



United States Department of the Interior

OFFICE OF SURFACE MINING
RECLAMATION AND ENFORCEMENT
Washington, D.C. 20240

JUL 5 2001

MEMORANDUM

To: Piet deWitt, Acting Assistant Secretary
Land and Minerals Management

From:  Glenda Owens, Acting Director
Office of Surface Mining 

Subject: Recommendation for Approval of the New Mining Plan for Federal Lease
UTU-74804 at Lodestar Energy, Inc.'s Horizon Mine located in Carbon
County, Utah

I recommend approval, without special conditions, of this new mining plan. My recommendation is based on:

- (1) Lodestar Energy, Inc.'s complete permit application package (PAP),
- (2) compliance with the National Environmental Policy Act of 1969,
- (3) documentation assuring compliance with applicable requirements of other Federal laws, regulations, and executive orders,
- (4) comments and recommendations or concurrence of other Federal agencies, and the public,
- (5) the findings and recommendations of the Bureau of Land Management regarding the resource recovery and protection plan, the Federal lease requirements, and the Mineral Leasing Act, and
- (6) the findings and recommendations of the Utah Division of Oil, Gas, and Mining regarding the PAP and the Utah State program.

The Secretary may approve a Mining Plan for Federal leases under 30 U.S.C. 207(c) and 1273(c). In accordance with 30 CFR Chapter VII, Subchapter D, I find that the proposed new mining plan will be in compliance with all applicable laws and regulations. The decision document for the proposed mining plan action is attached.

Attachment

Memorandum

To: Acting Director
Office of Surface Mining

From: Regional Director
Western Regional Coordinating Center

Subject: Recommendation for Approval, Without Special
Conditions, of the New Mining Plan for Federal Lease
UTU-74804 at Lodestar Energy, Inc.'s Horizon Mine
located in Carbon County, Utah

I. Recommendation

I recommend approval, without special conditions, of a new mining plan for Federal lease UTU-74804 at the Horizon Mine. This is a new mining plan for a underground coal mine being permitted under the Federal lands program, the approved Utah State program, and the cooperative agreement.

My recommendation to approve the new mining plan is based on:

- (1) Lodestar Energy, Inc.'s (LEI) complete permit application package (PAP),
- (2) compliance with the National Environmental Policy Act of 1969,
- (3) documentation assuring compliance with applicable requirements of other Federal laws, regulations, and executive orders,
- (4) comments and recommendations or concurrence of other Federal agencies, and the public,
- (5) the findings and recommendations of the Bureau of Land Management regarding the resource recovery and protection plan, the Federal lease requirements, and the Mineral Leasing Act, and
- (6) the findings and recommendations of the Utah Division of Oil, Gas, and Mining (DOGM) regarding the PAP and the Utah State program.

If you concur with this recommendation, please sign the attached memorandum to the Assistant Secretary, Land and Minerals Management.

II. Background

The Horizon underground coal mine is located in Carbon County, Utah. The mine has been in operation since 1997. The life of the currently approved mining operations within the approved permit area is estimated to be approximately 8 months. The mining operations use room-and-pillar mining methods. The average annual production rate is 750,000 tons per year from the Hiawatha coal seam, but the maximum production rate could reach the approved 1.2 million tons per year.

The State's current permit area covers 305 acres.

About 9 surface acres are disturbed within the State's current permit area.

No leased Federal coal exists in the currently approved permit area.

About 18 acres of Federal surface land exist in the right-of-way of the currently approved permit area.

The postmining land use within the currently approved mining plan area is grazing, logging, mining, recreation, and wildlife habitat.

II. The Proposed Action

This mining plan action consists of a new mining plan for Federal lease UTU-74804. Specifically, the mining plan action proposed by LEI consists of mining 406 acres of the 1288 acres in Federal lease UTU-74804. Only a portion of the Federal lease (area south of Beaver Creek) is being permitted since adequate baseline hydrologic data have not been collected as yet for the area north of Beaver Creek.

The life of the mining operations is expected to continue for 2.7 years under Utah Permit No. C/007/020 and this proposed new mining plan.

The proposed average annual production rate would increase by 360,000 tons per year to a maximum of 1.5 million tons per year.

The approved State permit area would increase to a new total of 711 acres, consisting of 406 acres of Federal coal lease and 305 acres of non-Federal coal.

Surface disturbance within the approved State permit area would not increase.

This new mining plan will result in 406 acres of leased Federal coal being included within the State permit area, as shown on the map included with this decision document.

Approval of this new mining plan will authorize mining of 2.1 million tons of recoverable leased Federal coal.

About 406 acres of Federal surface lands will be included in the mining plan area as a result of this action.

The postmining land use within the permit and mining plan area will not change.

The DOGM has attached two new permit stipulations to this permitting action. These stipulations are described in the State Decision Document section of this decision document.

Lodestar Energy, Inc.'s proposal does not require any special conditions to comply with Federal laws.

IV. Review Process

The DOGM reviewed the PAP under the Utah State program, the Federal lands program (30 CFR Chapter VII, Subchapter D), and the Utah cooperative agreement (30 CFR §.30). Pursuant to the Utah State program and the cooperative agreement, DOGM approved the permit revision on May 8, 2001.

The Office of Surface Mining Reclamation and Enforcement (OSM) has consulted with other Federal agencies for compliance with the requirements of applicable Federal laws. Their comments and/or concurrences are included in the decision document.

The Bureau of Land Management (BLM) indicated in a letter dated February 9, 2001, that the proposal was in compliance with the Mineral Leasing Act of 1920, as amended, and 43 CFR Part 3480.

In accordance with the September 24, 1996, Biological Opinion and Conference Report from the U.S. Fish and Wildlife Service (USFWS) to OSM, the DOGM has sought comments from the USFWS on threatened and endangered

species and has incorporated the necessary reporting requirements into the PAP and findings. As stated in a letter dated February 22, 2001, the USFWS and the DOGM did not develop or recommend any species-specific protective measures.

The State Historic Preservation Officer concurred with the proposed new mining plan in a letter dated December 11, 2000.

The proposed area of mining plan approval is not unsuitable for mining according to section 522(b) of Surface Mining Control and Reclamation Act (SMCRA).

The new mining plan area is not on any Federal lands within the boundaries of any national forest.

I have determined that approval of this new mining plan will not have a significant impact on the quality of the human environment. The environmental analysis prepared by BLM and OSM for the Federal Coal Lease by Application UTU-74804 Beaver Creek Tract and other environmental documents noted in the Finding of No Significant Impact (FONSI), describe the impacts that may result from approval of this new mining plan and its alternatives. The FONSI and supporting environmental analyses are included in this decision document.

OSM's review of the proposed action did not identify any issues that required resolution via the addition of special conditions to the mining plan approval.

Publication of four consecutive weekly notices in the Price Sun Advocate newspaper notified the public of the availability of the administratively complete PAP for review. The last publication date was November 21, 2000. No public comments on the PAP were received after the public notice was published.

The DOGM determined that a bond for \$711,000 is adequate for the Utah Permit No. C/007/020 associated with this new mining plan. The bond is payable to the State and the United States.

A chronology of events related to the processing of the PAP and this mining plan decision is included with the decision document. The information in the PAP, and other information identified in the decision document, has been reviewed by DOGM staff in coordination with the OSM Federal Lands State Coordinator.

OSM's administrative record of this new mining plan consists of the following:

-the Permit Application Package(PAP) submitted by
LEI and updated through January 12, 2001,

-DOGM's Permit No. C/007/020, for Federal Lease UTU-
74804, Horizon Mine Lodestar Energy Inc. provided to
OSM under the cooperative agreement,

-the Environmental Assessment entitled Federal Coal
Lease by Application UTU-74804 Beaver Creek Tract,

-the FONSI of the proposed action and alternatives
prepared by OSM,

-other documents prepared by DOGM, and

-correspondence developed during the review of the
PAP.

Attachments

MINING PLAN DECISION DOCUMENT

Lodestar Energy, Inc.

Horizon Mine

Federal Lease UTU-74804

Carbon County, Utah



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

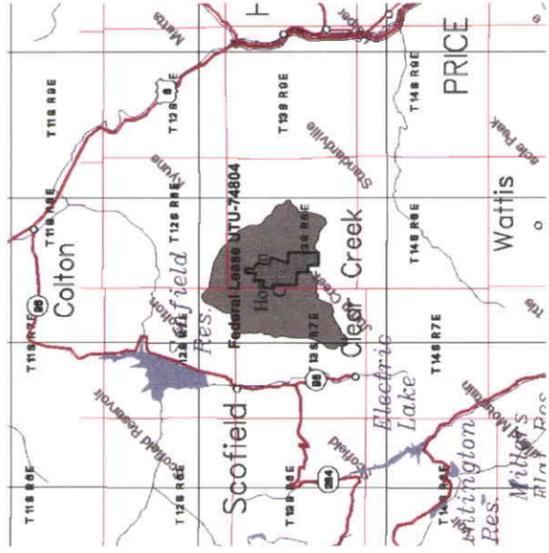
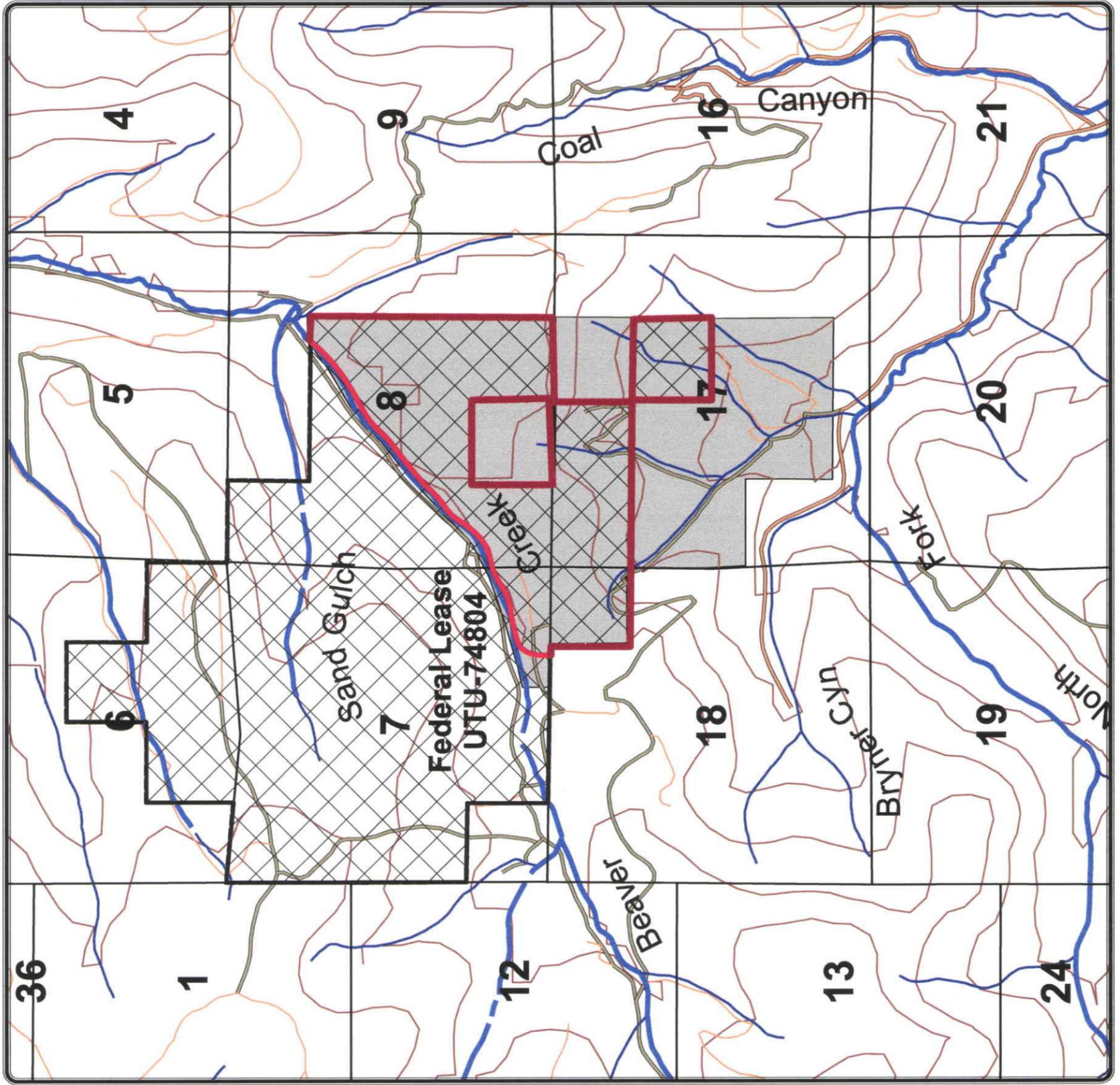
**Prepared
June 2001**

CONTENTS

Horizon Mine
Federal Lease UTU-74804
Mining Plan Decision Document

1. Memoranda
 - a. Memorandum from the Acting Director, Office of Surface Mining, to the Acting Assistant Secretary, Land and Minerals Management
 - b. Memorandum from the Regional Director, Western Regional Coordinating Center, to the Acting Director, Office of Surface Mining
2. Location Maps
3. Chronology
4. National Environmental Policy Act Compliance Documents
5. Letters of Concurrence and Consultation:
 - a. Bureau of Land Management
 - b. U.S. Fish and Wildlife Service
 - c. State Historic Preservation Office
6. Mining Plan Approval Document
7. State Findings and Decision

Utah Division of Oil, Gas, and Mining (DOG M) Permit
for Federal Lease UTU 74804, Horizon Mine, Lodestar
Energy Inc., C/007/020
8. Notifications



Location Map

- Legend**
- Federal Lease UTU-74804
 - Intermittent Stream
 - Perennial Stream
 - Dirt Road
 - Graded Road
 - Main Road
 - Contours 200ft Interval
 - State Permit Area
 - Mining Plan Approval Area



Mining Plan Approval Area
Horizon Mine UT-0077
Carbon, County
June 2001

CHRONOLOGY

Horizon Mine
Federal Lease UTU-74804
Mining Plan Decision Document

DATE	EVENT
August 21, 2000	Lodestar Energy, Inc. (LEI) submitted the permit application package (PAP) under the approved Utah State Program to the Utah Division of Oil, Gas, and Mining (DOGM) for a permit revision for the Horizon Mine.
October 26, 2000	DOGM determined that the PAP was administratively complete for public review and comment.
November 1, 2000	The Office of Surface Mining Reclamation and Enforcement (OSM) received the PAP.
November 21, 2000	LEI published in the Price Sun Advocate the fourth consecutive weekly notice that its complete PAP was filed with DOGM.
December 11, 2000	The State Historic Preservation Office provided its comments on the mining plan.
February 9, 2001	The Bureau of Land Management (BLM) provided its findings and recommendations on the approval of the mining plan.
February 9, 2001	The BLM had no objections with the proposed new mining plan with respect to Federal surface lands within the proposed mining plan area.
February 22, 2001	The U.S. Fish and Wildlife Service provided its final consultation comments on the mining plan.
May 8, 2001	DOGM approved the PAP.
DATE	OSM's Western Regional Coordinating Center recommended to the Acting Director, OSM, that the mining plan action be approved.

U.S. DEPARTMENT OF THE INTERIOR
OFFICE OF SURFACE MINING RECLAMATION AND ENFORCEMENT
FINDING OF NO SIGNIFICANT IMPACT
FOR
Horizon Mine
Federal Coal Lease UTU-74804
Mining Plan Decision Document

A. Introduction

Lodestar Energy, Inc. submitted a permit application package (PAP) for a permit revision for the Horizon Mine to the Division of Oil, Gas, and Mining (DOGM). The PAP proposed extending underground mining operations into 406 acres of Federal lease UTU-74804. Under the Mineral Leasing Act of 1920, the Assistant Secretary, Land and Minerals Management, must approve, approve with conditions, or disapprove the new mining plan for Federal lease UTU-74804. Pursuant to 30 CFR Part 746, the Office of Surface Mining (OSM) is recommending approval of the mining plan action without special conditions.

B. Statement of Environmental Significance of the Proposed Action

The undersigned person has determined that the above-named proposed action would not have a significant impact on the quality of the human environment under section 102(2)(C) of the National Environmental Policy Act of 1969 (NEPA), 42 U.S.C. 4332(2)(C), and therefore, an Environmental Impact Statement is not required.

C. Reasons

This finding of no significant impact is based on the attached Environmental Assessment, dated 9/4/97, jointly prepared by Bureau of Land Management (BLM) and the Office of Surface Mining Reclamation and Enforcement (OSM). This document adequately and accurately assesses the environmental impacts of the proposed action, and provides sufficient evidence and analysis for this finding of no significant impact.

