Unloading Facility (Demolished)
100 Ton/Hr. Fine Coal Recovery System (Demolished)
12,000 Kv Main Electrical Substation - Active
Resin Recovery Plant (Demolished)
Machine Shop
Carpenter Shop (Demolished)
Heavy Equipment Shop - Active
Warehouse Building

Mobile Equipment

3 - 15 Ton End Dump Trucks
2 - Euclid R-50 End Dump Trucks
2 - Caterpillar 988B Front End Loaders
1 - Caterpillar D6 Dozer
2 - Caterpillar D8 Dozers
1 - Caterpillar 14E Road Grader
1 - Michigan Scraper
1 - Case Backhoe/loader
1 - P&H 18 Ton Crane
1 - Mack Truck w/ Lowboy Trailer

Exhibit 5-9 shows the location of the coal processing waste disposal sites. These structures, which include three slurry impoundments and two refuse piles, have been assigned MSHA identification numbers and are constructed, modified and inspected in accordance with MSHA and DOGM regulations. Details of stability analysis, construction plans, fire extinguishing plans and inspection plans can be found in Appendices 5-1, 5-3, 5-4 and 5-5. Refuse pile No. 2 now occupies most of the site where old slurry ponds 2 and 3 formerly existed.

A 1.2 acre equipment and supply storage yard south of the mine office building is included as part of the disturbed area. HCC will utilize this area initially, but will reclaim the area when no longer needed. See Exhibit 5-9. This area is protected by existing sedimentation control structures.

Surface drainage from the yard, the town of Hiawatha and much of the Hiawatha preparation plant area is conveyed via overland flow and culverts to Slurry Pond #5, cell 5A. The remainder of the surface runoff (including the outer slopes of the slurry ponds and refuse stockpiles) is retained in sedimentation ponds or treated with alternative sediment controls. The alternative sediment control areas are identified on Exhibit 5-9 and in Appendix 5-8.

A few additions to the disturbed area have been created since this plan was first approved. These include an ancillary road between sediment pond D003 and the processing plant area, used when removing sediment from the pond, and a truck runaway road appended to the Middle Fork haul road. See Exhibits 5-6 and 5-9. The road serving sediment pond D003 was pre-existing, though not previously included in the disturbed area. The truck runaway road was also pre-existing but was modified during March, 1990. Plans for the runaway road are given in Appendix 5-9.

Water for industrial use at Hiawatha has been supplied by a variable diameter (6" minimum) water line extending from the Mohrland mine portal along the Utah Railway right-of-way to

Hiawatha. This pipeline can carry up to 1000 gallons per minute, depending on seasonal influences.

The sanitary sewer system at Hiawatha is old. It consists of a collection system with a few manholes and a septic tank - evaporation lagoon disposal system. No mining operation liquid wastes were discharged into the sanitary sewer system.

The general area of the processing plant, tracks and yards have been used by the mining operation since the early 1900's and all of it has been impacted. No topsoil materials were saved from this general area prior to disturbance, however, substitute topsoil materials are available. These are discussed in Chapter 2.

UTILITY INSTALLATIONS AND SUPPORT FACILITIES

Utility right-of-ways exist for the Utah Railway tracks and yards, Utah Power and Light high voltage power lines and transformer substations, and U.S. West buried telephone lines. Other utilities (such as sewer and water lines) were operated and maintained by U.S. Fuel Company. No oil, gas, or water wells or oil or gas pipelines exist in the permit area. All coal mining and reclamation operations will be conducted in a manner which minimizes damage, destruction or disruption of services provided by oil, gas and water wells; oil, gas, and coal-slurry pipelines, railroads; electric and telephone lines; and water and sewage lines which pass over, under, or through the permit area, unless otherwise approved by the owner of those facilities and/or the Division.

The Mohrland pipeline extends approximately 4 miles along the Utah Railway right of way. It stretches from the Mohrland portal to Hiawatha and initially was a support facility maintained by

U.S. Fuel. A permit change application for upgrading a section of the pipeline near Mohrland was approved in 1988. This application involved the installation of 660 feet of new 10 inch steel pipe adjacent to an older damaged section of pipe. See Appendix 5-11. After the demolition of the preparation plant, the pipeline was no longer considered a support facility, but continued to supply water for the town, U. S. Fuel and downstream irrigators on Miller Creek.

R645-301-527 TRANSPORTATION FACILITIES

Transportation facilities in the form of railroads, vehicle roads and overland conveyor systems are utilized within the permit area. These will be discussed separately below.

RAILROAD CORRIDORS

The Utah Railway Company owns and maintains railroad corridors and yards in the vicinity of Hiawatha. The main right-of-way includes multiple tracks and a wide siding which is ideal for stockpiling and loading coal into railcars. The railroad has allowed various coal companies, including U. S. Fuel, to utilize these facilities as a stockpiling and loading point for their coal. The Utah Railway right-of-way is not included as part of ~~U.S. Fuel's~~ Hiawatha's disturbed area. Regardless, due to its location much of the runoff from the rail yard reports to Slurry Pond 5, cell 5A. See Exhibit 7-18A. The railroad spur from the processing plant to the upper railroad yard, as shown on Exhibits 5-6 and 5-9, is owned by ANR and maintained by Hiawatha Coal Company.

PRIMARY ROADS

The Middle Fork and South Fork haul roads are primary roads constructed prior to the Surface Mining Control and Reclamation Act. They provide access, supply and production haulage support for the King 4, 5 and 6 mines. The Middle Fork road, constructed in 1974-75, is approximately 3 miles long, beginning at the truck unloading facility at the preparation plant and terminating at the King 4 mine yard. The South Fork road was constructed in the late 1940's. It is approximately 2.5 miles long and extends from the junction with the Middle Fork road to the King 6 mine yard. Exhibits 5-6 and 5-8 show the overall configuration of the roads along with typical cross sections and drainage structures. Cut and fill specifications do not exist but are fairly well revealed by surface contour lines. Also, grades can be readily determined for any section of the roads by surface contours. A Road Drainage and Erosion Control Plan for the Middle Fork road was submitted to the Division in response to Nov. N84-4-8-8, No. 8 of 8 on December 14, 1984. This plan, which addressed roadside ditch characteristics, culvert spacing, protection of culvert outlets and check dam installations was approved and implemented during the summer of 1985. Justifications, calculations, design specifications and approvals are given in Appendix 5-13.

A truck runaway spur to the Middle Fork road, shown on Exhibit 5-6 in the vicinity of the Upper Railroad Yard, was modified and upgraded in March, 1990. Details of the modifications are given in Appendix 5-9. State Highway 122, which terminates at the Utah Railway crossing in Hiawatha, is patrolled and maintained by the State of Utah.

Hiawatha Coal Company currently leases a parcel of ground (about 5 acres)from Utah Railway. There is a gravel road on the Utah Railway property that extends onto this parcel and, as a result, HCC's permit area. The road begins near the intersection of Highway 122 and the Utah

Railway's main line and extends to another crossing near the junction of Slurry Pond #1 and Refuse Pile #1. About midway, it intersects with a truck route that goes by the preparation plant site and the old railroad depot. The portion of this road that is on Utah Railway property will be retained and utilized by Utah Railway after completion of final reclamation.

Another primary road from the heavy equipment shop to the railroad crossing near the junction of Slurry Pond #1 and Refuse Pile #1 can be seen on Exhibit 5-9A. This road is used by equipment traveling to slurry ponds #4 and #5 and for hauling coal fines to the railroad siding for future loading. The road from the post office to the town of Hiawatha is also classified as a primary road. This road allows access to the mine site from the town of Hiawatha and provides access to the shop and warehouse buildings.

The North Fork jeep road is currently used by HCC very infrequently to inspect a water diversion, site reclamation and hydrologic structures near the North Fork ventilation portal. It is shown on Exhibit 7-19. This road is pre-SMCRA and was probably first constructed as a wagon road to access timber resources in the canyon around the turn of the century. In 1981, when a ventilation portal was constructed in the left fork of North Fork, this road was upgraded by installing water bars at numerous locations and by constructing gravel fords where the road crosses the stream channel below the vent portal and at the junction of the left and right forks of North Fork.

This road will be used for timbering, livestock and wildlife management after completion of mining. To facilitate the post-mining land use, culverts will be placed in the stream fords to minimize impacts to the water quality. Designs for these culverts are shown in Appendix 7-19.