Chief, Northwest Branch

Date

Attachment

ENVIRONMENTAL ASSESSMENT

**FEDERAL COAL LEASE BY APPLICATION
UTU-74804
BEAVER CREEK TRACT**

97-09-29-03

Prepared for

U. S. Department of the Interior
Bureau of Land Management
Price River Resource Area
Price, Utah - Carbon County
(801) 637-4584

and

U. S. Department of the Interior
Office of Surface Mining Reclamation and Enforcement
Western Regional Coordination Center

APPLICANT: HORIZON COAL CORPORATION
P.O. BOX 599
HELPER, UT 84526
(801) 472-3994

PREPARED BY: EARTHFAX ENGINEERING, INC.
7324 SO. UNION PARK AVENUE
MIDVALE, UTAH 84047
(801) 561-1555

ENVIRONMENTAL ASSESSMENT DATA SHEET

APPLICANT: HORIZON COAL CORPORATION
P.O. BOX 599
Helper, UT 84526
(801) 472-3994

PROJECT: Beaver Creek Tract
UTU-74804

BLM OFFICE: Price River Resource Area
Price, Utah - Carbon County
(801) 636-3600

TABLE OF CONTENTS

<u>Section</u>	<u>Page</u>
1.0 INTRODUCTION	1-1
1.1 EXISTING MINING OPERATION	1-1
1.2 AGENCY ROLES AND RESPONSIBILITIES	1-1
Bureau of Land Management	1-1
Office of Surface Mining	1-2
Other Jurisdictional Agencies	1-3
Federal Agencies	1-3
State Agencies	1-3
Local Agencies	1-4
1.3 CONFORMANCE WITH LAND USE DESIGNATIONS AND PLANS	1-4
1.4 ISSUES AND CONCERNS	1-4
2.0 PROPOSED ACTION AND ALTERNATIVES	2-1
2.1 PROPOSED ACTION	2-1
2.2 PURPOSE AND NEED	2-1
2.3 ALTERNATIVE ACTION	2-2
No Action	2-2
Reduction in Size of Lease	2-2
Expanding the Lease Area	2-2
2.4 COAL MINE DEVELOPMENT AND PRODUCTION	2-3
Socio-Economics	2-3
General Project Scope and Schedule	2-3
Mine Construction and Development	2-3
Mining and Related Operations	2-3
2.5 SUBSIDENCE CONTROL AND MONITORING PLAN	2-4
Springs Monitoring Plan	2-4
2.6 RECLAMATION OF MINING DISTURBANCES	2-5

TABLE OF CONTENTS (Continued)

<u>Section</u>	<u>Page</u>
2.7 PLANNED MITIGATION MEASURES	2-6
Cultural Resource Mitigation	2-6
Mitigation and Management Plans	2-6
3.0 AFFECTED ENVIRONMENT	3-1
3.1 EXISTING ENVIRONMENT	3-1
Topography, Minerals	3-1
Geology	3-1
Geology of Coal Beds and Adjacent Strata	3-3
3.2 SOILS	3-4
Shupert-Winetti Complex	3-4
Beje-Trag Complex	3-4
Uinta Family-Podo Association	3-4
Uinta-Toze Families Complex	3-4
Brycan	3-5
Curecanti	3-5
Rabbitex	3-5
Senchert	3-5
Prime Farmlands	3-5
Rangelands	3-5
3.3 HYDROLOGY	3-6
Regional Groundwater Hydrology	3-6
3.4 GEOLOGIC OCCURRENCE	3-7
Price River Formation	3-7
Castlegate Sandstone	3-7
Blackhawk Formation	3-7
Star Point Sandstone	3-8
Mancos Shale	3-8
Quaternary Alluvium	3-8
3.5 VEGETATION	3-10
Mountain Shrub	3-10
Slope Bunchgrass	3-11

TABLE OF CONTENTS (Continued)

<u>Section</u>	<u>Page</u>
Middle Elevation Conifer	3-11
High Elevation Conifer	3-11
Aspen	3-11
Mixed Riparian	3-11
Subalpine Moist Meadow	3-12
3.6 WILDLIFE AND FISH	3-12
Aquatic Studies	3-13
3.7 CULTURAL RESOURCES AND PALEONTOLOGY	3-14
Historic Land Use	3-15
History of Gordon Creek Area	3-15
Prehistoric Inventory	3-16
Paleontological Inventory	3-16
4.0 ENVIRONMENTAL IMPACTS	4-1
Subsidence Impacts	4-1
Renewable Resources	4-1
Geologic Hazards	4-1
Threatened and Endangered Plants	4-3
Threatened and Endangered Animals	4-3
Floodplains and Wetlands	4-3
Surface and Groundwater Impacts	4-4
Wilderness Values	4-6
Visual Resources	4-6
Air Quality	4-6
Wild and Scenic River	4-6
Grazing	4-6
Recreation	4-7
Land Uses	4-7
Residual Impacts	4-7
Public Interest	4-8
Roads	4-8
Native American Religious Concerns	4-8
Solid and Hazardous Waste	4-8
5.0 REFERENCES	5-1
6.0 AGENCIES AND PERSONS CONSULTED	6-1

LIST OF ATTACHMENTS

ATTACHMENT A - WASATCH COAL COMPANY EA, 1981, UT-060-PR-81-19
ATTACHMENT B - HORIZON COAL CORP. EA, 1995, UT-066-95-18
ATTACHMENT C - CUMULATIVE HYDROLOGIC IMPACT ASSESSMENT, UDOGM
ATTACHMENT D - FIGURES, TABLES, AND CORRESPONDENCE

LIST OF PLATES

FIVE YEAR MINE PLAN - PLATE 2
LAND USE - PLATE 4-1
GEOLOGY - PLATES 6-1, 6-2, 6-3
WATER MONITORING LOCATIONS - PLATE 7-1
VEGETATION - 9-1

1.0 INTRODUCTION

1.1 EXISTING MINING OPERATION

The proposed Horizon Lease Tract area is located approximately 15 miles northwest of Price, Utah in Carbon County. The surface facilities under construction for the Horizon No. 1 Mine are located adjacent to the Consumers Canyon Road approximately 14 miles northwest of Price (Plate 2). The mine permit area covers 317.5 acres, with 9.15 acres designated as disturbed.

The Horizon Coal Corporation (HCC) plans to recover fee coal during 1997 and 1998 from lands leased from Hidden Splendor Resources and a federal underground right-of-way lease (UTU-73227). The right-of-way lease (17.5 acres) connects the two blocks of coal leased from Hidden Splendor Resources.

HCC proposes to mine the coal from the lands within the Horizon Lease Tract as a logical extension of the current mining operations. The Horizon Tract is comprised of currently unleased federal lands, some of which were included in the terminated Federal Coal Lease SL 060311. The United States owns the coal deposits under the described lands and the appropriate rights to explore and mine the coal.

Economic coal reserves have been identified in the Castlegate "A" and Hiawatha Coal Seams. Horizon will begin underground mining of fee coal in the Hiawatha Seam, but when feasible intends to mine the Castlegate "A" Seam in the future.

Horizon Coal Corporation is the only coal operation presently owned by K & K Enterprises. However, the owners of K & K Enterprises share ownership in other coal operations in the United States.

Other adjacent unleased federal coal lands which are accessible only through the lands described above may ultimately be developed depending on the severity of the fault structure that separates the tracts. The fault structure can be explored by underground workings in the lands requested to be leased.

1.2 AGENCY ROLES AND RESPONSIBILITIES

The proposed coal leasing and potential related future mining operations have been designed to effect full compliance with all applicable Federal, State, and local laws and regulations. Specifically, coal lease acquisition and management must comply with applicable land management regulations and guidelines of the BLM, and any mining plan application that may result from BLM's leasing decision must adhere to applicable regulations and guidelines set forth by Utah Division of Oil, Gas and Mining (UDOGM) and Office of Surface Mining (OSM).

Bureau of Land Management

The BLM has the responsibility and authority to determine whether or not mineral leases are to be issued for Federal lands under the BLM's jurisdiction. Under applicable NEPA provisions, prior to granting leases, an evaluation of the potential effects of the proposed development

on the environment of the affected area(s) must be completed. As the primary responsible Federal land management agency for those Federal lands which will be affected by the proposed mine, the BLM will utilize this EA as a basis for the required determination on the lease application. The BLM will select a Preferred Alternative and determine whether or not the Preferred Alternative will result in unnecessary or undue degradation of potentially affected Federal lands consistent with applicable provisions of Federal Land Policy and Management Act (FLPMA). The BLM will also review the lease application and associated development plans in the context of the existing Management Framework Plan (MFP). Lease approvals may be conditioned on coordination with other resource values and land uses and appropriate rehabilitation of disturbed lands.

Office of Surface Mining

The OSM has jurisdiction over any mining plan application that may result from BLM's leasing decision. As a result, OSM is participating in the preparation of this EA as a formal cooperating agency.

The Surface Mining Control and Reclamation Act of 1977 (SMCRA) give OSM primary responsibility to administer programs that regulate surface coal mining operations and the surface effects of underground coal mining operations. In January 1981, pursuant to Section 503 of SMCRA, the UDOGM developed, and the Secretary of the Interior approved, a permanent program authorizing UDOGM to regulate surface coal mining operation and surface effects of underground coal mining on non-Federal lands within the State of Utah. In March 1987, pursuant to Section 523 (c) of SMCRA, UDOGM entered into a cooperative agreement with the Secretary of the Interior authorizing UDOGM to regulate surface coal mining operations and the surface effects of underground coal mining on Federal lands within the State.

Pursuant to the cooperative agreement, Federal coal lease holders in Utah must submit permit application packages to OSM and UDOGM for proposed mining and reclamation operations on Federal lands in the State. UDOGM reviews the packages to assure that the permit application complies with the permitting requirements and that the coal mining operation will meet the performance standards of the approved permanent program. If it does comply, UDOGM issues the applicant a permit to conduct coal mining operations. OSM, BLM, and other Federal agencies review the permit application package to assure that it complies with the terms of the coal lease, the Mineral Leasing Act of 1920, NEPA, and other Federal laws and their attendant regulations. OSM recommends approval, approval with conditions, or disapproval of the mining plan to the Assistant Secretary, Land and Minerals Management. Before the mining plan can be approved, BLM and the surface management agency (if other than the BLM) must concur with this recommendation.

UDOGM enforces applicable performance standards and permit requirements during the mine's operation and has primary authority in environmental emergencies. OSM retains oversight responsibility for this enforcement. BLM has authority in those emergency situations where UDOGM or OSM inspectors cannot act before significant environmental harm or damage occurs.

Other Jurisdictional Agencies

For any related future mining operations, Horizon will also comply with applicable regulatory requirements relating to the following designated activities/structures under the authority of the noted jurisdictional agencies.

Federal Agencies

Environmental Protection Agency (EPA) - Compliance with applicable air, water, and hazardous materials requirements under programs administered by the Utah Division of Air Quality (UDAQ) and Utah Division of Water Quality (UDWQ)

U.S. Army Corps of Engineers (COE) - Compliance with Section 404 of the Clean Water Act as it relates to the planned construction and stream realignment.

U.S. Commerce Department, Bureau of Alcohol, Tobacco, and Firearms - Permits for procurement, transportation, storage, and use of explosives.

Mine Safety and Health Administration (MSHA) - Compliance with applicable requirements relating to coal processing waste dams; impoundments and sedimentation ponds; plans for underground disposal of development waste, coal processing waste, or excess spoil; reclamation and closure of mine openings; any discharges into underground mines; mining within 500 feet of an active underground mine; and plans for extinguishing coal mine waste fires.

U.S. Fish and Wildlife Service (USFWS) - Compliance under the Endangered Species Act, Bald Eagle Protection Act, and Migratory Bird Act.

State Agencies

Utah Division of Oil, Gas and Mining (UDOGM) - Compliance under the State Utah Coal Mining Rules.

Utah Division of Air Quality (UDAQ) - Compliance with applicable air quality permitting and operational requirements.

Utah Division of Water Quality (UDWQ) - Compliance with applicable water discharge permitting, operational, monitoring, and reporting requirements.

Utah State Engineer - Compliance with well and pond design and construction requirements and water rights requirements.

Utah Department of Transportation (UDOT) - Highway modification and driveway permits.

Utah Division of Wildlife Resources (UDWR) - Compliance with applicable wildlife protection measures.

Utah State Historic Preservation Office (SHPO) - Compliance with applicable provisions of the National Historic Preservation Act.

Local Agencies

Carbon County - Compliance with applicable requirements for special use, building and water and sewer permits.

HCC has either applied for and received, or approvals are pending for all required permits and approvals.

1.3 CONFORMANCE WITH LAND USE DESIGNATIONS AND PLANS

In accordance with applicable provisions of 43 CFR 1600, the BLM has developed an implemented a Management Framework Plan (MFP) for the Price River Resource Area which addresses both multiple use objectives and resource specific objectives for protection and management of those Federal lands under the BLM's jurisdiction and authority. The following program description summarizes the Mineral Management Decisions presented in the MFP:

"The minerals program provides for the exploration and disposal of minerals by lease, license, or permit; coordination for minerals development with other land uses; and the assurance of rehabilitation of mined land ..."

The proposed action of coal leasing is consistent with both the general minerals management objectives as stated and specific multiple use objectives and decisions as outlined in the MFP.

The multiple use objectives and decisions for specific management categories (range, recreation, watershed, wildlife, and cultural) include limitations relative to the nature and extent of allowable disturbance. Relative to coal leasing, actual physical disturbance would be limited to that disturbance which would result from mine development, operation, and reclamation as reasonably foreseeable related future actions. Specific control, reclamation, and monitoring provisions included in the mining and reclamation plans reviewed and approved by UDOGM with input from the BLM effectively address compliance with all applicable limitations imposed by the BLM's multiple use objectives and decisions as outlined in the MFP.

1.4 ISSUES AND CONCERNS

Issuance of the proposed coal lease and related development and operation of the planned mine offer a number of important benefits specifically including the following:

Combined adjacent minable coal reserves with existing leased coal reserves as a logical mining unit assuring effective utilization and recovery of the available resource.

Assures continued availability of a valuable energy resource for industry and to generate electricity.

Facilitates effective reclamation, through a comprehensive reclamation program, of both new disturbance and previously disturbed areas.

Provides stable jobs for approximately 45 employees.

Support Federal, State and local governments through payments of property, sales, excise, fuel, and other taxes.

Support the National, State, and local economies through direct purchase of equipment, materials, supplies, services, and royalty payments.

2.0 PROPOSED ACTION AND ALTERNATIVES

2.1 PROPOSED ACTION

The proposed action is the approval and issuance of a coal lease ("lease") for approximately 1,280 acres of Federal lands administered by the BLM pursuant to a lease application by Horizon Coal Corporation (August 10, 1995).

Lease Description:

Township 13 South, Range 8 East, Salt Lake Meridian, Utah

Section 6: SE1/4SW1/4, S1/2SE1/4, NW1/4SE1/4;

Section 7: Lots 1 - 3, E1/2, E1/2W1/2;

Section 8: NW1/4NW1/4, S1/2NW1/4, SW1/4NE1/4, N1/2SW1/4, W1/2SE1/4, SW1/4SW1/4;

Section 17: N1/2NW1/4, SW1/4NE1/4;

Section 18: NE1/4NE1/4.

Refer to the Horizon Lease Tract application or Attachment D for drawings (HT3, 4 and 5, Block A-B) of the above described lease.

Leasing would provide both surface access for necessary mining related activities; and the rights to extract economically recoverable coal reserves. The coal would be recovered consistent with the terms of the BLM lease agreement, the approved Mining and Reclamation Permit (M&RP), Utah Division of Oil, Gas and Mining, and the approved mining plan, Assistant Secretary for Lands and Minerals.

2.2 PURPOSE AND NEED

The purpose and need for the proposed action are to make the coal resources available for development, extraction, and beneficial use consistent with applicable provision of the Mineral Leasing Act of 1920 as amended by Sections 2 and 3 of the Coal Leasing Amendments Act of 1976; the FLPMA of 1976; BLM regulations and the land use planning and management determinations presented in the Price River Management Framework Plan (1983).

Horizon considers the subsequent development of the requested federal lease to be necessary to the continued operation of the Horizon No. 1 Mine. Horizon presently retains access and extraction rights to coal resources which will provide coal productions for approximately one year. The "lease" would facilitate the operation of the mine for an additional 10 to 15 years, while providing a natural continuation of the mining unit. Leasing of this tract would assist in conserving the coal resource by avoiding a bypass. In addition the acquisition of the lease by Horizon would provide access for future development of coal reserves without requiring additional surface facility disturbance.

The current mine facilities are confined to Portal and Jewkes Canyons. Expansion of these facilities is possible, however the expansion would be within these canyons and would not extend into the "lease" area.

Environmental assessments of the area were performed in 1981 (Attachment A) and 1995 (Attachment B). The 1995 environmental assessment lists the unleased tract of Federal coal as the "Beaver Creek" tract.

2.3 ALTERNATIVE ACTION

The alternatives to issuance of the lease as described in this submittal would be as follows:

No Action

Under this alternative the requested coal lease would not be issued. This would result in the potential loss and sterilization of reserves since mining would then bypass these reserves and potential future access would be lost.

The only economical access to this reserve is through portals located on fee lands in Portal Canyon, where the Hiawatha Coal Seam nearly outcrops. The reserve block is bounded by the Fish Creek Graben to the south, the B-C Fault to the north, a stream channel system to the west and old mine workings to the east. No other economic point of access exists.

Should the coal lease not be issued, Horizon currently has coal reserves for one year of coal production.

Reduction in Size of Lease

A reduction in the area and total reserves under the requested lease was considered as a possible alternative to the proposed action. This alternative was eliminated because the requested lease block is based on natural geologic boundaries that support a logical sequence of mine development and recovery of available coal reserves. Reduction of the lease area would offer no advantage relative to reduction of potential mining-related impacts and would result in potential loss and sterilization of reserves since mining would then bypass these reserves and potential future access could be lost.

Expanding the Lease Area

The lease block is based on natural geologic boundaries that supports a logical sequence of mine development and recovery of available coal reserves. Data gained by mining the lease block may enable future economic crossing of the geologic boundaries to the north or west. Currently mining costs projected to cross the geologic boundaries cannot justify expansion of the lease area.

2.4 COAL MINE DEVELOPMENT AND PRODUCTION

Socio-Economics

With the acquisition of the "lease" the life of the mine will be extended for 10 to 15 years. Associated employment and economic benefits for the surrounding counties will be extended with the life of the mining operation. Horizon plans to hire and utilize employees from the Utah, Carbon and Emery County areas.

General Project Scope and Schedule

The Horizon Mine facilities are being constructed during 1997 in the adjoining Portal and Jewkes Canyons along Consumers Canyon Road. The mine facilities are being constructed on private lands leased from Hidden Splendor Resources. Mining of fee coal is due to begin during the Fall of 1997.

A BLM right-of-way was requested and granted (April 24, 1996) to connect two blocks of fee coal owned by Hidden Splendor Resources. The fee coal along with the BLM right-of-way lease should provide approximately one year of production, thus the necessity for the additional coal "lease".

Mine Construction and Development

No mine construction or development listed below is on the requested "lease". This information is provide for background purposes only.

The facilities in Portal and Jewkes Canyon will consist of the following structures:

- 3 Portals - Fan, Manway and Beltway
- 3 - 4 Trailers for use as offices, bath house, supply storage, etc.
- Sediment Pond
- Conveyor
- Coal Stockpile
- Substation
- Storage Tanks - Fuels and Water
- Pad Area for Equipment and Supply Storage, Parking

Mining and Related Operations

Coal will be extracted using continuous miners (2), loaded into shuttle cars, and hauled to an underground feeder breaker. The feeder breaker will reduce the coal to an appropriate size, after which the coal will be fed onto a conveyor to be carried to the surface. A crusher on the surface will further reduce the size of the coal, whereupon the coal will be transferred by conveyor to the raw coal storage pile. Coal from the storage pile will be loaded onto coal trucks.

The coal will be hauled by truck to the Wildcat Loadout and transported from there by train to various destinations and customers. No additional related operations are planned for the immediate mine area except as described above.

The coal from the Horizon No. 1 Mine will be sold on a run-of-mine basis, not washed. A minimal amount of rocky or high ash coal is expected to be produced. This material will be shipped to the coal terminal and blended with higher quality coal to be sold. Production/resource recovery is expected to be approximately 50,000 tons per month initially. A summary of anticipated coal reserves can be found in Attachment D.

The waste rock stowed underground will be backfilled into dead-end panels primarily near the outer extent of the area to be mined. Backfilling will occur prior to second mining to ensure that adequate roof support exists in the area.

2.5 SUBSIDENCE CONTROL AND MONITORING PLAN

The subsidence monitoring network will consist of permanent survey monuments located outside of the anticipated area of subsidence and a series of monitoring stations within the potential subsidence zone. The monitoring stations will be steel re-bar with aluminum caps set so that weather, frost heave, or livestock will not disturb them. Stations will be installed above the active mining area, as each new area is approached.

Multiple readings will be taken where necessary to ensure accuracy. Monitoring of the subsidence stations will be performed on an annual basis for a period of two years following final cessation of mining operations in a specific area. Reports of monitoring will be sent to the UDOGM on a yearly basis.

Springs Monitoring Plan

Each of the springs to be monitored issue from portions of the Blackhawk Formation which are stratigraphically higher than the Hiawatha coal seam. Therefore, data collected from the springs will allow quantification of potential impacts to perched aquifers within the permit and adjacent areas of both the initial permit term and future permit terms. Spring SP-2 is within approximately 400 feet of the initial planned workings and in an area which overlies future workings. Springs SP-1, SP-4, and GV-70 are in an area which lies within 200 to 700 feet of future workings. These distances are all within the zone of potential subsidence. Hence, data collected from these springs will assist in determining the impacts of subsidence on the groundwater resources of the Blackhawk Formation.

Springs SP-9 and 2-6-W lie approximately 1800 feet and 4900 feet southwest of the future mine workings. As a result, they are in areas which will not likely be impacted by subsidence effects. Hence, these springs will be monitored to provide background data on groundwater conditions within the Blackhawk Formation in areas that will not likely be impacted by mining. Spring locations are noted on Plate 7-1.

Stations SS-3, SS-5, SS-7, SS-8, SS-10, and SS-11 will be monitored once each calendar quarter (as access conditions permit) during the operational and reclamation periods. Stations SS-3 and SS-5 are located on Jewkes Creek down- and upstream from the surface facilities,

respectively, and will provide information regarding the impacts of surface disturbances. Stations SS-7 and SS-8 are located on Beaver Creek up- and downstream from potential future expansions of the mine. Similarly, stations SS-10 and SS-11 are located in tributaries to Jump Creek and Beaver Creek, respectively, downstream from potential future expansions of the mine. Through the collection of flow and water-quality data up- and downstream from underground mining activities, these latter four stations will provide information on the potential impacts of underground mining activities (e.g. increases or decreases in flow and water quality due to subsidence and other potential interruptions to the hydrologic regime) on surface hydrologic conditions.

Flow data collected from stations SS-7 and SS-8 will be compared to determine variations in flows up- and downstream from the mine workings. It should be noted that wide variations have been noted historically between these stations, with flows increasing and decreasing in the downstream direction. If the data suggest that abnormal variations in flow are occurring between stations SS-7 and SS-8, additional seepage evaluations will be conducted along Beaver Creek. Furthermore, station SS-12 will be established for the collection of flow data from Beaver Creek to further evaluate flow conditions in the creek as mining progresses to the northwest. These flow data will be collected on a quarterly basis during normal monitoring periods.

2.6 RECLAMATION OF MINING DISTURBANCES

Upon permanent cessation of operations, permanent reclamation will be performed in the disturbed area south of the "lease" area. All surface equipment, structures and facilities (other than sedimentation control) associated with the operation will be removed.

When no longer needed for mining operations, all entry ways or other openings to the surface from the underground mine will be sealed and backfilled. Prior to the sealing of the mine openings, all combustible materials will be removed from the portal area. The permanent closures will be constructed to prevent access to mine workings by people, livestock, and wildlife. Potential surface drainage will also be kept from entering the sealed entries.

All existing structures and roads which lie within the disturbed area boundary will be removed. Nonhazardous and nonflammable materials, such as concrete and steel, will be used as backfill in areas such as the sediment pond, highwalls, and cut slopes.

Diversions that are not planned for permanent use following reclamation will be removed during the backfilling and regrading operations. The area will be recontoured to drain to the final reclamation channel.

A loader will be used to load topsoil into haul trucks at the topsoil stockpiles. The haul trucks will be used to deliver the topsoil from the topsoil stockpile to the area where the dozer and backhoe will be working. The dozer will be used to evenly distribute the topsoil over the area.

Following redistribution of topsoil, the site will be reseeded, fertilized, and mulched.

Depending upon the season of the year and weather conditions the procedures listed above may be completed as one operation from start to finish or may be completed area by area to

control erosion and provide drainage. Erosion control matting and sediment controls will be placed throughout the reclamation process as they are needed.

All exposed coal outcrops resulting from this operation as well as toxic and acid-forming materials will be covered with a minimum of 4 feet of non-combustible, non-acid, non-toxic material during backfilling and grading. Similarly, any underground development waste that remains in temporary storage on the surface at the time of reclamation will be placed against an adjacent faceup or cut slope and covered with at least 4 feet of suitable backfill.

The revegetation plan has been designed to assure that all disturbed lands will be returned to productive self-perpetuating plant communities once the mining operation has been completed. The plan calls for temporary revegetation of disturbed areas where possible during the mining operation as well as permanent reclamation of all areas once mining has ceased.

Reclamation is particularly important as a means of controlling erosion and restoring disturbed areas to a productive state. To assist in meeting these desirable ends, the following aspects have been incorporated into the reclamation plan: (1) planting a diverse mixture of native grasses, forbs, and (where appropriate) woody species, (2) using seedling stock rather than relying solely on seeds for trees or shrubs, and (3) planting vegetation to create an edge effect by clumping selected shrub or tree species.

2.7 PLANNED MITIGATION MEASURES

Cultural Resource Mitigation

Should cultural or historical artifacts be discovered, the appropriate regulatory agencies will be notified and the site will be protected from further disturbance until it can be examined by authorized personnel.

Mitigation and Management Plans

The small surface disturbance associated with the mining facilities (south of "lease" area) will be mitigated upon completion of the project by reclaiming the disturbed sites. The revegetation plant mix includes herbaceous and woody species that are adapted to on-site conditions and are of known value to wildlife for cover and forage.

Habitat loss associated with disruption or pollution of North Fork Gordon Creek (Consumers Canyon) will be controlled through the mine's runoff- and sediment-control plan. Impacts to Beaver Creek should not increase when mining is introduced to the lease area, since no surface disturbance will be associated with the "lease". The "lease" area will be accessed on existing private roads for well monitoring and the collection of seep and spring water data.

Impacts to wildlife will be minimized by mandatory employee awareness programs which will inform mine personnel of especially sensitive periods (e.g., the nesting season for raptors, fawning season for deer) or habitats in the vicinity of the mine area. Road kills will be minimized through the awareness program, speed limits, and game crossing signs. Mine personnel will be strongly discouraged from leaving the disturbed area boundary during working hours except as required to fulfill permitting requirements.

Horizon will attempt to mitigate impacts with the following procedures:

1. Controlled speed limits on roads to protect wildlife. Personnel will restrict travel to exiting roads.
2. Wildlife habitats will be reclaimed with beneficial plant species. Native plants and berry producing shrubs will be planted for avian species.
3. Pesticides will be avoided on the mine site.
4. All toxic materials will be fenced to keep wildlife out, and taken to a disposal site.
5. Raptors and their offspring will be protected from disturbance and subsidence. Electrical and other transmission lines will be designed in accordance with the regulatory guidelines.
6. Subsidence, surface water and groundwater will be monitored as described in the Horizon's M&RP.

A wildlife monitoring program will be conducted throughout the operational life of the mine as required by regulatory agencies. The monitoring will utilize the services of an environmental specialist or as necessary, professional consultants. The program will also ensure that sensitive or critical use areas remain undisturbed by future activities and permit monitoring of reclamation efforts upon completion of mining activities. Any threatened or endangered species observed will be reported to the UDOGM and UDWR. The monitoring program will immediately be initiated upon opening the Horizon Mine.

Mitigation for impacts is discussed more extensively in the UDOGM approved Horizon M&RP ACT 007/020.

3.0 AFFECTED ENVIRONMENT

3.1 EXISTING ENVIRONMENT

Topography, Minerals

Topographically, the area consists of steep slopes on the face of the plateau and along drainages, flat surfaces or terraces or flood plains in valley bottoms and relatively gentle terrain on top of the plateau. The area is underlain by nearly flat sedimentary rocks of the Tertiary-Cretaceous North Horn Formation and the Lower Tertiary Flagstaff Formation.

Coal is the primary mined mineral in the immediate "lease" area.

Geology

The Horizon Mine is located in the northern portion of the Wasatch Plateau. The Wasatch Plateau is the northwestern outlier of the eroded San Rafael Swell. The plateau dips westward producing a great monoclinical fold that is interrupted by faults in the borderlands of the Great Basin. Superimposed over the region are numerous structural features including anticlines, synclines, faults and igneous intrusions.

The Wasatch Plateau is comprised primarily of Cretaceous to Tertiary age sedimentary rocks. These rocks are principally siliciclastic of both continental and marine origin. Coal seams of economic significance occur in the Cretaceous sediment.

The coal beds of interest lie within the Upper Cretaceous Mesaverde Group. This group is divided into four stratigraphic units and include in ascending order: The Star Point Sandstone, the Blackhawk Formation, the Castlegate Sandstone, and the Price River Formation. The minable seams are found in the lower 350 feet of the Blackhawk Formation. Plates 6-2 and 6-3 (Horizon M&RP) are geologic cross sections that illustrate the stratigraphic relationships of the Blackhawk and Star Point Formations and the mappable coal beds present in the Horizon Mine area.

Star Point Sandstone. The Star Point Sandstone is the oldest stratigraphic unit exposed in the area. It is the basal unit of the Mesaverde Group and is approximately 440 feet thick. The formation contains the Panther, Storrs, and Spring Canyon Sandstone Members which consist of coarsening upward littoral sequences of white to light gray, fine to medium grained, tight, quartzose sandstone (Blanchard 1981). The Star Point Formation overlies and intertongues with the marine Mancos Shale. The Star Point is the lowest cliff-forming unit over most of the east side of the Wasatch Plateau.

Blackhawk Formation. The Blackhawk Formation measures approximately 900 feet thick in the Gordon Creek area and 1,200 feet thick in the Beaver Creek area. The formation consists of interbedded fluvial and marine sandstone, siltstone, and shale. The Blackhawk Formation conformably overlies the Star Point Sandstone and the boundary between the two formations is sharp; the massive Spring Canyon Sandstone member of the Star Point Sandstone is overlain by an easily erodible, shaley sandstone.

A total of eight coal seams can be identified in the Gordon Creek region. Four of the eight seams are present in the mine area and outcrop on the walls of the North Fork of Gordon Creek Canyon, Coal Canyon, and Bryner Canyon. Weathering, burning and vegetation obscures the majority of coal outcrops of the Hiawatha, Gordon, Castlegate "A", and Bob Wright seams. Only the Hiawatha and Castlegate "A" seams have been economically mined in the area. The Hiawatha seam marks the base of the Blackhawk Formation. The Castlegate "A" seam overlies the Aberdeen Sandstone. The Aberdeen is a marine sandstone sequence that coarsens upward, and is similar in character to the Star Point Sandstone. The Aberdeen measures over 120 feet at Price Canyon (Sec. 12, T13S, R9E) and thins to the west pinching out within the lease boundary.

In the area, the Blackhawk Formation is the principal surficial bedrock unit. The Blackhawk is disconformably overlain by the massive, coarse grained, fluvial Castlegate Sandstone.

Castlegate Sandstone. The Castlegate Sandstone is exposed in the central and northeastern portion of the permit area. The formation consists of a white to gray, coarse grained to conglomeratic fluvial sandstone. Exposures of the Castlegate Sandstone typically form cliffs to steep slopes. The Castlegate Sandstone is approximately 300 feet thick in the Gordon Creek area.

Price River Formation. The Price River Formation occurs in the northeastern portion of the permit area. The Price River is also a fluvial deposit and contains gray to white silty sandstones with interbedded subordinate shale and conglomerate. The formation typically forms ledges and slopes. The Price River formation ranges from 600 to 1,000 feet in thickness.

Unconsolidated Deposits. Unconsolidated deposits composed of silt and fine grained sand, alluvial sediments and talus debris occur along valley floors and at the base of steep slopes. The thickness of these sediments is variable. In the Horizon Mine area, the thickest alluvial deposits occur along Beaver Creek. Based on field observations, the alluvial sediments appear to exceed 10 feet in thickness.

Igneous Dikes. Several igneous dikes have been reported in area mines including the Beaver Creek Coal Mines #2 and #3. The dikes are reported to be Miocene age and are a mica peridotite (Tingey, 1986). The dikes are typically associated with faults that bisect the area and trend east-west to northwest-southeast.

Both the lease and permit areas are faulted. Two major fault zones affect the area: the North Gordon and Fish Creek fault zones. The North Gordon fault zone measures three miles wide and five miles in length. The Fish Creek fault zone averages two miles wide and enters from the northwest. Both the fault zones pass through the lease area.