ANCILLARY ROADS

A pre-existing road between sediment pond D003 and the preparation plant area was recently included in the preparation plant disturbed area and classified as an ancillary road when it was used by mining equipment to clean out the sediment pond. This road can be seen on Exhibit 5-9.

Access roads to water tanks above the Middle Fork and South Fork mine yards are classified as ancillary roads. They are also classified as alternate sediment control areas as detailed in Appendix 5-8.

ROAD MAINTENANCE PLAN

Erosion control devices and drainage systems will be cleaned and repaired once a year, in the spring, and as needed throughout the year. Also, revegetating, brush removal and watering for dust control will be performed as needed. Due to the insignificant current amount of traffic, other road maintenance will be minimized until the mines reopen. At that time, the primary road maintenance will include repairs to the road surface such as blading, minor reconstruction, filling of potholes and replacement of gravel or asphalt on an as-needed basis.

The North Fork road is basically a pre-SMCRA timber and cattle road that sees minimal traffic. U. S. Fuel made some minor improvements when the portal was constructed. Although no formal design criteria has been developed, it has existed for over 60 years pretty much as is. This road will be upgraded to support the post-mining land use which includes recreation and timbering. Maintenance should then continue at its historical level, which is an annual grading to reestablish

drainage, move boulders or timber which block the path and replace culverts as needed.

Primary roads damaged by catastrophic events such as floods or earth quakes will not be used until reconstruction of damaged road elements. The reconstruction will be completed as soon as practicable after the damage has occurred.

Ancillary road maintenance will be performed as needed to ensure minimization of erosion for the life of the road. Ancillary roads will not be used if climatic conditions are such that usage may cause degradation of water quality.

OVERLAND CONVEYOR SYSTEMS

Overland conveyors were used in Middle Fork and South Fork to convey coal from mine portals to truck loading facilities. Although most of these structures have been removed, the conveyor corridors are still contained within the disturbed areas of the mine yards and related sediment control structures.

R645-301-528 HANDLING AND DISPOSAL OF COAL, OVERBURDEN, EXCESS SPOIL AND COAL MINE WASTE

528.100 COAL REMOVAL, HANDLING, STORAGE, CLEANING AND TRANSPORTATION AREAS AND STRUCTURES

Coal removal, handling, storage, cleaning and transportation areas and structures are discussed under R645-301-523 (Mining Methods) and R645-301-526 (Mine Facilities).

528.200 OVERBURDEN

Overburden was removed from areas in the vicinity of mine portals and used in the construction of pads for surface facilities, mostly prior to the Coal Mining and Reclamation Act. This material remains in place adjacent to the areas from which it was removed and will be utilized to reshape slopes during final reclamation as discussed in R645-301-540 (Reclamation Plan). HCC commits to not removing any additional overburden without first submitting a plan and receiving the Division's approval.

528.310 EXCESS SPOIL

No spoil material, generated during construction of pads and yards in the permit area, has been deposited in areas other than adjacent to the location from which it was derived. Material existing in pads and yards will be utilized to achieve the approximate original contour of regraded surfaces during final reclamation. No excess spoil is proposed to be

generated during the term of this permit. HCC commits to not conduct any activities that could generate excess spoil unless a plan is submitted and approval granted by the Division.

528.320 COAL MINE WASTE

Fine refuse from the preparation plant is stored in slurry ponds. Some of the fines, once dried, are sold to available markets. The coarse refuse is stored in refuse piles and slurry pond embankments according to approved plans and procedures discussed under R645-301-513 (Compliance With MSHA Regulations and Approvals). The majority of underground development waste generated by mining operations was disposed of in mined areas underground. Occasionally small amounts of underground development waste were brought out of the mine during roadway clean up operations. This material was temporarily stored at designated sites in the mine yards and later disposed of in refuse piles along with coal processing waste.

528.321 RETURN OF COAL PROCESSING WASTE TO ABANDONED UNDERGROUND MINES

No coal processing waste has been, or is proposed to be, disposed of in underground mine workings. No coal processing waste will be disposed of in underground mine workings without the express approval of the Division and MSHA.

528.322 REFUSE PILES

One refuse pile exists near the Hiawatha processing plant. It is Refuse Pile No.1, MSHA I.D. No. 1211-UT-09-02157-04. It is shown on Exhibit 5-9.

Refuse pile No. 1 was first established in the early 1940's and has been utilized intermittently to the present date. The refuse consists of coarse fragments of siltstone, sandstone and shale with adhering coal and carbonaceous material. The refuse was deposited by end dump trucks and allowed to form a progressing mound, the configuration of which was modified from time to time by dozing. See Appendix 5-3.

Refuse pile No. 2 was approved for use by MSHA in February 1987 and by DOGM in November 1987. This pile has been contemporaneously reclaimed to the point of reseeding, and has been taken off of MSHA's files.

Refuse deposited in the piles consists of the same type of material used to construct slurry pond embankments. It is not acid or toxic forming. The physical and chemical characteristics of the refuse is described in detail under R645-301-230 in Chapter 2 (Soils). Small amounts of mine development waste derived from occasional roof falls on roadways underground may have also been deposited on the piles. The pile is inspected and certified quarterly as required by the Division and annually as required by MSHA. Surface runoff from the pile is contained within the disturbed areas by a sediment pond.

528.323 BURNING AND BURNED WASTE UTILIZATION

Coal mine waste fires are extinguished as outlined in an approved plan given in Appendix 5-4.

528.330 NONCOAL MINE WASTE

Several temporary storage sites for non-coal mine waste have been established. These are shown on Exhibits 5-6, 5-7 and 5-9 and discussed in Appendix 5-10. These sites are utilized primarily for large items. Garbage, combustible material and smaller items of non-coal waste are stored in a controlled manner in metal dumpsters strategically located throughout the permit area near points where waste is generated. The dumpsters are regularly transported to a State approved landfill by a disposal contractor.

Fuel storage tanks (exceeding 500 gallons) are located near the equipment maintenance shop (Exhibit 5-9). One 10,000 gallon diesel and a 500 gallon unleaded gas tank are located inside a concrete storage structure designed for total containment of the tank contents. This site is covered in U.S. Fuel's SPCC plan which is on file in the engineering office.

528.340 UNDERGROUND DEVELOPMENT WASTE

Based on U.S. Fuel's past mining history there has been only minimal amounts of underground development waste produced. This waste has been associated with the development of portal entries or vent shafts and in each case the waste has been used in

the construction of pads at the portal sites or used within the mine to fill low areas. ~~U.S. Fuel~~ HCC is not proposing any new underground development which would result in disposing of significant amounts of underground development waste on the surface. Occasionally small amounts of rock may have been brought out of the mine in connection with clean up of roof falls along roadways near the portals. This rock was temporarily stored in the mine yards at approved locations shown on Exhibits 5-5 and 5-7 and ultimately disposed of in refuse piles near the preparation plant. This material is not toxic, hazardous or acid producing. The refuse piles were constructed by depositing refuse in two foot maximum lifts and compacting it to preclude sustained combustion.

528.400 DAMS, EMBANKMENTS AND OTHER IMPOUNDMENTS

Two active slurry impoundments currently exist in the permit area. They are identified on Exhibit 5-9 and are listed below with their MSHA identification numbers:

Slurry Pond No.1 1211-UT-09-02157-01

Slurry Pond No.5 1211-UT-09-02157-03

These ponds were utilized as evaporative ponds associated with the preparation plant. A slurry composed of water and coal fines (-28 mesh) was piped and ditched to the slurry ponds. After the water evaporated, the coal fines were recovered and the slurry pond reused.

At the time the preparation plant was salvaged, the ponds were almost completely full of coal fines. The decision was made at that point to begin final reclamation of #4 Slurry

Pond while marketing the coal fines in the main cell of #5 Slurry Pond. As a result, #4 Slurry Pond was regraded, topsoiled and reseeded. Concurrently, the main cell of Slurry Pond #5 was almost completely emptied of pond fines, regraded and partially topsoiled. Now, pond fines are being recovered from Slurry Pond #1. Unless a need arises for the disturbed acreage associated with Slurry Pond #1, it will be reclaimed after the recovery of the pond fines is completed.

In addition to being evaporative ponds, the slurry ponds were also used as sewage containment areas and, after SMCRA, sediment ponds. Although they are no longer used for sewage containment, it is important that one pond remain for sediment control of the Hiawatha area. Currently, all the surface runoff that has historically reported to the slurry ponds is going to Cell 5A of Slurry Pond #5. Therefore, cell 5A is expected to be one of the last structures to be reclaimed.

Because of their continual state of change, the topographic contours of ponds #1 and 5A as depicted on Exhibit 5-9 may not reflect the exact amount of slurry contained in the pond. However, Exhibit 5-9 accurately depicts the size and location of each of the ponds.

Slurry Pond #3 no longer exists and only the north east portion of the embankment of pond 2 remains. Refuse pile No. 2 was constructed over most of ponds 2 and 3.
Active slurry ponds are inspected weekly in accordance with 30 CFR 77.216-3 and R645-301-514.320. Inspections are made by a specialist experienced in the construction of impoundments and as outlined in the Inspection and Correction of Hazardous

Conditions Plan in Appendix 5-5. An annual report describing any changes in the geometry and configuration of the impoundments and including certification by a registered engineer is submitted to MSHA and the Division.

Plans for slurry pond foundation preparation and construction as well as geotechnical investigations, stability determinations and approval letters are given in Appendix 5-1. A fire extinguishing plan is given in Appendix 5-4.

An underground reservoir in the Hiawatha No. 2 mine in Middle Fork can be used as a municipal and industrial water supply for the mines and Hiawatha. See Exhibits 5-15 and 5-16. Plans for continued use of this reservoir, including a hazard assessment, structural analysis and field test data were reviewed by MSHA and OSM. Condition No. 4 of OSM's March, 1987 permit document specified that U.S. Fuel submit a plan to the Division for physical inspection of each seal impounding the reservoir and a contingency plan to be implemented if inspections identify a possibility of failure. These plans and approvals are given in Appendix 5-2. When the reservoir is in use, inspections are conducted by a qualified specialist experienced in impoundment stability.

Slurry Ponds 1 and 5 as well as the underground reservoir in the Hiawatha No. 2 mine are pre-SMCRA structures and are not required to meet the design standards. OSM, in its Technical Review of Sept., 1985 makes the following statement regarding Hiawatha's pre-SMCRA structures: "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".

Eight sediment ponds, all smaller than the MSHA minimum size requirement of 30 CFR 77.216 (a), are strategically located throughout the permit area to contain runoff from disturbed areas. The ponds and related diversion structures are shown on Exhibits 7-18A through 7-18D. As built details of each pond as well as preliminary design specifications, certifications and approvals can be found in Chapter 7 (Hydrology). All sediment ponds are inspected for structural weakness and hazardous conditions on a quarterly basis as required by R645-301-514.330.

Six small catch basins associated with sites approved for alternative sediment control structures exist in the vicinity of the Hiawatha preparation plant and refuse disposal area. These impoundments are shown on Exhibit 7-18A through 7-18D.

R645-301-529 MANAGEMENT OF MINE OPENINGS

Upon final reclamation, all post-SMCRA mine openings, bore holes, wells and other openings will be capped, sealed or backfilled in such a way as to prevent access by people, livestock, machinery, fish and wildlife and to prevent acid or toxic drainage from entering ground or surface waters. Mine openings will be sealed by backfilling as shown in Figure 5-9.

Past monitoring has shown that mine water discharges are of good quality. No acid or toxic drainage has been detected. Mine water has been used for culinary purposes at Hiawatha for many years, therefore, it may be desirable to allow mine water to be piped through seals in some

cases.

In the past, exploration bore holes have been sealed according to a plan recommended by the U.S.G.S., whereby multiple coal beds are cemented from the bottom of the hole to a point 50 feet above the highest coal bed that is 4 feet or greater in thickness. The hole collar is plugged with 5 feet of concrete. This same method will be used for future boreholes unless they are approved for water monitoring.

All post-SMCRA openings to mines which have been permanently closed or abandoned and are not needed for monitoring purposes have been sealed. Openings to mines which have not been permanently closed or abandoned are temporarily sealed, adequately fenced or posted with conspicuous signs prohibiting the entrance of unauthorized persons.

The status of mines and mine openings as they relate to enactment of the Surface Mining Control and Reclamation Act are identified in Table 5-8.

R645-301-530 OPERATIONAL DESIGN CRITERIA AND PLANS

R645-301-531 GENERAL

General plans for sediment ponds are given in Appendices 7-3 and 7-4 and detailed on Exhibits 7-4 through 7-11. Plans for water impoundments are given in Appendices 5-1, 5-2, 7-3 and 7-4 and on Exhibits 5-15 through 5-17 and 7-8 through 7-18. Plans for coal processing waste banks and embankments are given in Appendices 5-1 and 5-3 and identified on Exhibits 5-6, 5-7 and 5-9. All of the above structures are well outside the

zone of potential subsidence effects of past or future underground mining.

R645-301-532 SEDIMENT CONTROL

Sediment control for each specific disturbed area is discussed and referenced under R645-301-526, (Mine Facilities) and R645-301-732 (Sediment Control Measures).

532.100 See 532 above

532.200 See R645-301-532

R645-301-533 IMPOUNDMENTS

533.100 See R645-301-528.400 (Dams, Embankments and Other Impoundments).

533.200 See R645-301-528.400 (Dams, Embankments and Other Impoundments).

533.210 See R645-301-528.400 (Dams, Embankments and Other Impoundments).

533.220 See R645-301-528.400 (Dams, Embankments and Other Impoundments).

533.300 See R645-301-528.400 (Dams, Embankments and Other Impoundments).

533.400 See R645-301-528.400 (Dams, Embankments and Other Impoundments).

533.500 See R645-301-528.400 (Dams, Embankments and Other Impoundments).

Table 5 - 6
SMCRA STATUS OF MINES AND MINE OPENINGS

Mine	Location	Mine Status	Portals	Portal Status
King No. 1	South of Hiawatha	Pre-SMCRA	(1) Return Air	Pre-SMCRA
(Old Blackhawk Mine)			(1) Haulage	Pre-SMCRA
			(1) Intake Air	Pre-SMCRA
King No. 2	Mohrland	Pre-SMCRA	(1) Return Air	Pre-SMCRA
(Old Mohrland Mine)			(1) Intake Air	Pre-SMCRA
			(1) Haulage	Pre-SMCRA
			(1) Manway	Pre-SMCRA
			(2) Prospects	Pre-SMCRA
King No. 3	South Fork	Pre-SMCRA	(3) Return Air	Post-SMCRA
(Incorporated with King No. 6 Mine)			(4) Intake Air	Post-SMCRA
King No. 3 A & B Seam Prospects	South Fork	Pre-SMCRA	(6) Prospects	Pre-SMCRA
King No. 4	Middle Fork	Post-SMCRA	(2) Intake Air	Post-SMCRA
			(1) Return Air	Post-SMCRA
			(1) Haulage	Post-SMCRA
	North Fork		(1) Intake Air	Post-SMCRA
King No. 5	Middle Fork	Post-SMCRA	(1) Intake Air	Post-SMCRA
			(1) Return Air	Post-SMCRA
			(1) Haulage	Post-SMCRA
	South Fork		(1) Intake Air	Post-SMCRA
King No. 6 (Also Includes King No. 3 Portals)	South Fork	Post-SMCRA	(1) Haulage	Post-SMCRA
Hiawatha No. 1	Middle Fork	Pre-SMCRA	(1) Intake Air	Pre-SMCRA
			(1) Return Air	Pre-SMCRA
			(1) Haulage	Pre-SMCRA
Hiawatha No. 2	Middle Fork	Pre-SMCRA	(1) Intake Air	Post-SMCRA
			(1) Return Air	Pre-SMCRA
			(1) Haulage	Pre-SMCRA
			(1) Manway	Post-SMCRA

533.600 See R645-301-528.400 (Dams, Embankments and Other Impoundments).

533.610 See R645-301-528.400 (Dams, Embankments and Other Impoundments).

533.620 See R645-301-528.400 (Dams, Embankments and Other Impoundments).

533.700 See R645-301-733 (Impoundments).

R645-301-534 ROADS

534.100 See R645-301-527 (Transportation Facilities).

534.110 See R645-301-527 (Transportation Facilities).

534.120 See R645-301-527 (Transportation Facilities).

534.130 See R645-301-527 (Transportation Facilities).

534.140 See R645-301-240 under Reclamation of the roads.

534.150 See R645-301-527 (Transportation Facilities).

534.200 See R645-301-527 (Transportation Facilities).

534.300 See R645-301-527 (Transportation Facilities).

534.310 See R645-301-527 (Transportation Facilities).

534.320 See R645-301-527 (Transportation Facilities).

534.330 See R645-301-527 (Transportation Facilities).

534.340 See R645-301-527 (Transportation Facilities).

R645-301-535 SPOIL

535.100 See R645-301-514.100 and 528.310 (Excess Spoil).

535.110 See R645-301-514.100 and 528.310 (Excess Spoil).

535.111 See R645-301-514.100 and 528.310 (Excess Spoil).

535.112 See R645-301-514.100 and 528.310 (Excess Spoil).

535.113 See R645-301-514.100 and 528.310 (Excess Spoil).

535.120 See R645-301-513.300 (Underground Development Waste, Coal Processing Waste and Excess Spoil).

535.130 See R645-301-514.100 and 528.310 (Excess Spoil).

535.140 through 535.444 Does not apply.