The two major fault trends are the N60 degree west trending faults (Range N50-75W) associated with the Fish Creek fault zone, and the N-S trending faults associated with the North Gordon fault zone. Sympathetic faulting also occurs within the mine area. Displacements of the faults in the mine area are variable ranging from a few feet to as much as 200 feet.

Faulting may also effect the locations of springs and seeps in the area. The faulting and fracturing of the bedrock in the area may provide open conduits for surface water to enter into the subsurface or allow groundwater movement between aquifers.

A structural feature which influences the area is the Beaver Creek Syncline. The synclinal axis trends NE-SW and the strata dip toward the axis at approximately 3.5 degrees. The lease is located on the western limb of the syncline.

The igneous dikes of the area generally trend parallel to the Fish Creek fault trend. The dikes range from 0.1 to 14.0 feet in thickness.

Geology of Coal Beds and Adjacent Strata

Numerous surface exploration and surface development holes have been drilled by various energy companies and government agencies in the surrounding area. Many of these drill holes were drilled under the direction of the Beaver Creek Coal Company during exploration and evaluation projects for their Gordon Creek mines. Four holes, LMC 1 - 4, were drilled in the area under the direction of LMC Resources. The LMC drill hole geophysical logs were interpreted and lithologic logs were constructed by the Bureau of Land Management (BLM). Geologic cross-sections were generated from drill hole logs created by Beaver Creek Coal Company (BCCC), LMC, and the USGS. See Plates 6-2 and 6-3 in the map section attached to this environmental assessment.

Hiawatha Seam. The Hiawatha Seam is the lowest stratigraphic coal in the current Horizon mining area. It directly overlies the Star Point Sandstone and is the most laterally persistent seam in the area. The Hiawatha seam ranges in thickness from 6.0 to 11.0 feet, averaging 7.0 feet within the area. A thin rider seam overlies the Hiawatha in the southwestern part of the current permit area.

The floor rock of the Hiawatha seam ranges from the competent littoral Spring Canyon of the Star Point Sandstone to fluvial overbank shales and siltstone and channel sandstones. Horizon Coal Corporation will be mining the Hiawatha Seam.

Gordon Coal Zone. The Gordon seam is stratigraphically located about 80 feet above the Hiawatha. It is very lenticular and generally less than 5.0 feet in thickness with multiple splits. It is not economically mineable in the Gordon Creek area.

Castlegate "A" Seam. The Castlegate "A" seam is stratigraphically located 150 to 230 feet above the Hiawatha seam. The seam ranges 4.0 to 14.0 feet in thickness. The average thickness in this area is 8.3 feet. The Castlegate "A" seam becomes unmineable in areas near the southwestern permit boundary and pinches out near the western boundary of the lease, there are no current plans to mine this seam. Horizon Coal Corporation plans on mining the Hiawatha Seam.

Bob Wright Seam. The Bob Wright seam lies about 120 feet above the Castlegate "A" seam. It is very lenticular and contains abundant partings. It does not achieve minable thickness (4.0 ft.) within the Gordon Creek area. However, the seam does thicken above 4.0 feet southwest of the current permit area.

3.2 SOILS

Soil mapping units are a refinement of USDA Soil Conservation Service manuscript mapping. The soils mapping was done by Patrick D. Collins (Botanist/Reclamation Specialist) using the information supplied by George Cook of the Soil Conservation Service (SCS) as to the locations, types and depths of soils.

The soil descriptions were compared with recorded characteristics of the soils in adjacent areas and in the official SCS series descriptions. Depths and types of soil were identified by SCS. A complete survey of the soil within the permit area was completed on November 3, 1990 and data for the lease area collected from SCS sources.

Shupert-Winetti Complex

The Shupert - Winetti complex consists of very deep, well drained, moderately permeable soils on narrow valley and canyon floors. These soils formed in alluvium derived from sandstone and shale. Slope is 1 to 8 percent. Elevation ranges from 4,600 to 7,200 feet but commonly is 5,200 to 6,400 feet. These soils are fine-loamy, mixed (calcareous), frigid Typic Ustifluvents. Average annual precipitation is 12 to 16 inches, and average annual air temperature is 43 to 45 degrees F.

Beje-Trag Complex

The Beje-Trag complex consists of shallow to deep, well drained, moderately permeable soils on ridges and draws of plateaus. These soils formed in alluvium derived from sandstone and shale. Slope is 3 to 30 percent. Elevation ranges from 7,000 to 9,700 feet. These soils are loam and clay loam. Average annual precipitation is 16 to 20 inches, and average annual air temperature is 38 to 45 degrees F.

Uinta Family-Podo Association

The Uinta Family-Podo Association consists of shallow to deep, well drained, moderately slow to rapid permeable soils on mountain ridges and slopes. These soils formed in colluvium derived from sandstone, shale, and siltstone. Slope is 30 to 70 percent. Elevation ranges from 8,000 to 9,000 feet. These soils are stony, sandy loam. Average annual precipitation is 16 to 30 inches, and average annual air temperature is 34 to 42 degrees F.

Uinta-Toze Families Complex

The Uinta-Toze Families Complex consists of deep, well drained, moderately slow permeable soils on mountain slopes. These soils formed in colluvium derived from sandstone, shale, and siltstone. Slope is 30 to 75 percent. Elevation ranges from 7,800 to 9,600 feet. These soils are loam, sandy loam, and gravelly silty loam. Average annual precipitation is 20 to 30 inches, and average annual air temperature is 34 to 38 degrees F.

Brycan

The Brycan Series consists of very deep, well drained, moderately slowly permeable soils on alluvium derived from shale and sandstone. Slope is 3 to 8 percent. Elevation is 7,700 to 8,600 feet. These soils are fine-loamy, mixed Cumulic Haploborolls. Average annual precipitation is 16 to 20 inches, and average annual air temperature is 38 to 45 degrees F.

Curecanti

The Curecanti family consists of very deep, well drained, moderately permeable soils on mountain slopes. These soils formed in colluvium derived dominantly from sandstone and shale. Slope is 50 to 70 percent. Elevation is 6,800 to 9,000 feet. These soils are loamy-skeletal, mixed Typic Argiborolls. Average annual precipitation ranges from 16 to 20 inches, and average annual air temperature ranges from 38 to 45 degrees F.

Rabbitex

The Rabbitex series consists of very deep, well drained, moderately permeable soils on mountain slopes and ridge tops. These soils formed in residuum and colluvium derived dominantly from sandstone, shale, limestone, and siltstone. Slope is 15 to 70 percent. Elevation is 7,000 to 9,200 feet. These soils are fine-loamy, mixed Typic Calciborolls. Average annual precipitation range from 16 to 20 inches, and average annual air temperature ranges from 38 to 45 degrees F.

Senchert

The Senchert family consists of moderately deep, well drained, moderately permeable soils on mountain slopes, plateaus, and ridges. These soils formed in residuum and alluvium derived dominantly from sandstone and shale. Slope is 1 to 50 percent. Elevation is 8,000 to 10,100 feet. Average annual precipitation is 20 to 30 inches. An average annual air temperature is 36 to 38 degrees F. These soils are fine loamy, mixed Argic Pachic Cryoborolls.

Prime Farmlands

The SCS has determined that there are no prime farmlands of statewide importance, or unique in the lease area. None of the soils mapped at the site have potential for the growth of crops or pasture land. The soils, short growing season, and weather are not conducive to the raising of crops.

Rangelands

The principle limitations for the use of the land as range are erosion and shallowness. According to the SCS the soils cannot support cultivated crops. The soils incapability have very severe limitations thus restricting the use of the land largely to grazing, woodland, or wildlife habitat.

3.3 HYDROLOGY

Field reconnaissance of the mine area by Darin Worden, UDOGM (1988-1990) permitted observation of the geologic setting of springs and seeps, and confirmation of the geologic observations made from aerial photo reconnaissance. Hydrologic data collected from wells and springs in the area were evaluated. Data evaluated also include drill hole logs, mine maps from the permit and adjacent areas, published and open file reports from the U.S. Geological Survey (USGS), Utah Geological Survey, Bureau of Land Management (BLM), and the U.S. Forest Service. BCCC records were also used to study the hydrology of the area.

Furthermore, at the request of UDOGM in 1996, a reconnaissance of the permit and surrounding areas was performed for seeps and springs. Areas evaluated included Sand Gulch, Coal Canyon, and several unnamed drainages which contribute to Beaver and Jump Creeks. The flow and temperature for each of the seep or spring within the Horizon permit boundary are summarized in the Horizon mining permit. These data were gathered to provide baseline information in anticipation of future mining. A plate showing the majority of the seeps and springs is included in this submittal as Plate 7-1. Several springs are outside the area covered by Horizon's current base map, however their locations will be provided upon request.

Regional Groundwater Hydrology

The lithologic nature of the Upper Cretaceous strata generally render these units unsuitable as significant aquifers. Price and Arnow (1974) do not identify Gordon Creek area as a region for potential large scale ground water development. In general, all the upper Cretaceous sediments of the area have low hydraulic conductivities and low specific yields (0.2 to 0.7 percent) (Price and Arnow, 1974). Much of the precipitation that falls in the Wasatch Plateau exits the area by overland flow and evaporation. Much of the water that does enter the ground moves only short distances before discharging as springs and seeps (field observations made by Darin Worden - UDOGM).

The lowest principal water-bearing formations of the Wasatch Plateau are the sandstone units of the Mancos Shale Group.

The Star Point Formation overlies the Mancos Shale. It is composed of littoral sandstones interbedded with tongues of the Mancos Shale. Lines (1985) identified the Blackhawk Formation and Star Point Sandstone as an aquifer in the region. The majority of the water contained in the Blackhawk-Star Point aquifer resides in the sandstone tongues of the Star Point Formation. It is likely that the Star Point Sandstone is the only formation within the permit and adjacent areas that contains groundwater on an areally-extensive basis.

The Blackhawk Formation overlies the Star Point Sandstone and contains the principal coal beds mined in the area. The Aberdeen Sandstone is a marine sandstone unit of the Blackhawk Formation. Sandstone units of the Blackhawk are generally very-fine grained, and have a significant clay content. Ground water that occurs in this formation generally occurs in laterally discontinuous perched aquifers. As a result, the Blackhawk is not a significant regional aquifer, and little work has been done to determine its hydraulic characteristics.

The Price River Formation overlies the Castlegate Sandstone and consists of interbedded sandstone, shale, and siltstone. Groundwater contained within the Price River Formation occurs within perched aquifers. Laboratory tests on sandstone from the Price River show that it has generally high porosity (21%) but apparently a low permeability (Cordova, 1964).

3.4 GEOLOGIC OCCURRENCE

Formations which outcrop within the Horizon permit and adjacent areas include quaternary alluvium, the Price River Formation, the Castlegate Sandstone, the Blackhawk Formation, the Star Point Sandstone, and the Mancos Shale. A regionally extensive groundwater system has not been identified in the permit area (Engineering Science, 1984). Characteristics of these formations, and their potential to serve as aquifers in the permit and adjacent areas, is presented below.

Price River Formation

Due to its limited outcrop extent within the permit and adjacent areas, the presence of claystone and shale within the formation, and drainage of the formation by deeply incised canyons, the Price River Formation is not considered to be a significant aquifer within the permit and adjacent areas. According to the Cumulative Hydrologic Impact Assessment (CHIA), completed by UDOGM (1989) for the Upper Gordon Creek Area, "groundwater associated with the Price River Formation may be characterized as occurring within a 'perched' aquifer and represents a relatively insignificant hydrologic resource." UDOGM compiled a CHIA for the Upper Gordon Creek and Beaver Creek Basins in September 24, 1996.

Castlegate Sandstone

The Castlegate Sandstone consists of 150 to 500 feet of white to gray, coarse-grained often conglomeratic sandstone with a few thin interbedded mudstones or shales near the base. Cliffs often form along outcrops of the Castlegate Sandstone. Based on the limited area of exposure for surface recharge (due to the steep slopes), the limited potential for recharge from the overlying perched aquifers of the Price River Formation, and drainage of the sandstone into the deeply incised canyons of the area, water contained within the Castlegate is minimal. Consequently, this formation is not considered to be a significant aquifer.

Blackhawk Formation

The Blackhawk Formation underlies the Castlegate Sandstone and consists of several hundred feet of interbedded sandstone, siltstone, shale, and coal. The Hiawatha coal seam is located near the base of the Blackhawk Formation. The Blackhawk Formation has a mixed lithology of sandstones, shales, and coals which produce alternating perched aquifers and impermeable beds (Doelling, 1972). Four springs were identified in the area by the 1989 Cumulative Hydrologic Impact Assessment with "all springs discharging from the Blackhawk Formation".

The above-mentioned springs are associated with fractures and/or channel sands that are of limited areal extent, which contain water perched over shale beds and have limited recharge

areas. This type of spring commonly has considerable variation in flow because of the limited recharge area and the limited amount of storage in the aquifer (Engineering Science, 1984).

According to UDOGM (1989), mine inflows into mines in the area of the Horizon Mine are insignificant. Since mining in the area occurs within the Blackhawk Formation, this indicates that extensive aquifers are not present within the Blackhawk Formation in the permit and adjacent areas.

The Aberdeen is present in the Horizon Mine area but is not anticipated to be a significant aquifer in the permit area.

Star Point Sandstone

The Star Point Sandstone consists of fine to medium grained sandstone that decreases in grain size with depth. This unit consists of several littoral sandstone tongues separated by Mancos shales (Doelling, 1972). Regionally, recharge to the Star Point occurs primarily from vertical movement of water through the overlying Blackhawk Formation. Due to the low vertical permeability of the Blackhawk Formation, the magnitude of this recharge is limited. This formation is monitored via monitoring wells HZ-95-1, HZ-95-2, and HZ-95-3, which have been installed into the uppermost Spring Canyon tongue.

Mancos Shale

Underlying the Star Point Sandstone is the Masuk member of the Mancos Shale. The Masuk Shale consists of blue-gray fissile claystone or silty claystone which weathers light blue-gray to light tan. Although the Masuk Member of the Mancos Shale may be locally saturated beneath the Star Point Sandstone, it is not considered to be an aquifer. Except where extensively fractured, the low-permeability shales in the Masuk will transmit only relatively small quantities of water (Lines, 1985).

Quaternary Alluvium

Unconsolidated Quaternary deposits are present in the floors of drainages and generally consist of silts, sands, and gravels. The alluvial deposits receive water from the adjacent bedrock in some of the deeply incised canyons. Water is probably supplied to the alluvium by seepage from the Blackhawk and Star Point Formations. Discharge from the Quaternary alluvium is to the surface water system. Due to the limited areal extent of alluvium in the area, this unit is not considered to be a significant aquifer.

No water rights exist within the permit and adjacent areas for water wells. However, rights exist for the use of water from several springs in the permit and adjacent areas. Typically, these rights are for the use of less than 5 gallons per minute of water from springs issuing from the Blackhawk Formation. Water in this formation issues from perched aquifers of limited areal extent. This accounts for the low flow and usage rates of the springs.

Approximately 50 to 70 percent of the stream flow in the region occurs during the May-July snowmelt runoff period (Waddell et al., 1981). Summer precipitation usually results in minor amounts of runoff.

Water quality in the Price River and its tributaries can be classified as good at the higher elevations, with TDS concentrations of 250 mg/1 and below. As is the case with springs in the area, these surface waters tend to be a calcium bicarbonate type. At lower elevations below diversions, the water changes to a sodium sulfate type with dissolved solids ranging from 2,500 to more than 6,000 mg/1 (Waddell et al., 1981). These changes are caused by leaching of salts from irrigation return flows and natural runoff from areas underlain by Mancos Shale.

The three principal surface water courses in the region of the "lease" are Jump Creek to the north, Beaver Creek through the center, and North Fork Gordon Creek to the south.

Beaver Creek originates at 9,200 ft. about 4 km west of the mine facilities, first being mapped as a perennial stream at an elevation of 8,950 ft. 0.8 kilometer below its upper end. Beaver Creek is fed by a perennial stream (Spring Creek) within the study area. During the 1980-81 field studies, however, this tributary was dry above the spring (8,550 ft.) except during snow-melt. Between the upper limits of permanent water and its confluence with Sand Gulch near the northern end of the study area at 8,300 ft., Beaver Creek has a mean gradient of 650 ft/mile (12 percent). Much of the stream length is characterized by active or abandoned beaver ponds, willow thickets, and wet meadows with fairly well-developed meanders in some broader sections.

One of the contributing springs, the Homestead Spring (sampled by BCCC as 2-6-W), is an area of seeps located in a small tributary to Beaver Creek in the SW $\frac{1}{4}$ NE $\frac{1}{4}$ Sec. 13, T. 13 S., R. 7 E. (approximately 0.5 mile south of the lease area). Past measurements collected by BCCC personnel have indicated that this spring discharges from 3 to 136 gallons per minute, with the higher flow rates in June including surface runoff from snowmelt conditions.

Jewkes Spring (SP-9) is located near the Beaver Creek stream channel in the SW $\frac{1}{4}$ SW $\frac{1}{4}$ Sec. 7, T. 13 S., R. 8 E., approximately .25 mile west of the lease area. With the exception of a spurious measurement in July 1985, discharges from this spring have generally varied during the period of record from about 1 to 40 gpm, with no observable flow during drought periods.

The general flow direction of Beaver Creek is to the northeast toward the Price River. The drainage pattern in the upper portions of the Beaver Creek basin is dendritic. The valley profile is not as steep as the North Fork of Gordon Creek.

The USGS formerly maintained a gauging station near the mouth of Beaver Creek (Station No. 09312700) approximately 8 miles northeast of the lease. During the 29-year period of record from October 1960 to October 1989, the minimum annual discharge of 254 acre-feet occurred during water year 1981. The maximum annual discharge of 9,950 acre-feet occurred two years later in water year 1983. The average annual discharge of Beaver Creek at the USGS monitoring station during the 29-year period of record has been 3,310 acre-feet.

The annual variability of flow in Beaver Creek can be seen by the fact that the annual maximum and the annual minimum during a 29-year period of record were separated by only two years. This variability is also evident in the high coefficient of variation for the station (74 percent).

Stream flow at the Beaver Creek USGS station was typically highest in the spring and early summer (April through June, as a result of snow melt) and lowest during the autumn and winter months. Occasional late summer rapid increases in flow were also observed, probably as a result of summer thunderstorms. Several days of no flow were also reported during the period of record (mostly in the winter and late summer).

Jump Creek is located approximately 1 mile north of the lease area. Flow data for Jump Creek is minimal therefore it is not discussed. The creek joins with Beaver Creek and flows into the Price River.

North Fork Gordon Creek originates from two unnamed intermittent tributaries about 5 kilometers (km) southwest of the mine site, at an elevation of about 8,750 ft. Within the study area, North Fork Gordon Creek is augmented by a number of minor intermittent tributaries, particularly the Jewkes Creek that flows through the mine's disturbed and permit area. North Fork Gordon Creek covers approximately 3.5 miles of stream length, with a mean gradient of 340 ft/mile or 6.5 percent. The stream has few meanders but is characterized by scattered beaver ponds. Riparian vegetation is poorly developed along much of its length. The elevation of North Fork Gordon Creek is lower than the Hiawatha coal seam, the lowest minable seam in the area.

Jewkes Creek originates at 8,240 feet at the spring being monitored by Horizon as SP-1. Multiple springs add to the flow in Jewkes Creek as it drops from the 8,240 feet to 7,600 feet and empties into the North Fork of Gordon Creek. Jewkes Creek is an intermittent stream which enters the Horizon disturbed area at approximately 7,600 feet.

3.5 VEGETATION

Mountain Shrub

One of the most widespread habitats, especially on steep slopes at lower elevations, was a highly variable mixture of shrub species typical of mountainous areas in the region.

The xeric phase was prevalent on south-facing slopes. Characteristically, these areas were dominated by open stands of Gambel's Oak with varying amounts of Alder-leaf Mountain Mahogany, Serviceberry, Snowberry, Antelope Bitterbrush, and Rubber Rabbitbrush. Conspicuous herbaceous species during early fall were a Tansy-aster and Salina Wildrye. At higher elevations, some south facing slopes were strongly dominated by Greenleaf Manzanita an evergreen shrub of particular values to wildlife.

The mesic phase, typically occurring on north-facing slopes, was dominated by dense stands of Gambel's Oak or Wasatch Maple. Associated woody plants included isolated clumps of Quaking Aspen, scattered Douglas Fir, and White Fir (often appearing to represent a later successional stage), and shrubs such as Chokecherry, Serviceberry, Snowberry, Woods' Rose, Oregon grape, and Mountain lower. The variable herbaceous stratum was dominated by Mountain Brome, Nodding Brome, and perennial forbs such as Aster, Erigeron, Fragaria, Frasera, Galium, Geranium, Lathyrus, Thalictrum, and Vicia.

Slope Bunchgrass

This rather widespread habitat was similar in composition to Xeric Mountain Shrub habitat, except for the near absence of woody species. The dominant plant was the bunchgrass *Salina Wildrye*. The casual distinction between these two xeric communities is not clear, but it probably is related to soil moisture and texture.

Middle Elevation Conifer

This widespread habitat type was limited to north-facing slopes and along drainages, typically appearing as isolated clumps scattered through larger areas of Aspen or Mesic Mountain Shrub. Mature White Firs and Douglas Firs were visually and numerically dominant throughout. Prominent understory species were Mountain Snowberry, Oregon Grape, Currants, Mallow Ninebark, Woods' Rose, Aster, *Fragaria*, and *Heuchera*.

High Elevation Conifer

Atop the Wasatch Plateau especially at elevations of 8,500 ft. or higher, coniferous forests were dominated by Engelmann Spruce, Subalpine Fir, and Douglas Fir. Understory species were similar to those described above for Middle Elevation Conifer Forests.

Aspen

Dense stands of mature Quaking Aspen occurred as a mosaic in moist sites, either on north slopes among Mesic Mountain Shrubs and Middle Elevation Conifers or along forest edges adjacent to High Elevation Conifers. In both occurrences, the understory was similar to other mesic habitats; prominent species included Mountain Snowberry, Mountain-lower, Oregon Holly-grape, *Fragaria*, Geranium, Lathyrus, *Thalictrum*, and *Vicia*. In the north-slope phase of this community type, Wasatch Maple often was sufficiently common to be considered a co-dominant.

Mixed Riparian

Streams at lower elevations in the study area generally were characterized by riparian vegetation dominated by larger deciduous shrubs: Mountain Maple, Redtwig Dogwood, Elderberry, Chokecherry, and Willow (*Salix*) species. This assemblage was most common in shaded areas, where the stream was closest to the base of north-facing slopes. More open sites often lacked a distinct riparian community, instead being dominated by species occurring on adjacent xeric hillsides. Trees frequently were absent altogether, but some sites did support large Plains Cottonwoods and Box Elders.

At higher elevations, aspen and conifers (including Blue Spruce) often occurred as part of the riparian complex.

Subalpine Moist Meadow

Moist meadows commonly were the dominant riparian habitat type above 8,500 ft. These open areas supported dense stands of mesic grasses, such as Foxtail, Red-top, Canada Wildrye, Reed Canary-grass, Bluegrass species, and Sedge species.

Plate 9-1 outlines the sections of vegetation within and adjacent to the "lease" area. Refer to Section 4.0 for description of threatened and endangered species study.

3.6 WILDLIFE AND FISH

In 1981 and 1990, the UDWR provided detailed wildlife information for the area, UDWR also prepared a wildlife plan representing their recommendations for mitigation and impact avoidance procedures in the disturbed area. The UDWR personnel providing the information were John Livesay, Larry Dalton, Darrel Nish, Clark Johnson, Bill Bates, Robert G. Valentine, and Cleon B. Feight.

Large herbivores and large carnivores were inventoried by road surveys during each field session for abundance, distribution, and habitat use. This data was augmented with walked transects across each habitat type.

Medium-sized mammals, such as predators, lagomorphs (rabbits and hares), and large rodents were studied at dawn and dusk when they are most active. Data for small mammals, which may be used as indicators of ecosystem quality and reclamation success, were drawn almost exclusively from UDWR (1978) and Durrant (1952).

Upland game bird surveys were conducted in conjunction with other field programs. The upland fowl and water bird populations in this area were insufficient to warrant recreational value.

The most likely raptors in the mine area are the Flammulated Owl and Cooper's Hawk, which occur in the Wasatch Plateau and prefer wooded country, such as riparian and conifer forests. With the availability of cliffs for nesting and open areas for hunting within a relatively short distance the Prairie Falcon is a potential breeder in the area.

Information provided by UDWR (1981a) indicate that the most important habitat types in the study area are the Mixed Riparian zones along Beaver Creek and North Fork Gordon Creek and the Subalpine Moist Meadows atop the plateaus.

It is probable the sixty-six species of mammals inhabit the project area as well as the biogeographic area (reference the UDWR Publication No. 90-11). Mule deer and elk are inhabitants of the biogeographic area. In the lease area both species show altitudinal migrations in response to winter conditions.

On June 14, 1996 a bat survey in the portals located in Portal Canyon were performed by Brad Lengas, a qualified biologist. This report states that "the adit(s) show no evidence of being used as summer bat roost(s)". No bats were observed in the portal area during site construction (fall and winter, 1996).

Two hundred forty-two species of birds, all of which are protected, are known to inhabit the biogeographic area in which the mine and lease are located. It is possible that one hundred thirty-eight of these species inhabit the project area.

Golden eagles are a common yearlong resident of the area. No active aerie territories are known inside the project disturbed area. Golden Eagle/Prairie Falcon nests were observed during the 1995 survey, Bill Bates (UDWR) confirmed that they had not been nor were they inhabited recently. The nesting area surveyed by UDWR is used by Golden Eagles one year and by Prairie Falcons another year, only one species will use the nesting area any given year. The mine plan and adjacent areas have been ranked as being of substantial value to golden eagles.

The northern bald eagle is an winter resident (November 15 to March 15) of the biogeographic area. The area has been ranked as being of substantial value to wintering bald eagles, therefore the lease area may be used by the bald eagle. The American peregrine falcon and the prairie falcon are yearlong residents of the area.

The sixteen reptile species suspected of inhabiting the project area are protected under the law but none are federally listed as a threatened or endangered species. Six species of amphibians, all of which are protected, are known to inhabit the biogeographic area. No amphibians which are known to inhabit the mine area are federally listed as a threatened or endangered species.

Listed threatened and endangered species potentially present in the study area are the American Peregrine Falcon, which breeds in Utah; Arctic Peregrine Falcon, which migrates through Utah; and Bald Eagle, which winters in Utah.

Wildlife in the area has been monitored yearly by the UDWR due to the proximity of the lease to the Gordon Creek Wildlife Management Area. Detailed data is available from the UDWR and can be supplied upon request.

Aquatic Studies

Aquatic field and lab studies were performed in the North Fork Gordon Creek and Beaver Creek by the UDWR. Biotic components specifically included sampling for macroinvertebrates and evaluating the fisheries potential. Abiotic components included field techniques for testing water quality, as well as descriptions of substrate and channel morphology. Studies were conducted in November 1980 and April and June 1981. Additional stream surveys and inventories were done on Beaver Creek in 1953 and 1987 by the UDWR.

The 1980 and 1981 aquatic studies involved six stream sample sites: four in the Beaver Creek system and two in the North Fork Gordon Creek system. The sites were selected to provide information from representative stream reaches, above and below substantial tributaries. The sites on North Fork Gordon Creek were located in the drainage south of Bryner Canyon, southwest of the Horizon permit area. No fish were seen or collected in either the North Fork Gordon Creek or Beaver Creek (UDWR, 1981a).

The two sites in Beaver Creek were located upstream of the unnamed stream which is the tributary in extreme northwestern Section 18. A third site was located on the unnamed tributary called Spring Creek, and the fourth site was about 1 kilometer farther downstream, in southern Section 7.

Beaver Creek is ranked by UDWR as being of substantial value as a salmonid fishery, with a self-sustaining population of introduced Yellowstone Cutthroat Trout. Nongame fish species listed by UDWR for Beaver Creek in the study area are the Mottled Sculpin, Mountain Sucker, and Speckled Dace. No fish were seen in Beaver Creek during the April or June surveys, suggesting that populations are fairly small in the study area, probably due to low flows and low gradients (the latter reflected by fairly high temperatures). Fish surveys were not conducted because the mining project is not expected to affect the stream. This was recognized by UDWR in their evaluation of wildlife in the study area (UDWR 1981a).

Beaver Creek has been essentially unaffected by mining or exploratory drilling programs in the Beaver Creek valley. This situation is not expected to change with an additional mining operation.

3.7 CULTURAL RESOURCES AND PALEONTOLOGY

Coal mines were opened in the area in the 1920s. Among the larger mines in the area were Sweet in 1925, Consumers in 1922, and National in 1908. Mining camps sprang up at the mines and for a short time Coal City (Dempseyville), located 2 miles east of the mines served as the business and residential center of the mining district. Remains of the major mining camps and coal mining operations can still be seen, including remains of cabins and work areas constructed by National Coal Company.

The historical, cultural and paleontological resources inventory and Class I literature search for Horizon Coal Corporation were completed by Baseline Data, Inc. (BDI) in 1995 under Utah State Project Authorization No. U95-BS-416P. The inventory fulfills requirements of the Utah Coal Mining and Reclamation Act of 1979. A copy of the data collected by BDI can be found in Appendix 5-1 of the Horizon M&RP.

The area inventoried lies approximately 14 miles northwest of Price, Utah in Township 13 South, Range 8 East, Section 17. The BDI inventory consisted of a 100% examination of the proposed mine disturbed area. The area disturbed by the drilling of monitoring wells HZ-95-1, 1S and 2 (Section 8) was also inventoried for historical, cultural and paleontological resources. No artifacts were collected during the inventories. Since no additional surface disturbance is planned for the requested lease, the data is presumed sufficient.

The archaeological survey of the area recorded no historic archaeological sites. A search of the site files at the Utah Division of State History turned up no previously recorded sites in or near the permit area. Letters from the Utah State Historical Preservation Office (SHPO) on May 30, 1995 and October 24, 1995 both recommend that there would be "No Effect" upon cultural resources by the Horizon No. 1 Mine project. A conversation with James L. Dykmann (SHPO) on January 19, 1996 confirmed "no change" in their recommendation of 1995.

An inventory of the area was performed by Betsy L. Chapoose, Director of the Tribe Cultural Rights and Protection for the Ute Tribe. She determined there would be "No Effect" to tribal cultural artifacts with the issuance of the "lease" to HCC.

The permit and "lease" areas do not contain any public parks, cemeteries, archeological sites, units of the National System of Trails or of the Wild and Scenic River System.

Historic Land Use

The general region has been occupied by Native Americans for several thousand years. There is no evidence of permanent occupation by Native Americans, and their use of the area was probably limited to passage to higher grounds west of the mine or seasonal hunting and foraging activities.

Historic use of the area may have occurred as early as the 1830 - 1840s by fur trappers, but no evidence of this activity has been documented in the area. The first use of the mine location by Euro-Americans probably occurred in the early 1850s in the form of grazing by settlers from the Sanpete Valley. Grazing activities in the Gordon Creek Canyon were probably continued if not increased with the settlement of the Price River area east of the mine location.

A high quality coal seam was discovered in the area in 1921. Between 1922 and 1956, the mine area was the location of the operating Blue Blaze Mine. The mine expanded and contracted through those years with the ups and downs of local and national economic conditions.

From 1956 to the present, little activity has occurred at the mine property. There have been a few proposals to reopen the mines but none successfully. The mine properties generally deteriorated and buildings collapsed. In the mid-1980s, efforts aimed at public safety closed several portals and removed some mine buildings.

History of Gordon Creek Area

Gordon Creek was initially settled not for its coal resources, but as a ranching and farming area by Alfred Grams in 1885. Arthur E. Gibson began prospecting the Gordon Creek in 1920 and in the Spring of 1921, discovered a substantial deposit of high quality coal in the canyon walls. He secured a lease for 1480 acres in Gordon Creek and began development of the coal seam he had discovered (Daughters of the Utah Pioneers 1948).

In 1922, Gibson with a small crew of assistants removed 34 carloads of coal from Gordon Creek Canyon. The coal was shipped to prospective stockholders in Salt Lake City via the Utah Railway Company. Investors from Salt Lake City purchased the stock and organized the Consumers Mutual Coal Company which would later be known as the Blue Blaze Coal Company (Desert West, 1985).

Two other coal mines developed in Gordon Creek - the National and Sweet mines. National was actually developed earlier (1908) than Consumers by an engineer named Williamson who leased land from the government. In 1921, Fred Sweet took over the property developed by

Williamson and started the National Coal Company. A tent city developed around the Sweet Mine which was soon replaced by regular housing. Red tile housing constructed at National can still be seen at the site today. By 1925, the National Railroad extended into the area which greatly increased the capacity of each mine.

The community of Consumers (Blue Blaze Mine) boasted of a four story apartment house, store, service station, and a post office. During the later 1920s each of the three communities continued to develop. National had a row of red tile homes with arched doorways that are still found at the site, a store and a service station. The Consumers Mine closed in 1938, but a prominent Carbon County mining operator names Terry McGown opened the mine at a later date. By 1952, the demand for coal was low and all three of the mines in Gordon Canyon shut down. During its years of operation, the Blue Blaze produced over 2.5 million tons of coal (Doelling, 1972).