535.500 See R645-301-514.100 and 528.310 (Excess Spoil).

R645-301-536 COAL MINE WASTE

536.100 See R645-301-513.100, 513.400, 514.200, 528.320 and 528.322.

536.110 See 528.322 (Refuse Piles).

536.120 See 528.322 (Refuse Piles).

536.200 See 528.322 (Refuse Piles).

536.210 See 528.322 (Refuse Piles).

536.220 See 528.322 (Refuse Piles).

536.230 See 528.322 (Refuse Piles).

536.300 All coal mine waste will be disposed of in refuse piles.

536.310 See 536.300.

536.320 See 536.300.

536.330 See 536.300.

536.400 See 536.300.

536.410 See 536.300.

536.420 See 536.300.

536.500 See 536.300.

536.510 No coal mine waste from activities outside the permit area will be disposed of in the permit area without Division Approval. The Division approved U. S. Fuel to accept coal mine waste hauled from Mohrland as part of an Abandoned Mine Lands project. The details of the coal mine waste and disposal is discussed in Appendix 5-16.

536.520 See R645-301-513.300

536.600 See R645-301-528.340

536.700 See R645-301-513.300

536.800 See R645-301-513, 513.200, 513.400, 514.200, 514.300, 515.200, 528.322, 528.322, 528.340 and 528.400.

536.820 See R645-301-528.322 and 528.400.

536.821 See R645-301-528.322 and 538.400.

536.822 See R645-301-528.322 and 538.400.

536.823 See R645-301-528.322 and 538.400.

536.824 See R645-301-528.322 and 538.400.

536.900 See R645-301-528.322.

R645-301-537 REGRADED SLOPES

537.100 No alternative specifications are proposed.

537.200 As provided by this rule, HCC will not restore the canyon access roads to approximate original contour. Justification is given in rules 537.210 through 537.250 below and in R645-302-270 addressed in Appendix 4-7 of Chapter 4.

537.210 The settled and revegetated fills comprising the access road grades and outslopes consist of natural material derived from the immediate location of the roads.

537.220 The spoil associated with the roads has not been located so as to be detrimental to the environment, to the health and safety of the public or to the proposed postmining land use.

537.230 Stability of the existing road grades and outslopes has been demonstrated to be consistent with back filling and grading requirements as evidenced by twenty to forty-five years of continual use without any signs of instability. OSM makes the following statement regarding performance standards in their 1985 Technical Review of the permit application "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.

537.240 The reclaimed surface of the roads will be vegetated according to R645-301-356 and 357 (see Chapter 3). Surface runoff will be controlled in accordance with R645-301-742.300 since existing approved runoff control structures are proposed to be left in place.

537.250 No response required by operator.

R645-301-540 RECLAMATION PLAN

R645-301-541 GENERAL

Hiawatha Coal Company presently has operations at several different sites near Hiawatha, Utah. Due to the complexity of operations, five separate areas of reclamation will be discussed in this section. These areas (identified on Exhibit 4-5 in Chapter 4) including their associated yards, structures and access roads are referenced as follows:

Hiawatha Coal Company~~U.S. Fuel Company~~ Permit Area Reclamation Sites

1. North (Right) Fork of Miller Creek Surface Facilities
2. Middle Fork of Miller Creek Surface Facilities
3. South (Left) Fork of Miller Creek Surface Facilities
4. Hiawatha Processing Plant and Waste Disposal Sites
5. Substitute Topsoil Borrow Sites

Rules R645-301-540 through 560 are addressed or referenced in this Reclamation Plan, however, due to the number of sites involved, no attempt will be made to itemize each rule for each individual site. Some procedures will be the same for all locations while others will vary from site to site, therefore, this narrative will discuss both general and site specific reclamation operations.

Some of the structures and facilities have been and are being reclaimed contemporaneously with the ongoing operations. The remaining structures and facilities at the mine sites will be needed if the underground mines reopen. However, without the preparation plant, the slurry ponds should not be needed for future underground mining operations, except for cell 5A which is providing sediment control. Therefore, much of the recent work on the property has been centered around the reclamation of the slurry ponds. First, Slurry Pond #4 was regraded, topsoiled and reseeded. While Slurry Pond #4 was being reclaimed, the coal fines in the main cell of Slurry Pond #5 were being recovered. When the recovery of pond fines in Slurry Pond #5 was completed, U. S. Fuel began recovering coal fines from Slurry Pond #1 simultaneous with the regrading of Slurry Pond #5. This sequence is expected to continue. The coal fines in Slurry Pond #1 will be recovered while Slurry Pond #5 is being topsoiled and reseeded. Then, unless a need arises for the disturbed acreage associated with Slurry Pond #1, it will be regraded, topsoiled and reseeded after the recovery of its pond fines.

The regrading of each level area during final reclamation of any portion of the permit area will be done using material from the fill portions of the various sites and any excess cut material which has been stockpiled. This material will be generally pushed back against the cut areas from where it originally came until the level areas have been eliminated and there is no discernable break in slope. Fill material will be recompacted to 90 percent maximum dry density (AASHTO T99-74 or equal) in lifts no thicker than 2 feet to provide for positive stability. The final lift will not be compacted to allow for root and water penetration. The surface of the final compacted lifts will not be smooth, but irregular to key in and hold the final layer of fill onto the slope. The final layer will subsequently be furrowed and scarified along the contour prior to placing the topsoil or substitute topsoil. The slope of the regraded surface will be varied to approximate drainages that

existed prior to initial disturbance. Generally all regraded areas will have slopes of 2h:1v or less. For areas where fill heights exceed 10 feet the new fill areas will be keyed into the underlying level area.

Upon final reclamation, all abandoned mine openings, bore holes, wells and other openings will be capped, sealed or backfilled in such a way as to prevent access by people, livestock, machinery, fish and wildlife and to prevent acid or toxic drainage from entering ground or surface waters. Mine openings will be sealed by backfilling as shown in Figure 5-3.

Four seed mixtures intended for revegetation of specific reclamation situations are provided in Tables 3-5, 3-6, 3-7, and 3-8 of the discussion of R645-301-331 in Chapter 3. These are for reclamation of (1) the borrow areas, (2) the areas affected by coal refuse and other coal materials, (3) the mine pads, approaches, and other similar areas in South, Middle, and North Fork, and (4) riparian areas. Mixture Nos. 1 and 2 include nursery grown stock for shrubs. Mixture Nos. 3 and 4 include nursery grown stock for both trees and shrubs. The primary post-mining land uses that reclamation will attempt to provide for are wildlife habitat, forestry and cattle grazing.

Due to the historical contribution of the railway corridor (See Appendix 4-8), this area will not be regraded, but will remain in place. This is currently subject to the application and approval of an alternate post-mining land use of a historical district.