Prehistoric Inventory

No prehistoric sites or artifacts were noted during the inventory. The surface of the mine area has been heavily impacted by historic mining and the remains of any prehistoric sites have been removed or completely covered in mine tailing and rubble. Undisturbed areas along the edges of the mine location contained no evidence for prehistoric remains.

Paleontological Inventory

The paleontological inventory recorded the presence of plant "hash", or leaves, stems and branches. Occasional isolated larger wood sections were observed. In most instances, the paleontological remains are either impressions or compressions. A few of the finer sandstone and siltstone units contain well defined leaves, but these are the exception rather than the rule. The plant remains suggest the presence of Cretaceous deciduous trees and more limited conifers.

In addition to the plant remains, occasional invertebrate burrows were noted in the sandstone units. These trace fossils are fillings of burrows that preserved their shapes. The identification of the invertebrate animal that created the burrows would be difficult. Neither the plant hash or the trace burrows are considered to be paleontologically sensitive. No fossil remains found within the lease area were determined to fall into the sensitive category.

4.0 ENVIRONMENTAL IMPACTS

Subsidence Impacts

The surface effect of the backfilling operation will be to reduce the surface expression of subsidence in an area where subsidence will already be minimal.

The extent of the potential subsidence on adjacent area outside of the permit area was determined based on a maximum overburden thickness of 1500 feet (from data presented by Hansen, 1988) and an angle of draw of 35 degrees as measured from the vertical (the maximum angle of draw recommended by Dunrud [1976]). This angle of draw is significantly in excess of the 20-degree value used by Beaver Creek Coal Company for adjacent mining operations (Guy, 1985), but will result in a conservative estimate of the extent of the adjacent area. Based on the 35-degree angle of draw and a maximum overburden thickness of 1500 feet, subsidence impacts will extend a maximum of 1050 feet (0.2 mile) from the edge of the permit area. Hence, for the purpose of this application, the adjacent area for potential subsidence is defined as that area within 0.2 mile of the permit area.

Renewable Resources

Hydrologic and vegetative renewable resources exist within the area to be mined. One perennial stream, Beaver Creek, and various springs are known to exist above the area to be mined. Based on past experience and monitoring results from this area, it is not expected that mining will affect any hydrologic resource through subsidence.

Substantial inflows of groundwater to underground workings are not currently anticipated. However, should a substantial inflow of groundwater occur, mitigation measures may include: attempts to seal off the inflow, increased monitoring efforts, lining of the stream bed through the affected area, and replacement of lost water if indicated by monitoring. An extended mitigation plan will be enacted should a measurable impact occur to surface water due to mining activity.

The vegetation resource above the mining area consists of rangeland for stock and wildlife grazing and a limited timber resource. If subsidence should occur, the effects would be minimal, possibly resulting in some fractures or slight depressions. Thus, the effect upon vegetation resource would also be minimal. Should impacts to vegetation occur due to subsidence, mitigation measures may include: filling of fractures, regrading of broken areas, replanting degraded areas, and intensified monitoring.

Geologic Hazards

Geologic hazards in the mine area exist in the form of steep slopes and numerous inactive normal faults. Roof conditions will typically worsen in these areas due to fracturing and slickensides; however, no surface movement or new effects have been noted to date from mining through fault zones in this area.

Movement could result in rock falls from exposed outcrops; however, no evidence of such falls or movement has been noted in this area from past mining. There are no potential

landslide or slump areas known to exist that were caused by previous mining activities in the area. Horizon is unaware of escarpments within the "lease" area.

Subsidence can normally be expected to occur over areas where second mining (pillaring) has taken place. Maximum potential subsidence from pillar extraction in the No. 1 Mine (the Hiawatha seam) has been estimated from Figure 3-5 (Attachment D) using the following criteria:

Panel Width = 600 ft
Average Depth = 800 ft
Width/Depth Ratio = 0.75
Seam Thickness = 7.0 ft

Using these data, subsidence due to pillar extraction in the Hiawatha seam could reach 2.33 feet directly over a pillared panel. The cumulative potential subsidence for areas where both seams are pillared is 6.18 feet (3.85 + 2.33). Again, past experience in this area suggests that subsidence would be of a lesser magnitude.

The following observations and conclusions regarding subsidence have been made from past mining activities in the vicinity of the mine:

- (1) Pillaring in the upper (Castlegate "A") seam has previously occurred beneath Beaver Creek. Specifically, the northernmost west panel was pillared beneath Beaver Creek by Swisher Coal Company in January 1978 in an areas where the overburden thickness was about 650 feet. In addition, in September 1981, Beaver Creek Coal Company pillared the "A" Panel area beneath Beaver Creek in an area with an overburden thickness of approximately 425 feet. Neither of these areas show any measurable effect on Beaver Creek.
- (2) The Gordon Creek No. 2 Mine overlies areas pillared up to 40 years ago in the lower seam (Sweet's Mine) with no noticeable subsidence effects. The Consumers No. 3 Mine also pillared areas in the permit area which show no noticeable subsidence effects.
- (3) The overburden in the permit area above the Castlegate "A" seam (with a thickness of 600 to 800 feet) contains massive sandstone units which are unlikely to allow caving effects to reach the surface. In addition, the seams are separated by over 150 feet of similar interburden with no noticeable effects from past pillaring.
- (4) Subsidence, should it occur, is not likely to affect the Beaver Creek flow due to the numerous beds of swelling shales within the overburden and interburden. Fractures within these sedimentary deposits have a strong tendency to heal due to the swelling of the shales and sandy shales contained therein.

Threatened or Endangered Plants

In 1981, Mt. Nebo Scientific completed a preliminary vegetation study of the area for Sanders Exploration, Ltd. (C & W No. 1 Mine). In 1990, Mt. Nebo Scientific performed a vegetative study for Blue Blaze Coal Company and a threatened and endangered plant and general vegetation study for Horizon in 1995. In August of 1995 a habitat study for Ute Lady's Tresses (*Spiranthes diluvialis* Shev.) specifically was performed. No threatened or endangered plant species were found during the 1995 study. Refer to Appendix 9-1 of the Horizon M&RP for details of these studies.

Threatened or Endangered Animals

No reptiles or amphibians known to inhabit the mine area are federally listed as a threatened or endangered species.

Listed threatened and endangered species potentially present in the study are the American Peregrine Falcon, which breeds in Utah; Arctic Peregrine Falcon, which migrates through Utah; and Bald Eagle, which winters in Utah. Bald Eagles are known to use riparian woodlands along lower North Fork Gordon Creek and the Price River as winter roosts (UDWR 1981a). The mine disturbed area elevation is high for the willow flycatcher, but it may occur in the general area during the summer months. The loggerhead shrike is a yearlong inhabitant of the Wasatch Plateau and is most likely found in the mine area (UDWR, 1990).

If any endangered or threatened species are found in the permit area Horizon has committed to report them to UDOGM and the UDWR.

Information or conclusions provided by the Section 7 consultation with the U.S. Fish and Wildlife Service is included in Attachment D.

Floodplains and Wetlands

A reconnaissance investigation of the permit and adjacent areas was conducted to delineate alluvial deposits which might be considered to be alluvial valley floors (AVF). Identification of locations where unconsolidated stream-laid deposits occur was performed using surficial geology and soils maps of the area. Further, field reconnaissance and an analysis of aerial photographs of the mine permit and adjacent areas were conducted. Locations of stream-laid deposits thus identified are the same as those identified on Plate 6-1 as Qal (Recent Alluvium and Qoa (Older Alluvium).

From a geomorphic standpoint, the rugged mountainous terrain of the permit and adjacent areas has resulted in drainages still in a youthful stage of development. The streams are confined in narrow, steep-sided, V-shaped valleys with steep channel gradients. Meanders normally associated with AVF development are absent except in a few isolated locations.

Alluvial deposits along Beaver Creek exhibit minor stream meandering and contain numerous beaver ponds. Some of the stream-laid deposits along Beaver Creek, particularly at the mouths of small tributary canyons, appear to be debris flows. Soils in the valley exhibit localized signs of being flooded or water logged during a field visit to the site.

Alluvial deposits were also identified at the mouth of Jewkes Creek and along North Fork Gordon Creek. The alluvial deposits at these locations are below the coal outcrop and thus, could not be directly impacted by mine subsidence.

Agricultural developments are not found along North Fork Gordon Creek, Jump Creek, Beaver Creek, or their tributaries in the permit and "lease" areas. The agricultural potential of the valley floors in the area is limited by the soil capability and the short growing season. The narrow valleys are occupied by the stream and the road and both break up the narrow valley so that development of hay meadows or improved pasture is impractical.

The valley floor along Beaver Creek, Jump Creek, North Fork Gordon Creek, and their tributaries would be incapable of supporting agricultural activities without proper drainage. Even with adequate drainage, agricultural development would be restricted to grasses and pasture because of the high elevations and short growing seasons. Hence, given the extensive prior disturbance in the proposed disturbed area, the narrowness of the valleys, and climactic conditions in the area, the stream-laid deposits in the permit and lease areas are not considered to be alluvial valley floors. This conclusion is supported by the opinion of Mr. T.B. Hutchings, State Soil Scientist with the U.S. Soil Conservation Service (see Appendix 7-6, Horizon M&RP).

Since no surface disturbance is planned in the lease area, the government agencies required to make a wetland determination were not contacted. However riparian vegetation is prominent along Beaver Creek and Jump Creek.

Surface and Groundwater Impacts

Potential impacts of coal mining on the quantity and quality of surface and groundwater flow may include:

- o Increased sediment yield from disturbed areas;
- o Diminution of springs in perched aquifers overlying the mine area;
- o Decreased availability of groundwater in the regional aquifer system;

Impacts to the Perched Aquifer System. The hydrologic data indicate an absence of significant perched aquifers within the Blackhawk Formation overlying the coal to be mined. The geology of the area and the occurrence of springs in the Blackhawk Formation indicate the presence of small, laterally discontinuous perched aquifers in the Blackhawk. These small perched aquifers within or adjacent to the mine plan area may be impacted as a result of mining related subsidence.

The perched aquifers of the Blackhawk Formation characteristically produce water from channel sandstones bounded by impervious shale beds at their bases. If subsidence fractures do intersect these perched aquifers, clay minerals contained within these shale beds will likely seal the fracture planes. Sealing of the fracture planes may allow spring discharge to continue uninterrupted.

According to the Cumulative Hydrologic Impact Assessment prepared for the area by UDOGM (Attachment C), "Subsidence impacts are largely related to extension and expansion of the

existing fracture system and upward propagation of new fractures." Vertical and lateral migration of water is partially controlled by fracture conduits. Potential changes include increased flow rates along fractures and diverting flow along new fractures or within permeable lithologies. Subsurface flow diversion may result in diminution and/or loss of flow to springs that are undermined.

Retreat mining also results in uniform downwarping and lowering of strata above the mined interval. This uniform downward movement is generally not accompanied by a significant degree of fracturing. As a result, the original attitude and integrity of the strata are maintained. Little impact on the perched aquifers of the overburden are expected to result from downwarping.

The probable consequences of mining on the hydrologic resources associated with perched aquifers are considered minimal due to: 1) small number of springs, 2) low and/or erratic spring flow, 3) absence of municipal water use rights, 4) water loss experienced at one location may be accompanied in an increased flow at another location, and 5) possible sealing of subsidence fractures by clay minerals.

Impacts to the Regional Aquifer System. It is anticipated that the coal in the Horizon No. 1 Mine will be saturated essentially from the beginning of mining. It is assumed that groundwater inflow to the mine workings will occur primarily as a result of porous-medium flow rather than fracture flow. Historically, large amounts of the Hiawatha Coal seam have been mined out to the southwest of the permit area by Sweet Coal Company's Sweet Mine, Blue Blaze Company's No. 1 Mine, National Coal Company's No. 1 Mine, and Beaver Creek Coal Company's No. 3 Mine. Based on a review of mine records (Skaggs, 1992), many faults have been mined through in the Hiawatha seam with only insignificant/minor amounts of water being encountered.

Only one fault has produced significant quantities of water when mined through. This fault lies in the east portion of the permit area and was intersected in mining of the Beaver Creek Coal Company No. 3 Mine. Inflows of approximately 400 gpm occurred when this fault was encountered (Skaggs, 1992).

Surface mapping and mining experience in the overlying Castlegate "A" seam within the permit area indicate that fracturing within the permit area is not significant. Therefore, the previous estimates of potential groundwater inflow rates to the mine workings are considered adequate.

Impacts to the Hydrologic System Resulting From Subsidence. Stream buffer zones will be maintained for a distance of 100 feet on either side of Beaver Creek, within which second mining will not occur. According to Gentry and Abel (1978), topographic lows (e.g., stream channels) tend to be protected by upwarping of adjacent slopes during subsidence. Therefore, mining-induced surface fracturing should be very limited (or nonexistent) within the Beaver Creek stream channel area. Any fracturing that does occur in the stream channel is likely to fill rapidly as a result of sedimentation.

It is also not anticipated that subsidence will affect springs within the permit and adjacent areas. Von Schonfeldt et al. (1980) found that uniform subsidence "rarely causes problems

to renewable resources such as aquifers, streams, and ranch lands." Since second mining will occur uniformly across the permit area except in buffer zones, the resulting subsidence should also be uniform, minimizing the potential impacts to overlying springs.

As noted in the Cumulative Hydrologic Impact Assessment, mining in the area adjacent to the Horizon permit area has not resulted in hydrologic impacts due to subsidence. Given the lack of extensive aquifer systems in lithologic units that overlie the coal within the permit and adjacent areas, it is not anticipated that groundwater will be affected by subsidence. Thus, subsidence caused as a result of mining by HCC should not cause significant surface or groundwater impacts within the permit or adjacent areas.

Wilderness Values

The surface above the coal lease is privately owned with the exception of 120 acres managed by the BLM. At the discretion of the owners the area has been used for hunting, grazing, and timbering (1995 - 1996). Recreational properties exist on the lease (a cabin on approximately 1 acre) as well as north and west of the "lease" area. Portions of the BLM managed subsurface acreage is presently leased to Horizon as a right-of-way.

Since the BLM managed lands within the "lease" have been used by livestock under the assignment of various grazing allotments and due to the continuous use of the privately owned lands, the value of classifying the area as wilderness is questionable.

Visual Resources

No surface disturbance will occur in the "lease" area except indirectly in the form of limited mine-related subsidence. This should not result in discernable aesthetic impacts. The access roads on the "lease" are pre-existing.

Air Quality

Since no construction is planned for the lease area, air quality concerns would be confined to the mine yard area which is south of the lease area. Dust caused by the existing roads within the "lease" would be minimal, due primarily to travel to water monitoring locations.

Wild and Scenic River

To the best of the applicants knowledge the permit area does not contain any public parks, cemeteries, archeological sites, units of the National System of Trails or of the Wild and Scenic River System.

Grazing

The lands adjacent to the mine portal area are used for grazing by both cattle and sheep. The extent of use varies from year to year and season to season. The southern portion of Beaver Creek runs through private lands used for grazing, with BLM grazing allotments scattered through the Jump Creek, northern Beaver Creek and North Fork of Gordon Creek areas. Plate 4-1 outlines land uses in the area including grazing.

Recreation

The mine area has no established parks or recreation areas. The majority of camping and recreation vehicle activity in the area is done during the fall when hunting season begins. However the majority of the surface area in the lease is privately owned and is behind locked gates.

Land Uses

The land on which the Horizon No. 1 Mine is located has long been used for coal mining. Areas adjacent to the mine and lease area are used for the monitoring of previous mining operations, mining reclamation activities, wildlife habitat, recreation, and grazing. The mine area has been classified as M & G (mining and grazing) by Carbon County.

Private landowners presently administer the lands in the lease area for livestock forage and timbering. Cattle and sheep are herded along the county road running adjacent to the mine site in spring and fall. Wildlife habitat, watershed, dispersed recreation, and coal mining are also land uses in the area. There are no range improvements in the area. Access to the grazing lands is limited to jeep trails into the higher elevations leading to Beaver Creek. There are no plans to alter this access situation.

Carbon County owns and maintains two roads, one runs parallel to the permit boundary on the south (Consumers Canyon-County Road 290), the second runs parallel to the disturbed area (for approximately 1250') enabling access to higher elevations for grazing and recreational activities.

It is not projected that the mining operation will affect the land use within and adjacent to the it's boundary. Efforts will be made to minimize the area of disturbance so the environmental impacts will remain minimal. No utilities are planned for installation on the "lease".

Once mining has ceased, the disturbed areas will be reclaimed to a degree acceptable to UDOGM and the land will once again support its principle pre-mining use: i.e., undeveloped land.

The land owners of record and their addresses are recorded in Attachment D along with Figure 4-1 showing the location of their property.