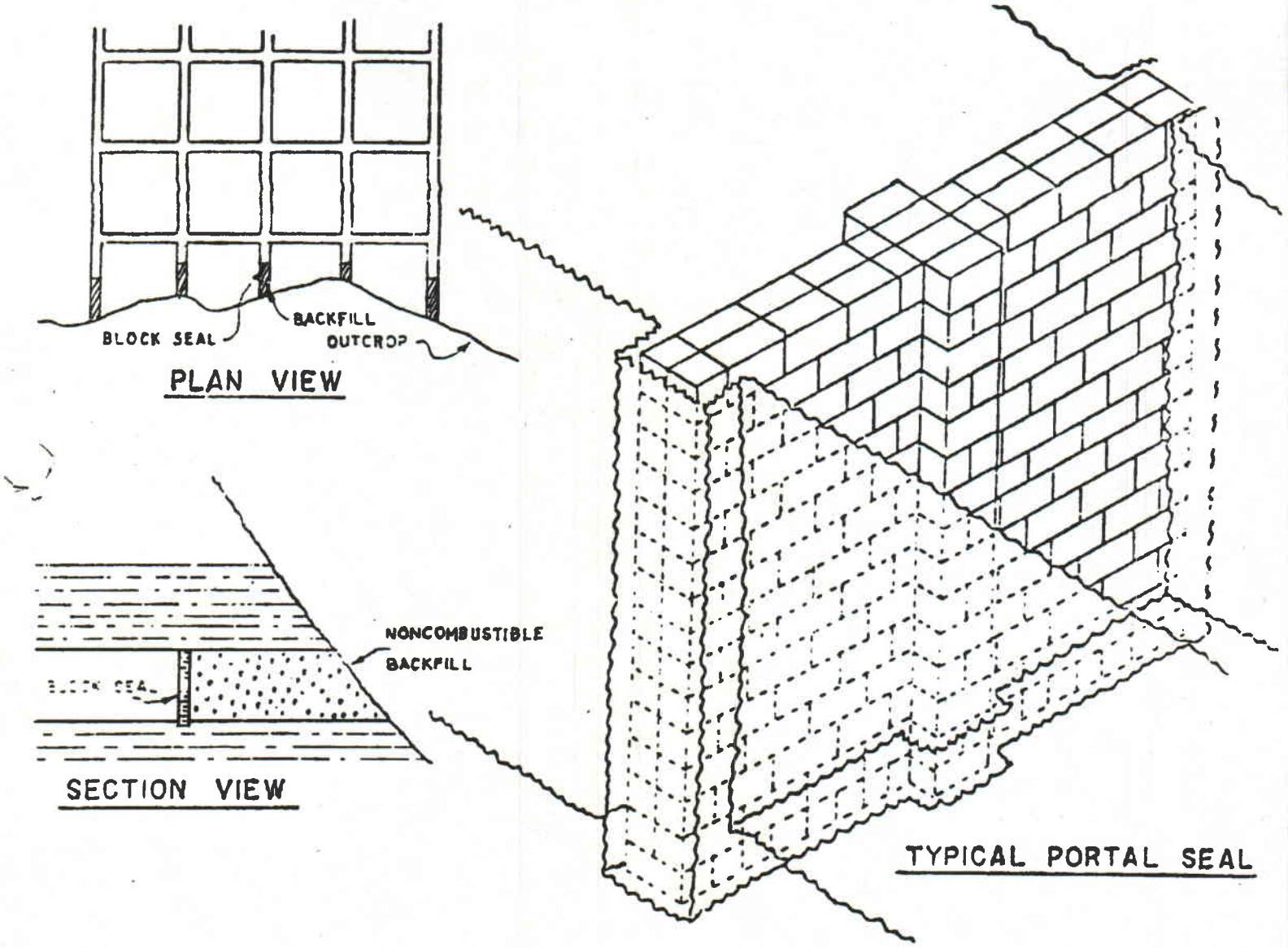
The North, Middle and South Fork roads, and the road from the heavy equipment shop to

Highway 122 will remain in place to facilitate the post-mining land uses. The remaining roads will be reclaimed. Reclaimed roads will be regraded as necessary to promote upstream drainage through down-gradient locations, ripped, surface material removed if existing, and planting done according to the procedures described with seed mixture No. 3 as may be modified by the results of field trial tests conducted as described in Chapter 3. Revegetation will achieve the necessary standards provided by the appropriate reference areas except that forage values will be enhanced at the expense of undesirable shrub density as explained in the rationale accompanying the discussion of field trial test plot studies in Chapter 3.

Planting techniques will include broadcasting by hand, using portable spreaders, hydroseeding and/or drill seeding. Where hydroseeding is used, the fertilizer and mulch will be applied separately from the seed. Nursery stock will be planted in clumped arrangements in areas that are to receive trees or shrubs (portions of the mine pads and riparian areas). The intended plant densities and seeding rates are provided in the seed mix tables (Tables 3-3 to 3-6). Revegetation success will be measured during monitoring studies conducted after reclamation is complete. Reference areas will be compared in these studies.

Figure 5-3

Mine Opening Backfill Plan



NORTH FORK RECLAMATION

The intake ventilation portal in North Fork was constructed in 1979-80 for the King 4 mine. Trees and large brush were cleared from the site before topsoil was removed. Topsoil was salvaged and redistributed on the regraded slopes after completion of the portal. Following the topsoil redistribution, the site was seeded to protect against erosion. A list of the seed mix applied, as recommended by the Division, is included in Appendix 5-7 along with the plan approval by DOGM and OSM.

This site was regraded in the fall of 1993. First, the portal was back-filled with twenty-five feet of incombustible fill dirt. Then, a Caterpillar D-6 dozer was used to cut soil from an area just northeast of the portal and layer it over the exposed structure. The ground was prepared and the area was then reseeded. No other work has been done in the area except for minor repairs to the silt fencing. Once vegetation is established adequately, the alternative sediment controls will be removed. The post-mining contours and cross sections for the North Fork portal area are shown on Exhibit 5-4.

A stream diversion, constructed in 1951, is located approximately 1/4 mile downstream from the King 4 ventilation portal. Water from this diversion is piped approximately 2,100 feet further downstream to an old ventilation opening in the Hiawatha No. 2 mine. The ventilation opening is inaccessible due to natural caving of the portal over time. During final reclamation, those portions of the pipeline exposed on the surface will be removed and disposed of. Buried pipe will be left in place and will be capped by welding steel plates on both ends. The diversion structure and catch basin will be reclaimed by removing all man-made objects from the stream, with the spillway and catch basin remaining as-is.

Only a small portal opening, approximately 2' x 2', exists for entry of the pipeline into the Hiawatha No. 2 mine. The portal has already been backfilled by caved material, preventing access. No coal outcrop is exposed which is associated with the highwall, and vegetation has already been established on the highwall and contiguous areas. The pipeline will be removed and the small opening will be sealed and backfilled over a minimum of two feet using in situ material immediately West of the portal as backfill and topsoil. Since access with equipment is restricted and available reclamation material is limited, the work will be done by hand, with the upper portion of the highwall remaining. Since the upper portion of the highwall blends in with the adjacent cut banks in the canyon, the current configuration is restored to approximate original contour. The regraded areas will be seeded. Figure 5-3 shows a typical cross-section of a backfilled portal.

The pipeline corridor will not require regrading, but will be spot seeded where needed to establish vegetation. Two areas exist where the slope below the cut appears to be unstable. These areas will have excelsior erosion control matting placed on them following seeding. This will aid in soil stability until the vegetation is established.

The North Fork road will be left in place to facilitate the wildlife, timbering, and recreation post-mining land uses. As shown in Figure 4-1, it is the intent of the property owner to extend the existing road up the canyon. This will allow additional access for timbering and wildlife habitat enhancement in accordance with the proposed wildlife management plan for the wildlife management unit, of which the Hiawatha area is a part. Appendix 7-19 shows the permanent designs for the culverts along the North Fork road.

Middle Fork Reclamation

Mining in Middle Fork Canyon had commenced in the early 1900's. Surface areas related to mining in King 4 and King 5 were disturbed prior to the Surface Mining Control and Reclamation Act, therefore, no topsoil was removed and stockpiled for future reclamation. At the time of reclamation, substitute topsoil material from the pad itself will be salvaged. Surface structures will be removed and the foundations backfilled. Compacted topsoil will be scarified before revegetating. Highwalls connected with portals, embankments and benches will be terraced in the form of highwall slope reduction to control erosion. Portals will be back filled and graded to prevent access.

Proposed post-mining grading plans for the Middle Fork area are shown on Exhibit 5-11. No contour maps which show predisturbance surface configuration are available for this area, therefore, the proposed final surface configuration was developed to provide a balanced cut and till situation and configuration similar to other canyons in the area. A shrink factor of 5 percent was used in balancing the cut and fills.

Calculations for the earthwork volumes are based on the cross-sections shown on Exhibit 5-11. Quantity computations, based on computer generated cross-section areas and the average end-area method, are included in Appendix 5-15. The total cut volume calculated is 74,115 cubic yards and the fill volume is 73,477 cubic yards. If, during regrading operations, it is found that the earth work volumes will not balance as planned, the grading plans will be adjusted to achieve a balanced condition. A detailed statement of reclamation costs for the Middle Fork area are given in Chapter 8.

After final cessation of operations, completion of surface facility removal and sealing of the portals, the regrading operations will commence. All coal material from the stockpile area will be cleaned up, removed and sold to the extent possible. Remaining soil containing coal and/or coal waste will be pushed against the toe of the west slope in the stockpile area and buried during regrading operations. Fill material will be pushed up against the highwalls as high as possible. All fills will be constructed at a slope of 2 horizontal to 1 vertical. Prior to placement of topsoil material the regraded surfaces will be ripped to a depth of 18 to 24 inches. Scarification will be done on the contour where feasible utilizing a dozer or patrol grader. The mine pad, coal stockpile and truck loadout areas will be covered with the best available material salvaged from the Middle Fork substitute topsoil sites discussed under R645-301-231.200. The existing culverted stream diversions will be removed during the regrading operation. The existing diversion cut-off ditches and sediment pond will be left in place until the end of the regrading. Prior to removal of the sediment ponds, traps will be constructed in the existing stream bed below the site. The traps will not be removed but will be allowed to fill in with sediment from the reclaimed site.

A vegetation test plot, as required by OSM, has been established to test the substitute topsoil materials for their capability to produce adequate revegetation results. The test plot is discussed in detail in Chapter 3, Appendix 3-5.

Seeding, fertilizing, and mulching will be done during the first September or October following regrading of the site. Seed will be drilled on all areas where the slope allows. Steeper slopes will be hydroseeded or broadcast and hand raked. Seeded areas will be mulched at a rate of 1.5 ton per acre (0.5 ton per acre if hydroseeded). Seeded and mulched areas on slopes steeper than 2:1

will be covered by a stapled netting to maintain position and integrity of mulch.

The existing culverted stream diversions beneath the mine yard and sediment pond will be removed and the channel restored as a permanent open channel. The design of the channel, including peak flow and stability calculations, are given in Chapter 7 (Hydrology). The restored stream channel will be revegetated using Seed Mix No. 4, for riparian habitat, and the area will be mulched using tacked hay to prevent excessive erosion in the newly restored channel.

An abandoned mine portal of the Hiawatha No. 2 mine, sealed by concrete bulkhead, impounds water for mining purposes at the King 4, 5 and 6 mines. During final reclamation the impoundment will be drained. The seal will be left in place to help prevent access to the mine. Because of the eligibility status of this portal structure for the National Historic Register (See Appendix 4-8), the portal will be left in place and not disturbed during regrading operations.

A determination of the amount of water produced in the mine cannot be made until after mining operations cease and the reservoir has been drained. At this time the seal will be monitored for mine water build up. It is very likely that if any water is made in the mine it will meet all applicable state and federal effluent limitations and could be discharged. Water discharged from the Mohrland mine portal is acceptable and comes from underground workings similar to the Hiawatha No. 2 mine. If the mine is found to produce water of an unacceptable quality, hydraulic seals will be replaced or restored on any open portals and the portals will be backfilled, regraded and reclaimed.

The small timber storage yards along the Middle Fork road as well as the road to the water tank

above the mine yard and the truck runaway spur will be reclaimed according to the same procedures as the haul road.

South Fork Reclamation

The South Fork Mine yard is located on an area previously disturbed by the King 3 mine which halted operations in 1975. Disturbed areas in South Fork will be reclaimed in the same manner as the Middle Fork areas. Surface structures will be dismantled and removed. Portal openings for the King 6 mine will be backfilled to the angle of repose. No hydraulic mine seals will be necessary. Foundations will be covered with backfill material. The fill material used to construct the existing pads remains in place and will be used to reshape final surfaces.

Most of the facilities in the South Fork area were constructed prior to the current regulations. Therefore, no topsoil was stockpiled for reclamation. The overland conveyor and loadout facilities shown on exhibit 2-4B were constructed after the regulations were in force. Topsoil was stripped and stockpiled for these areas. The location of the stockpile is near the junction of the Middle Fork and South Fork roads as shown on Exhibit 2-4A. The topsoil stockpiles, the cut and fill slopes of the conveyor and loadout area, and the sediment pond embankment have been revegetated. The areas which have received interim reclamation are shown on Exhibit 5-7.

Proposed post-mining grading plans for the South Fork area are shown on Exhibit 5-12. Predisturbance contour maps of the area are not available, therefore, the proposed final surface configuration was developed to provide a balanced cut and fill situation and a configuration consistent with other canyons in the area. Substitute topsoil material segregated from the pad fill

will be used on the 6.4 acre mine pad site after it has been regraded. The 1.9 acre South Fork Loadout and coal stockpile area will be reclaimed using material from the topsoil stockpile. The haul road will not be reclaimed but will be left in place to support the post mining land use (see Chapter 4).

A shrink factor of 5 percent was used in balancing the cut and fills. Calculations for the earth work volumes are based on cross-sections shown on Exhibit 5-12. Quantity computations, based on computer generated cross-sectional areas and the average end area method, are included in Appendix 5-15.

The total calculated cut volume for the mine yard and truck loadout is 42,300 cubic yards. The total calculated fill volume is 42,424 cubic yards. Sufficient material should be available to regrade this 6.4 acre site. Cost estimates for removing equipment, structures and other facilities in the South Fork area are given in Chapter 8 (Bonding).

After final cessation of mining, completion of surface facility removal and sealing of the portals, the regrading operation will commence. All coal material from the stockpile area will be cleaned up, removed and sold to the extent possible. Remaining soil containing coal and/or coal waste will be placed in the areas to be filled shown on Exhibit 5-12, Cross-sections and R.Fill material will be pushed up against the highwalls as high as possible. All fills will be constructed at a slope of 2:1. The mine pad and disturbed areas will be covered with the best available material (substitute topsoil) salvaged from the mine pad during recontouring. Regrading and redistribution will be performed as described previously for Middle Fork.

During reclamation and regrading of the site, those materials suitable for use as a topsoil

substitute (as determined visually by a high percentage of fines, high organic matter content and low coarse fraction) will be segregated. Prior to placement of topsoil material the regraded surfaces will be ripped to a depth of 18 to 24 inches. Scarification will be done on the contour where feasible utilizing a dozer or patrol grader. The topsoil and substitute topsoil material, will then be spread on the site. A uniform layer of six inches of soil material will be spread over the entire regraded site unless test plot results show that less can be used. During spreading operations equipment travel will be held to a minimum to reduce compaction of the topsoil.

After spreading, the topsoil will be sampled to determine nutrient requirements. Fertilizer will then be applied in the amounts necessary. Seed mixtures and application rates are discussed in Chapter 3.

Revegetation will consist of native species selected from the reference areas on the U.S. Fuel Company property. These areas can be found in Chapter III, Biology. Planting will occur during periods of greatest moisture conditions.

Seeding, fertilizing, and mulching will be done during the first September or October following regrading of the site. Seed will be drilled on all areas where the slope allows. Steeper slopes will be hydroseeded or broadcast and hand raked. Seeded areas will be mulched at a rate of 1.5 tons per acre (0.5 ton per acre if hydroseeded). Seeded and mulched areas on slopes greater than 2:1 will be covered by a stapled netting to maintain position and integrity of mulch. Where hydroseeding is used, fertilizer, seed and mulch will be applied in separate operations. Refer to Table 5-7 "Reclamation Timetable".

Currently, the South Fork of Miller Creek flows beneath a portion of the mine yard area and the mine yard sediment pond in corrugated metal pipes. During reclamation these diversions will be

removed and the channel reclaimed in open form. The design of the channel, including peak flow and stability calculations are given in Chapter 7, (Hydrology).

The existing diversion ditches and sediment ponds will be left in place at least until the end of regrading. Prior to the removal of the sediment pond, sediment traps will be constructed in the existing stream bed below the regraded sites. The traps will not be removed but will be allowed to fill in with sediment from the reclaimed sites.

Sufficient material is available in the South Fork loadout sediment pond embankments for the pond itself. This amounts to 0.86 acre which will be reclaimed after the revegetation period.

The other 1.94 acres of the loadout and coal stockpile area will be covered with a minimum of six inches of stockpiled topsoil material. The 1,206 cubic yards of topsoil will cover 1.5 acres. The residual area will be covered with 354 cubic yards of substitute material obtained from South Fork borrow site B.

An 8 X 20 foot breakout associated with the King 5 mine is found in the left fork of South Fork. The breakout was excavated from within the mine, so very little disturbance away from the breakout occurred. Surface disturbance associated with this breakout amounts to approximately 300 square feet. Upon final cessation of mining this opening will be sealed, the disturbed area bermed and then reseeded by hand broadcasting. Because access to this area is impossible without causing significant damage to the surface, HCC ~~U.S. Fuel~~ proposes no further reclamation of this small area.