Residual Impacts

First and foremost the coal resource will be removed which will result in changes in the geology and hydrology of the area. The impacts could include minor surface subsidence and an alteration of groundwater flow patterns. Although the area near Beaver Creek has been mined south of the "lease", detailed records were not kept of the operation. Therefore the impacts which may have been caused by mining in the immediate area are not documented.

Alluvial deposits were identified at the mouth of Jewkes Creek and along North Fork Gordon Creek. The alluvial deposits at these locations are below the coal outcrop and thus, could not be directly impacted by mine subsidence.

The removal of the coal within the proposed "lease" should cause no residual impacts of a long-term nature to man or the environment.

Public Interest

The economy of Carbon and Emery counties is dependent on the stimulus provided by coal mining. The general public and the business community encourage the development of coal mining in the area.

The impact and need for area housing, utilities, educational, medical, and social services will remain consistent throughout the life of the mine.

Roads

The county road connecting Carbon County Road 290 (Consumers Canyon) to Utah State Highway 96 at Clear Creek has been used for recreation and the movement of livestock since the early 1900. This road parallels Horizon's disturbed area boundary. During 1995 and 1996 the road was graded, realigned, and widened by a logging operation removing timber along Beaver Creek. The constant change in the road caused a substantial increase of erosion and siltation in the both Jewkes and Beaver Creeks. This county road provides access to the "lease" area where all roads are privately owned and gated.

Traffic will increase on U.S. Highway 6, Consumers Road and various associated county roads (having no associated numbering or labeling). The existing transportation routes should be sufficient to handle the additional traffic. As is common in the mining industry the majority of the employees will car pool to the mine site.

Native American Religious Concerns

Horizon is unaware of any cause for concern by native americans. Archeological and paleontological studies have been done for the area with no concerns being voiced by SHPO upon the submittal of the studies findings. A letter from the Ute Tribe confirms the lack of concern for the disturbance or destruction of cultural or historical artifacts in the proposed coal lease area (Attachment D).

Solid and Hazardous Wastes

Any waste produced by the mine will be disposed of as defined in the Horizon M&RP. Wildlife will be restricted from contact with any hazardous wastes stored on the mine site.

5.0 REFERENCES

- Blanchard, L.F. 1981, Newly identified intertonguing between the Star Point Sandstone and the Blackhawk Formation: U.S. Geol. Survey Open File Report No. 81-724
- Cordova, R.M. 1964, "Hydrogeologic Reconnaissance of Part of Headwaters Area of the Price River, Utah", Utah Geological and Mineral Survey, Water Resources Bulletin 4a, p. 26.
- Daughters of the Utah Pioneers 1958. Centennial Echoes from Carbon County, Daughter of the Utah Pioneers, Salt Lake City.
- Desert West Research 1985. An Archeological Evaluation of Historic Coal Mining Sites in Carbon County: Spring Canyon, Bear Canyon, Scofield and Gordon Creek Areas. Desert West Research, Salt Lake City.
- Doelling, H.H. 1972. Central Utah Coal Fields: Sevier-Sanpete, Wasatch Plateau, Book Cliffs and Emery. Monograph Series No. 3. Utah Geological and Mineralogical Survey, Salt Lake City.
- Dunrud, C.R. 1976. Some Engineering Geologic Factors Controlling Coal Mine Subsidence in Utah and Colorado. U.S. Geological Survey Professional Paper 969. U.S. Government Printing Office. Washington, D.C.
- Durrant, S.D. 1952. Mammals of Utah: taxonomy and distribution. Mus. Nat. Hist., Univ. of Kansas 6:1-549, Lawrence, Kansas.
- Engineering-Science 1984. Cumulative Hydrologic Impact Assessment with Respect to the Gordon Creek No. 2 Mine. Prepared for U.S. Office of Surface Mining, Denver, Colorado.
- Guy, Dan 1985. Verbal communication.
- Hansen, C. D. 1988. "Geology of the Jump Creek 7 1/2' Quadrangle, Carbon County, Utah," M.S. Thesis, Brigham Young University, 70 pp.
- Lines, G.C. 1985. The Ground-Water System and Possible Effects of Underground Coal Mining in the Trail Mountain Area, Central Utah. U.S. Geological Survey Water-Supply Paper 2259. Washington, D.C.
- Price, D. and Arnow T. 1974. Summary Appraisals of the Nation's Groundwater Resources - Upper Colorado Region. U.S. Geological Survey Professional Paper 813-C, 40 pp.
- Tingey, D. 1986, Miocene mica peridotite dike swarm, Wasatch Plateau, Utah: Geologic Society of America, Abstract with Programs, v. 18, no. 5, p. 14.
- Skaggs, Roger 1992. Verbal Communication.

- Utah Division of Oil, Gas and Mining. 1989. Upper Gordon Creek Cumulative Hydrologic Impact Assessment. Utah Department of Natural Resources. Salt Lake City, Utah.
- Utah Division of Oil, Gas and Mining. 1996. Horizon Coal Company Mining and Reclamation Plan, ACT/007/020, October 10, 1996.
- Utah Division of Wildlife Resources. 1978. Vertebrate species of southeastern Utah. Publ. 78-16. Salt Lake City.
- Utah Division of Wildlife Resources. 1981a. Utah big game investigations and management recommendations, 1979-1980. Publ. No. 80-6.
- Utah Division of Wildlife Resources. 1981a. Fish and Wildlife resource information, C & W Coal Company, Gordon Creek Project, Price, Utah.
- Utah Division of Wildlife Resources. 1990. Fauna of Southeastern Utah and Life Requisites Regarding their Ecosystems. Publ. No. 90-11.
- Utah Division of Wildlife Resources. 1995. Horizon Coal Company Proposed Mining and Reclamation Plan, PRO/007/020, Folder #2, Carbon County, Utah, Letter addressed to Mr. James W. Carter, Director Utah Division of Oil, Gas and Mining from Robert G. Valentine, Director Division of Wildlife Resources, October 31, 1995.
- Vaughn Hansen and Associates 1979. "Consultants Report on the Geology and Hydrology of the Skyline Mine of Coastal States Energy Corporation".
- von Schonfeldt, H., F.D. Wright, and K.F. Unrug 1980. Subsidence and Its Effect on Longwall Mine Design. Mining Congress Journal. pp. 41-53.
- Waddell, K.M., P. Kay Contratto, C.T. Sumsion, and J.R. Butler 1981. Hydrologic Reconnaissance of the Wasatch Plateau-Book Cliffs Coal-Fields Area, Utah. U.S. Geological Survey Water-Supply Paper 2068. Washington, D.C.

6.0 AGENCIES AND PERSONS CONSULTED

Larry Dalton
Utah Division of Wildlife Resources

Bill Bates
Utah Division of Wildlife Resources
Southeastern Regional Habitat Manager

Kevin Christopherson
Utah Division of Wildlife Resources
Southeastern Regional Aquatic Manager

Mark Page
Utah Division of Water Rights
Regional Engineer

Dan Guy
Blackhawk Engineering
Civil Engineer

Patrick Collins
Mt. Nebo Scientific
Biologist/Reclamation Specialist

Steve Stamatakis
Land Owner

Roger and Margaret Skaggs
Blue Blaze Coal Company

Utah Division of Oil, Gas and Mining
Salt Lake Office

Steve Falk
Bureau of Land Management
Price River Resource Area
Mining Engineer

Tom Rasmussen
Bureau of Land Management
Price River Resource Area
Geologist

Dave Levanger
Carbon County
Director of Planning

Ray Hansen
Carbon County Road Department

Chris Hansen
EarthFax Engineering, Inc.

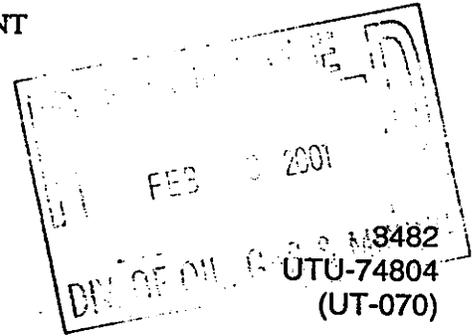
Brad Lengas
Biologist



United States Department of the Interior

BUREAU OF LAND MANAGEMENT

Price Field Office
125 South 600 West
Price, Utah 84501



CERTIFIED MAIL - RETURN RECEIPT REQUESTED
Certified No. 7099 3400 0006 5092 6217

Mr. David B. Miller
Lodestar Energy, Inc.
HC 35 Box 370
Helper, Utah 84526

Re: Minor Amendment to Resource Recovery and Protection Plan (R2P2) Horizon Mine, Lodestar Energy, Inc., November 4, 1999

Dear Mr. Miller:

On January 30, the Bureau of Land Management (BLM) received Lodestar Energy, Inc.'s request for a minor amendment to the approved Resource Recovery Protection Plan (R2P2) for the Horizon Mine. This letter is to notify you that the BLM has completed our review of Lodestar Energy, Inc.'s minor amendment to the approved R2P2 regarding the Horizon Mine. The purpose of our review is to determine compliance with The Mineral Leasing Act of 1920, as amended, the regulations at 43CFR 3480, and the lease terms and conditions; and to ensure that maximum economic recovery (MER) will be achieved.

Our determination of the subject minor amendment is as follows:

- ◆ Since DOGM approval for the complete lease is not likely for some time, a new stipulation has been added below allowing for mining south of "Beaver".
- ◆ Recoverable coal reserves for UTU-74804 are 6,295,700 as determined by the May 12, 1998 Engineering and Geologic Report.
- ◆ The actual sequencing and initial date of commencement of mining operations on UTU-74804 will probably change. Once all the permits are in place, a revised sequence and timing map will need to be submitted to the BLM.

Based upon the above-stated requirements, BLM determination is conditioned with the following stipulation:

Original Stipulation: Horizon shall submit the following information (as requested above):

- An updated mine plan that details mining sequencing and any other changes will be submitted when all permits are in place, but prior to commencement of operations on

the Federal lease.

New Stipulation:

- R2P2 approval is for areas south of "Beaver" as shown on the approved R2P2 amended map. Areas north of "Beaver" are NOT to be mined prior to all permits being in place.

BLM has determined that the information contained in the R2P2 amendment for the Horizon Mine with stipulation does comply with the Mineral Leasing Act of 1920, as amended, the regulations at 43 CFR 3480, and the lease terms and stipulations. Thus, approval for the Horizon Mine's R2P2 amendment is granted. If you have any questions, please contact Jay Marshall at the Price Field Office at (435) 636-3614.

Sincerely,



Field Manager

cc: UT-921, SD, Utah
Utah Division of Oil, Gas and Mining
355 West North Temple Street
3 Triad Center Ste. 350
Salt Lake City, Utah 84180-1203
Joe Wilcox
Office of Surface Mining
Reclamation and Enforcement
1999 Broadway, Suite 3320
Denver, Colorado 80202-5733



State of Utah

GOVERNOR'S OFFICE OF PLANNING AND BUDGET
Resource Development Coordinating Committee

Michael O. Leavitt
Governor

Brad T. Barber
State Planning Coordinator

James L. Dykmann
Committee Chairman

John A. Harja
Executive Director

116 State Capitol Building
Salt Lake City, Utah 84114
(801) 538-1027
Fax: (801) 538-1547

December 11, 2000

Pam Grubaugh-Littig
Division of Oil, Gas & Mining
1594 West North Temple, Suite 1210
Salt Lake City, Utah 84114-5801

*Copy to
a/007/020
Incoming*

SUBJECT: ~~Determination of Administrative Completeness for Federal Lease Addition Lodestar~~
Energy, Inc., Horizon Mine ACT/007/020-SR00B
State Identification Number: UT001031-010

Dear Ms. Grubaugh-Littig:

The Resource Development Coordinating Committee (RDCC), representing the State of Utah, has reviewed this proposal. The Division of State History comments:

After review of the material provided, the Utah Preservation Office concurs with a determination of No Historic Properties Affected for the project.

If you have questions, please contact Jim Dykmann at (801) 533-3555. (Please refer to Case No. 00-1633).

The Committee appreciates the opportunity to review this proposal. Please direct any other written questions regarding this correspondence to the Utah State Clearinghouse at the above address or call Carolyn Wright at (801) 538-1535 or John Harja at (801) 538-1559.

Sincerely,

John A. Dykmann
for Natalie Gochnour
State Planning Coordinator

NG/ar



United States Department of the Interior
FISH AND WILDLIFE SERVICE

UTAH FIELD OFFICE
LINCOLN PLAZA
145 EAST 1300 SOUTH, SUITE 404
SALT LAKE CITY, UTAH 84115

In Reply Refer To
(CO/KS/NE/UT)

February 22, 2001

01-02-23-08

Mr. Darron Haddock, Permit Supervisor
Utah Division Oil, Gas, and Mining
1594 West North Temple, Suite 1210
P.O. Box 145801
Salt Lake City, Utah 84114-5801

RE: Section 7 Consultation on the Beaver Creek Tract, Lodestar Energy Inc., Horizon Mine,
C/007/020-SR00B

Dear Mr. Haddock:

The U.S. Fish and Wildlife Service (Service) has reviewed your letter of December 13, 2000. Potential impacts to proposed or listed species from mining activities have been previously addressed in the Service's September 24, 1996 Biological Opinion and Conference Report on Surface Coal Mining and Reclamation Operations under the Surface Coal Mining and Reclamation Act of 1977. As part of the terms and conditions of this BO, the regulatory authority must implement and require compliance with any species-specific protective measures developed by the Service field office and the regulatory authority. No species-specific protective measures are considered necessary for the subject project.

We concur with your "no effect" determination for the black footed ferret and bald eagle. However, we do not concur with your "no effect" determination for the razorback sucker, humpback chub, bonytail, and Colorado pikeminnow.

The project proposes continued annual water use of approximately 60 acre-feet. In addition, there could be disruption of surface and groundwater flows due to subsidence fractures. Water depletions from the Upper Colorado River Basin are considered to jeopardize the continued existence or adversely modify the critical habitat of the four Colorado River endangered fish species: Colorado pikeminnow, razorback sucker, bonytail, and humpback chub. However, depletions are addressed by existing inter-agency section 7 agreements. In 1998, the Department of the Interior, the states of Wyoming, Colorado, and Utah, and the Western Area Power Administration established the Recovery Implementation Program for Endangered Fish Species in the Upper Colorado River Basin (RIP). The purpose of the RIP is to recover listed species while providing for new water development in the Upper Colorado River Basin. In accordance with the RIP, the Service assesses impacts of projects that require section 7 consultation and determines how the RIP will serve as a reasonable and prudent alternative.

For new depletions less than 100-acre feet, an intra-service agreement based on basin-wide cumulative depletions precludes the need for a depletion charge and the RIP recovery activities are considered adequate to offset depletion impacts. Therefore, the depletion fee for this project is waived. It is important to note that the Service is required to consult on and keep track of all depletions, historic or new, of any magnitude. Therefore, UDOGM should report all water depletion to our office. In addition, groundwater and surface water flows in the project area should be closely monitored. Any additional loss of water should be immediately reported to this office.

Should project plans change, or if additional information on the distribution of listed or proposed species becomes available, this determination may be reconsidered. Only a Federal agency can enter into formal Endangered Species Act section 7 consultation with the Service. A Federal agency may designate a non-Federal representative to conduct informal consultation or prepare a biological assessment by giving written notice to the Service of such a designation. The ultimate responsibility for compliance with ESA section 7, however, remains with the Federal agency.

As you are aware, the peregrine falcon was removed from the federal list of endangered and threatened species per Final Rule of August 25, 1999 (64 FR 46542). Protection is still provided for this species under authority of the Migratory Bird Treaty Act (16 U.S.C. 703-712) which makes it unlawful to take, kill, or possess migratory birds, their parts, nests, or eggs.

We recommend use of the *Utah Field Office Guidelines for Raptor Protection from Human and Land Use Disturbances* which were developed in part to provide consistent application of raptor protection measures statewide and provide full compliance with environmental laws regarding raptor protection. Raptor surveys and mitigation measures are provided in the Raptor Guidelines as recommendations to ensure that proposed projects will avoid adverse impacts to raptors, including the peregrine falcon.

We appreciate your interest in conserving endangered species and migratory birds. If further assistance is needed or you have any questions, please contact Laura Romin, at (801) 524-5001 extension 142.

Sincerely,



 Henry R. Maddux
Utah Field Supervisor

cc: Sandy Vana-Miller, Office of Surface Mining, 1999 Broadway, Suite 3320, Denver, CO
80202

Colorado River Recovery Program, RO, Denver

UNITED STATES
DEPARTMENT OF THE INTERIOR

This mining plan approval document is issued by the United States of America to:

Lodestar Energy, Inc.
HC 35 P.O. Box 370
Helper, Utah 84526

for a new mining plan for Federal lease UTU-74804 at the Horizon Mine. The approval is subject to the following conditions. Lodestar Energy, Inc. is hereinafter referred to as the operator.