The South Fork road will remain for the post-mining land uses. The 800 foot long dirt road from the bath house to the South Fork water tank, classified as an alternate sediment control area, will

be reclaimed in the same manner except that asphalt removal will not be required. As shown in Figure 4-1, this road will be required after mining as part of the Wildlife Management Plan, which calls for a road extended past the water tank and to the top of the canyon. The road will be used for timbering and enhancement of the wildlife habitat.

HIAWATHA PROCESSING PLANT AND WASTE DISPOSAL SITES RECLAMATION

The Hiawatha coal processing plant and refuse disposal areas are shown on Exhibit 5-9. Reclamation of these facilities is discussed in detail in R645-301-240 in Chapter 2 under the Hiawatha Area Reclamation heading. Revegetation procedures are discussed under R645-301-340 in Chapter 3.

Coal mining has been conducted in the Hiawatha area for over ninety years. The Blackhawk Mine stockpiled and loaded coal into railcars near the current slurry ponds and refuse piles. The preparation plant was built in 1938 and immediately began to build refuse piles and slurry ponds. Over the decades, many wind blown fines have been generated. Prior to SMCRA, there were no sediment controls required. It is intuitive that many coal fines would be washed onto the surrounding property. It is obvious and expected that throughout the decades coal mining has been conducted in the Hiawatha area, the surrounding soils would be complemented with fine particles of coal and mine waste. Since the implementation of SMCRA, the amount of coal fines leaving the property has diminished dramatically. Nonetheless, there is a band of affected soils around the perimeter of the slurry ponds and refuse piles. Except where the coal fines are several inches deep, it appears to have no deleterious effect on the vegetation. Therefore, the Division and permittee have agreed to implement a mitigation plan whereby the permittee will reclaim

three of the areas which have been affected. The three areas are shown on Exhibit II-4A. These areas will be vacuumed or scraped to remove the fine coal particles, then scarified and reseeded. The collected materials will be placed into Slurry Pond 5, cell 5A. Surface runoff will be channeled into existing sediment controls. If any additional areas are identified by the Division and Hiawatha Coal Company, these areas will also be mitigated in the same manner.

As stated in 301-541 "General", the slurry ponds are in various stages of reclamation. Theoretically, the first step is to recover the maximum amount of coal fines. Pond 4 was the exception to this generality. It was practically full of pond fines when it was regraded. Second, the refuse banks are regraded such that a substantial amount is moved to the pond interior. This reduces the refuse bank outslopes to about a 5 to 1 slope. The interiors are graded to provide a roughened, positive, gradual slope so that the regraded ponds will not impound water. Then the subgrade is scarified with a dozer ripper or backhoe. Next, the topsoil is applied such that it puddles, but does not impound water. Subsequently, the topsoil is sampled, scarified, fertilized and reseeded. After establishing adequate vegetation, the sediment ponds treating the runoff from the pond outslopes can be reclaimed if the outslopes are the only source of runoff feeding the pond.

The main cell of Slurry Pond #5 was so large that an initial regrading as described above would have overwhelmed the existing sediment controls. It would have also channeled significant amounts of surface runoff over a fairly long, unvegetated outslope which would have resulted in some significant erosion channels. Therefore, the main cell is being reclaimed to drain into cell 5A.

When slurry cell 5A is reclaimed, it will be contoured as shown on Exhibit 5-13. The slope will allow the runoff to gradually drain to the northwest, towards SR122. This will prevent the runoff from running over the steeper slopes, avoid possible excessive erosion.

Post-mining backfill and grading plans are shown on Exhibits 5-13. The proposed final surface configuration was developed to provide a balanced cut and fill situation except in the case of topsoil borrow areas where the final surface will be established by shaping and grading the side slopes and floor to a uniform configuration to match the surrounding terrain once topsoil has been removed. A shrink factor of 5 percent was used in balancing cuts and fills. Calculations for earthwork volumes are based on the cross-sections shown on Exhibits 5-13 and 5-13A. Quantity computations, based on cross-section areas and the average end method are given in Appendix 5-15.

Subsequent to initial approval of this application several changes have been made in the vicinity of the Hiawatha area. An ancillary road used to clean out sediment pond D003 located below the upper railroad yard has been added to the disturbed area. This road is shown on Exhibit 5-9. A haul truck runaway spur appended to the Middle Fork haul road and shown on Exhibit 5-6 was modified during 1990 and added to the permit disturbed area. Both roads will be reclaimed according to procedures outlined in R645-301-240 in Chapter 2 under the heading Reclamation of Roads.

COAL AND COAL WASTE MATERIAL

The following areas within the Hiawatha yard contain coal and coal waste material:

Area	Est. Volume
Slurry Ponds and Refuse piles	Unknown
Upper Rail Storage Yard	10,050 cu yds
Rail Tracks	2,570 cu yds
Lower Preparation Plant by rail tracks	Unknown

Reclamation of the slurry ponds and refuse piles are described in this section under "Regrading Refuse Materials".

The coal waste in the Upper Rail Storage Yard will be reclaimed as described in R645-301-241, by placing all of the material against the toe of the south cut slope. A minimum of 24" of in situ soil will then be placed over it.

The rail tracks will be cleaned of coal and coal waste material following removal of the tracks. The material will be hauled to Slurry Pond "1".

There are several small coal waste piles adjacent to the Lower Preparation plant. This material will be removed prior to regrading, and will be incorporated into slurry pond "1".

RECLAMATION OF SUBSTITUTE TOPSOIL BORROW AREAS

All potential topsoil borrow areas are shown on Exhibits 2-4. However, it is anticipated that there will be sufficient topsoil material available in borrow areas A, F, the Lower Preparation Plant Area, the Upper Rail Yard and the mine pads that no other borrow areas will be needed. However, several areas have been evaluated as potential borrow areas which can be utilized if needed. Reclamation cost estimates can be found in R645-301-830 in Chapter 8, (Bonding).

If needed, access to the borrow areas would be accomplished by using existing ancillary roads. A stream crossing (ford) currently exists between borrow areas B and C and Borrow area D. If borrow area D was needed, HCC would improve this crossing by installing a 30 inch corrugated metal culvert capable of passing a one year six hour runoff event of 10.8 CFS as required for temporary culverts (see calculations in Appendix 5-12). Installation of the culvert would be initiated with emplacement of a silt fence across the channel below a gravel pad to be placed in the bottom of the channel. The culvert would be laid on the pad and the gravel fill material would be placed on both sides of the culvert and compacted in 8 inch lifts. The stream crossing would be brought to a level grade with the flood plain surfaces on both sides of the creek and would have a top width of 16 feet. Sediment control for the crossing would consist of both berms and straw bale dikes. The 12 inch berms would be placed one on each side of the top of the stream crossing pad to contain runoff on the road and possible spillage from the haul trucks from entering the creek. The straw bale dikes would be emplaced in the face of the embankments above the culverts on both the upstream and downstream sides. These dikes would protect against significant sedimentation problems from the small areas of the embankment faces. The stream crossing would be strictly temporary and would only be in place during the removal of the

borrow materials from areas B and C. After the needed volumes of borrow materials are obtained, the fill materials and culvert would be removed and the area reclaimed. The thin gravel layer emplaced directly on the stream bottom would be left in place to help protect the existing stream bottom. Reclamation of the borrow area access roads would be carried out as described in; R645-301-240 of Chapter 2 under Substitute Topsoil Haul roads.

Borrow areas A, B, C, D and E are on tributaries of, or adjacent to Miller Creek, a perennial stream. Borrow Area A is located on an ephemeral tributary of Miller Creek with Borrow Areas B, C and D located on an alluvial terrace contiguous to Miller Creek. It is planned to utilize Borrow Areas B, C, D or E only if there is not sufficient substitute topsoil material available in borrow areas A, F, the Lower Preparation Plant Area, and the Upper Rail Yard. In any case, erosion control plans have been formulated to limit the amount of sediment delivered to Miller Creek.

The top 12 inches of soil from all borrow sites will be salvaged and returned to it's respective site to expedite reclamation of the borrow area.

Sedimentation from the borrow areas will be controlled using a combination of straw bale dikes, silt fencing or sediment ponds. If the runoff from the borrow area is not directed to a sediment pond, straw bale dikes or silt fencing will be constructed immediately down slope from the borrow area. These structures will be keyed and anchored into the soil.

For Borrow Area A, the plan is to remove soil in the area below Sediment Pond 0006 running east

to the property boundary. This will allow Sediment Pond 0006 to remain in place and also allow for protection of a high-tension power line running across the west end of the proposed borrow area. The proposed area of removal is shown on Exhibit 2-4A. Runoff controls and post-mining topography are detailed in Appendix 8-18.

For Borrow Area D, a sedimentation pond would be constructed to contain a runoff volume of 0.84 acre-feet and a sediment volume of 0.05 acre-feet. Runoff from the borrow area would be conveyed to the pond by a berm and trapezoidal ditch along the edge of the Miller Creek buffer zone. A 50 foot buffer zone would be maintained between the borrow site and the creek. Water running off the undisturbed drainage above the borrow site would be diverted around the borrow site by a trapezoidal channel and conveyed to Miller Creek.

Borrow Areas B and C would require 1.95 acre-feet of storage for runoff and sediment storage. Runoff from the borrow area would be conveyed to the pond by a berm and trapezoidal ditch. A 50 foot buffer zone would be maintained between the borrow site and Miller Creek. Undisturbed area drainage would be diverted around the borrow site by a trapezoidal channel.

After borrowing is completed, any borrow sites utilized will be graded to suitable contours (see Exhibit 5-13) ripped, disked, raked, seeded, fertilized and mulched. Seed mixture number 1 will be utilized (see Table 3-5 under R645-301-331 in Chapter 3) with application rates of 28.8 pounds per acre (pure live seed). Since no trees are presently found in the borrow areas, no nursery stock will be planted. The seed mixtures contain seed for shrubs and therefore no nursery stock for shrubs will be utilized either.

Revegetation of the borrow sites will rely on leaving soil behind that is suitable for supporting vegetative growth. The deeper horizons are not very different from the shallow horizons except that N, P and organic matter are lower. These deficiencies will be remedied by the application of fertilizer, mulches and other amendments.

Hand broadcasting, a seed spreader or hydroseeding will be used to spread seed over the disturbed borrow areas. All seeded areas will be mulched and monitored for success.

The borrow sites will be developed at the time the substitute topsoil is required for the given areas, and will remain undisturbed until that time, and will be reclaimed as soon as borrowing activities are completed. If a borrow area is being used for contemporaneous reclamation for more than one year, resulting in the area being disturbed beyond the fall of the year, the disturbed areas within the borrow site will be seeded in the interim using the interim seed mix described in Chapter 3.

541.100 See R645-301-240, 340, 412, 540 and 740.

541.200 Does not apply.

541.300 See R645-301-240, 340, 412, 540 and 740.

541.400 See R645-301-240, 340, 412, 540 and 740.

R645-301-542 NARRATIVES, MAPS AND PLANS

542.100 See R645-301-541

542.200 See R645-301-240, 340, 412, 540 and 740.

542.300 See Exhibits 5-10 through 5-13A.

542.310 See Exhibits 5-10 through 5-13A.

542.320 See Exhibits 5-10 through 5-13A.

542.400 See R645-301-240, 340, 412, 540 and 740.

542.500 See R645-301-240.

542.600 See R645-301-240 (Reclamation of Roads).

542.610 See R645-301-240 (Reclamation of Roads).

542.620 See R645-301-240 (Reclamation of Roads).

542.630 See R645-301-240 (Reclamation of Roads).

542.640 See R645-301-240 (Reclamation of Roads).

542.700 See R645-301-529 and 738.

542.710 See R645-301-529 and 738.

Table 5-7
Reclamation Timetable

Activity	Start (Beginning of Month #)	Finish (End of Month #)
Slurry Pond 4 and Refuse Pile 2:		
Regrade and topsoil pond 4 and Refuse Pile 2		Completed
Mitigate coal fine impacted areas East and South of Slurry Pond 4, Northeast area	March 1999	May 1999
Reseed coal fine impacted areas	Oct. 1999	Oct. 1999
Slurry Pond 5 Main Cell:		
Topsoil Pond 5 Main Cell	1997	Oct. 1999
Mitigate coal fine impacted area	Aug. 1999	Oct. 1999
Final Cessation of Operations		
Remove Equipment from Mine Pads	1	3
Remove Structures King 4 (including asphalt)	2	5
Remove Structures King 6 (including asphalt)	3	15
Reclaim North Fork Ventilation Portal		Completed
Remove and regrade the pipeline and other remaining disturbed areas in North Fork	July 2,009	September 2,009
Reseed remaining disturbed areas in North Fork	October 2,009	October 2,009
Contour King 4 (except sed. ponds)	6	15
Contour King 6 (except sed. ponds)	16	25

Table 5-7
Reclamation Timetable (CONT.)

Reseeding (unless otherwise approved by the Division)	1st October after topsoiling	Same Month
Remove Yard Rails	4	12
Contour #1 Pond and #1 Refuse Pile	26	34
Remove Structures and Stored Equipment in the Hiawatha Area	12	45
Topsoil #1 Pond and #1 Refuse Pile	35	45
Contour and Topsoil Remaining Hiawatha Area	46	52
Contour Pond 5A	53	58
Topsoil Pond 5A	58	64
Reclaim Sediment Ponds and Borrow Area A	65	67
Reclaim Roads	68	72

542.720 See R645-301-514.100 and 528.310.

542.730 See R645-301-528.320.

542.740 See R645-301-528.330.

542.741 See R645-301-528.330.

542.742 See R645-301-528.330.

542.800 See R645-301-830.100 and 830.300

R645-301-550 RECLAMATION DESIGN CRITERIA AND PLANS

R645-301-551 See R645-301-513.500, 529, and 738.

R645-301-552 PERMANENT FEATURES

552.100 No response required.

552.200 No response required.

R645-301-553 BACKFILLING AND GRADING

553.100 See R645-301-240 and R645-301-540.

553.110 See R645-301-240 and R645-301-540.

553.120 See R645-301-240 and R645-301-540.

553.130 See R645-301-240 and R645-301-540.

553.140 See R645-301-240 and R645-301-540.

553.150 See R645-301-412.100 and R645-301-540.

553.200 SPOIL AND WASTE

553.210 See R645-301-513.100, 513.200, 513.300, 513.400, 514.100, 514.200, 514.300, 528.310, 528.320, 528.321, 528.322, 528.323, 528.330 and 528.340.

553.220 See R645-301-514.100 and 528.310.

553.221 See R645-301-514.100 and 528.310.

553.222 See R645-301-514.100 and 528.310.

553.223 See R645-301-514.100 and 528.310.

553.230 See R645-301-514.100 and 528.310.

553.240 See R645-301-514.100 and 528.310.

553.250 REFUSE PILES

553.251 See R645-301-240 and R645-301-540.

553.252 See R645-301-240 (Regrading Refuse Material)

553.260 See R645-301-513.300

553.300 See R645-301-731.100 and 731.300

553.400 No cut and fill terraces are proposed.

553.410 See 553.400

553.420 See 553.400

553.500 PREVIOUSLY MINED AREAS

553.510 See R645-301-540 (Reclamation Plan).

553.520 See R645-301-540 (Reclamation Plan).

553.521 See R645-301-540 (Reclamation Plan).

553.522 See R645-301-540 (Reclamation Plan).

553.523 See R645-301-540 (Reclamation Plan).

553.524 See R645-301-540 (Reclamation Plan).

553.600 APPROXIMATE ORIGINAL CONTOUR

553.610 See R645-301-540 (Reclamation Plan).

553.620 See R645-301-540 (Reclamation Plan).

553.630 Not applicable.

553.640 Not applicable.

553.641 Not applicable.

553.642 Not applicable.

553.650 See R645-301-540 (Reclamation Plan).

553.651 See R645-301-540 (Reclamation Plan).

553.652 See R645-301-540 (Reclamation Plan).

553.653 See R645-301-540 (Reclamation Plan).

553.700 BACKFILLING AND GRADING: THIN OVERBURDEN

553.710 Not applicable.

553.720 Not applicable.

553.800 BACKFILLING AND GRADING: THICK OVERBURDEN

553.810 Not applicable.

553.820 Not applicable.

553.830 Not applicable.

R645-301-560 PERFORMANCE STANDARDS

Coal mining and reclamation operations will be conducted in accordance with the approved permit and requirements of R645-301-510 through R645-301-553.