1. Statutes and Regulations.--This mining plan approval is issued pursuant to Federal lease UTU-74804; the Mineral Leasing Act of 1920, as amended (30 U.S.C. 181 et seq.); and in the case of acquired lands, the Mineral Leasing Act for Acquired Lands of 1947, as amended (30 U.S.C. 351 et seq.). This mining plan approval is subject to all applicable regulations of the Secretary of the Interior which are now or hereafter in force; and all such regulations are made a part hereof. The operator shall comply with the provisions of the Water Pollution Control Act (33 U.S.C. 1151 et seq.), the Clean Air Act (42 U.S.C. 7401 et seq.), and other applicable Federal laws.
2. This document approves the new mining plan for Federal lease UTU-74804 at the Horizon Mine and authorizes coal development or mining operations on the Federal leases within the area of mining plan approval. This authorization is not valid beyond:
Township 13 South, Range 8 East, SLM

Section:8 W1/2SE1/4, S1/2SW1/4E1/4S1/2NE1/4SW1/4,
NE1/4NE1/4SW1/4NE1/4, S1/2W1/4SW1/4,
NE1/4SW1/4SW1/4, S1/2NW1/4SW1/4SW1/4,
S1/2NE1/4SW1/4NE1/4, NE1/4NE1/4SW1/4,
SE1/4NW1/4NE1/4SW1/4, SE1/4SE1/4SE1/4NW1/4,
SE1/4SE1/4NW1/4SW1/4,

Portion NW1/4NE1/4SW1/4NE1/4, Portion NE1/4NW1/4SW1/4NE1/4,
Portion SE1/4NW1/4SW1/4NE1/4, Portion SW1/4NW1/4SW1/4NE1/4,
Portion SW1/4NW1/4NE1/4SW1/4, Portion NW1/4NW1/4NE1/4SW1/4,
Portion NE1/4NW1/4NE1/4SW1/4, Portion SE1/4SW1/4SE1/4NW1/4,
Portion SW1/4SE1/4SE1/4NW1/4, Portion NW1/4SE1/4SE1/4NW1/4,
Portion NE1/4SE1/4SE1/4NW1/4, Portion SE1/4NE1/4NW1/4SW1/4,
Portion NE1/4SE1/4NW1/4SW1/4, Portion NW1/4SE1/4NW1/4SW1/4,
Portion SW1/4SE1/4NW1/4SW1/4, Portion SE1/4SW1/4NW1/4SW1/4,
Portion NE1/4NW1/4SW1/4SW1/4, Portion NW1/4NW1/4SW1/4SW1/4

Section 17: SW1/4NE1/4, N1/2NW1/4

Section 18: NE1/4NE1/4

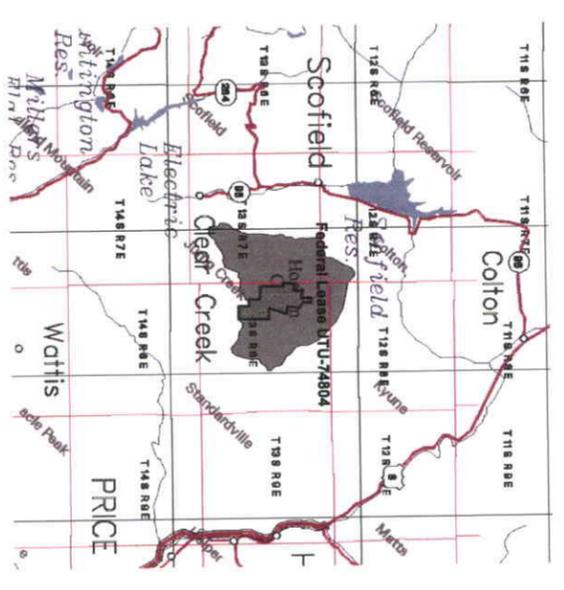
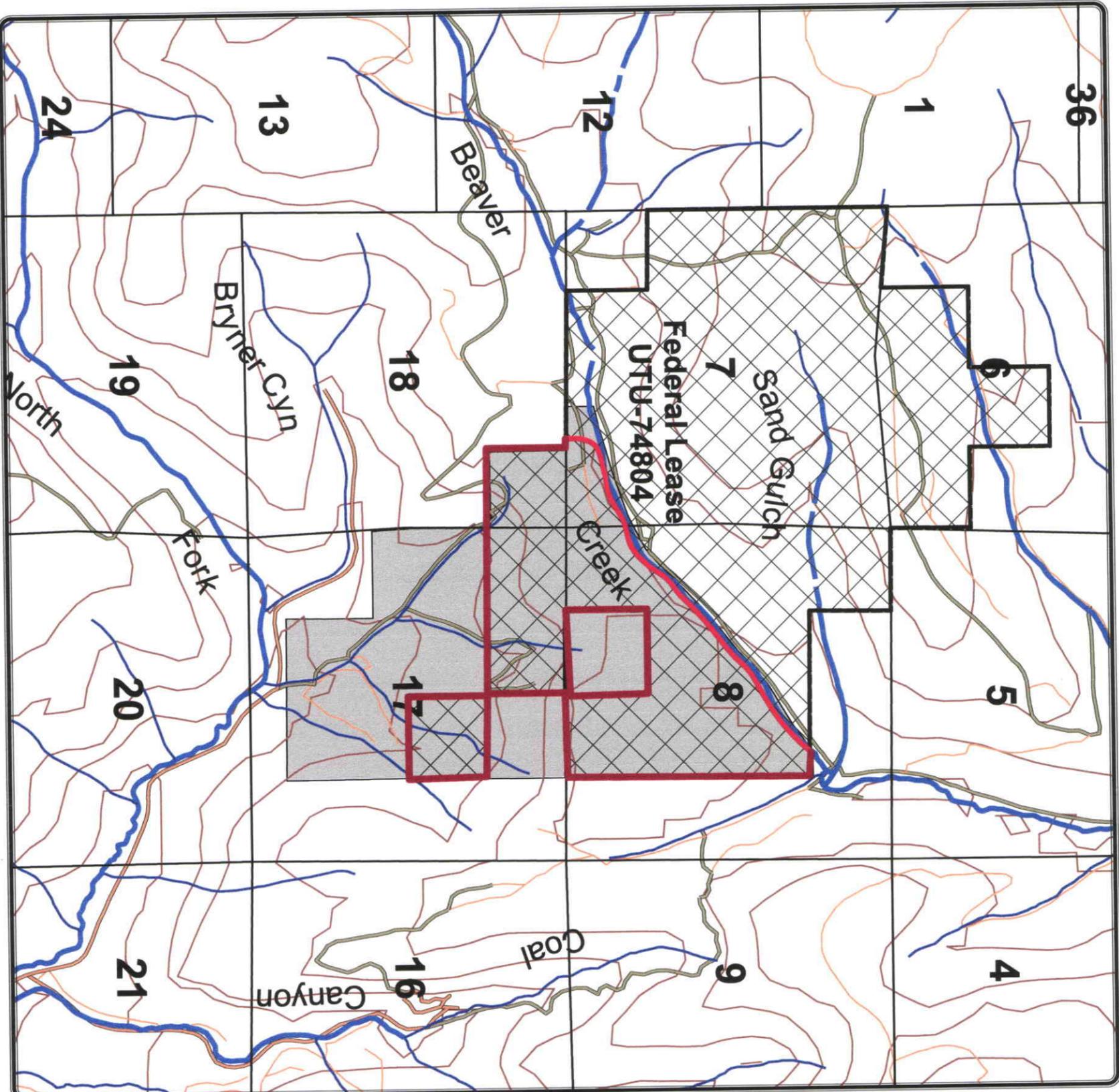
Section 7: SE1/4SE1/4SE1/4, S1/2SW1/4SE1/4SE1/4,
NE1/4SW1/4SE1/4SE1/4, S1/2SE1/4SW1/4SE1/4
Portion NE1/4NE1/4SE1/4SE1/4, Portion SE1/4NE1/4SE1/4SE1/4,
Portion SW1/4NE1/4SE1/4SE1/4, Portion SE1/4NW1/4SE1/4SE1/4,
Portion NW1/4SW1/4SE1/4SE1/4, Portion NE1/4SE1/4SW1/4SE1/4,
Portion NW1/4SE1/4SW1/4SE1/4, Portion SW1/4NW1/4SE1/4SE1/4.

These lands encompass 406 acres and are shown on the map appended hereto as Attachment A.

3. The operator shall conduct coal development and mining operations only as described in the complete permit application package, and approved by the Utah Division of Oil, Gas, and Mining, except as otherwise directed in the conditions of this mining plan approval.
4. The operator shall comply with the terms and conditions of the lease, this mining plan approval, and the requirements of the Utah Permit No. C/007/020 issued under the Utah State program, approved pursuant to the Surface Mining Control and Reclamation Act of 1977 (30 U.S.C. 1201 et seq.).
5. This mining plan approval shall be binding on any person conducting coal development or mining operations under the approved mining plan and shall remain in effect until superseded, canceled, or withdrawn.
6. If during mining operations unidentified prehistoric or historic resources are discovered, the operator shall ensure that the resources are not disturbed and shall notify Utah Division of Oil, Gas, and Mining and the Office of Surface Mining Reclamation and Enforcement (OSM). The operator shall take such actions as are required by Utah Division of Oil, Gas, and Mining in coordination with OSM.
7. The Secretary retains jurisdiction to modify or cancel this approval, as required, on the basis of further consultation with the U.S. Fish and Wildlife Service pursuant to section 7 of the Endangered Species Act, as amended, 16 U.S.C. §§ 1531 et seq.

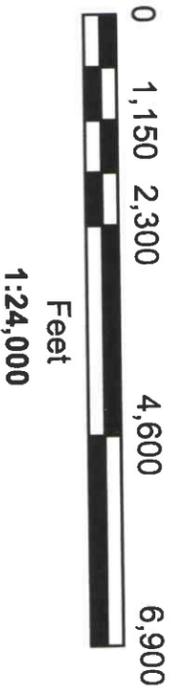
Piet deWitt
Acting Assistant Secretary,
Land and Minerals Management

7/9/01
Date



Location Map

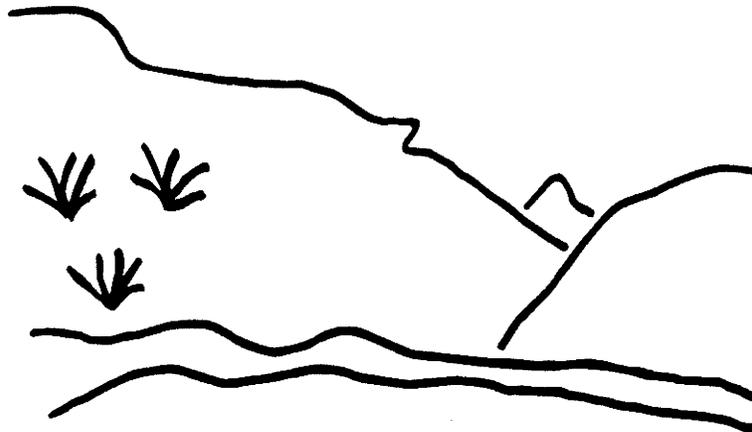
- Legend**
- Federal Lease UTU-74804
 - Intermittent Stream
 - Perennial Stream
 - Dirt Road
 - Graded Road
 - Main Road
 - Contours 200ft Interval
 - State Permit Area
 - Mining Plan Approval Area



Attachment A

**Mining Plan Approval Area
Horizon Mine UT-0077
Carbon, County
June 2001**

State of Utah



Utah Oil Gas and Mining

Coal Regulatory Program

Horizon Mine
Beaver Creek Tract Lease Addition #UTU-74804
C/007/020- SR00B-1
Technical Analysis
February 23, 2001

TABLE OF CONTENTS

INTRODUCTION	1
SUMMARY OF PERMIT CONDITIONS R645-300-100	3
GENERAL CONTENTS	5
IDENTIFICATION OF INTERESTS	5
VIOLATION INFORMATION	5
RIGHT OF ENTRY	5
LEGAL DESCRIPTION AND STATUS OF UNSUITABILITY CLAIMS	6
PERMIT TERM	6
PUBLIC NOTICE AND COMMENT	7
FILING FEE	7
PERMIT APPLICATION FORMAT AND CONTENTS	7
REPORTING OF TECHNICAL DATA	8
MAPS AND PLANS	8
COMPLETENESS	8
ENVIRONMENTAL RESOURCE INFORMATION	11
GENERAL	11
PERMIT AREA	11
HISTORIC AND ARCHEOLOGICAL RESOURCE INFORMATION	12
CLIMATOLOGICAL RESOURCE INFORMATION	12
VEGETATION RESOURCE INFORMATION	12
FISH AND WILDLIFE RESOURCE INFORMATION	13
SOILS RESOURCE INFORMATION	13
LAND-USE RESOURCE INFORMATION	14
ALLUVIAL VALLEY FLOORS	14
PRIME FARMLAND	15
GEOLOGIC RESOURCE INFORMATION	15
HYDROLOGIC RESOURCE INFORMATION	17
Sampling and analysis	17
Baseline information	18
Ground-water information	19
Surface-water information	27
Baseline cumulative impact area information	30
Modeling	30
Alternative water source information	30
Probable hydrologic consequences determination	31
MAPS, PLANS, AND CROSS SECTIONS OF RESOURCE INFORMATION	37
Affected Area Boundary Maps	37

TABLE OF CONTENTS

Archeological Site Maps	38
Coal Resource and Geologic Information Maps	38
Cultural Resource Maps	38
Existing Structures and Facilities Maps	38
Existing Surface Configuration Maps	38
Mine Workings Maps	38
Monitoring Sampling Location Maps	38
Permit Area Boundary Maps	39
Surface and Subsurface Ownership Maps	39
Subsurface Water Resource Maps	39
Surface Water Resource Maps	39
Well Maps	40

OPERATION PLAN	41
MINING OPERATIONS AND FACILITIES	41
Type and Method of Mining Operations	41
EXISTING STRUCTURES:	41
PROTECTION OF PUBLIC PARKS AND HISTORIC PLACES	41
RELOCATION OR USE OF PUBLIC ROADS	42
AIR POLLUTION CONTROL PLAN	42
COAL RECOVERY	42
SUBSIDENCE CONTROL PLAN	43
Renewable resources survey	43
Subsidence control plan	43
SLIDES AND OTHER DAMAGE	44
FISH AND WILDLIFE INFORMATION	44
Protection and enhancement plan	44
Endangered and threatened species	45
Bald and golden eagles	45
Wetlands and habitats of unusually high value for fish and wildlife	45
TOPSOIL AND SUBSOIL	46
VEGETATION	46
SPOIL AND WASTE MATERIALS	46
Disposal of noncoal waste	47
Coal mine waste	47
Refuse piles	47
HYDROLOGIC INFORMATION	47
Groundwater Monitoring	48
Environmental Resource Description, Hydrology	50
Surface-water monitoring	51
Acid and toxic-forming materials	52
Transfer of wells	52
Discharges into an underground mine	52

TABLE OF CONTENTS

Gravity discharges	52
Water quality standards and effluent limitations	53
Diversions	53
Stream buffer zones	56
Sediment control measures	56
Siltation structures	57
Sedimentation ponds	58
Other treatment facilities	59
Exemptions for siltation structures	60
Discharge structures	60
Impoundments	60
Casing and sealing of wells	60
SUPPORT FACILITIES AND UTILITY INSTALLATIONS	60
SIGNS AND MARKERS	60
USE OF EXPLOSIVES	61
MAPS, PLANS, AND CROSS SECTIONS OF MINING OPERATIONS	61
Affected area maps	61
Mining facilities maps	61
Mine workings maps	62
Monitoring and sample location maps	62

RECLAMATION PLAN	63
GENERAL REQUIREMENTS	63
POSTMINING LAND USES	63
PROTECTION OF FISH, WILDLIFE, AND RELATED ENVIRONMENTAL VALUES	63
APPROXIMATE ORIGINAL CONTOUR RESTORATION	64
BACKFILLING AND GRADING	64
MINE OPENINGS	65
TOPSOIL AND SUBSOIL	65
ROAD SYSTEMS AND OTHER TRANSPORTATION FACILITIES	65
HYDROLOGIC INFORMATION	66
CONTEMPORANEOUS RECLAMATION	66
REVEGETATION	66
General requirements	67
Timing	67
Mulching and other soil stabilizing practices.	67
Standards for success	67
STABILIZATION OF SURFACE AREAS	67
CESSATION OF OPERATIONS	68
Ground-water monitoring	68
MAPS, PLANS, AND CROSS SECTIONS OF RECLAMATION OPERATIONS ...	68
Affected area boundary maps	68

TABLE OF CONTENTS

Bonded area map 69
Reclamation backfilling and grading maps 69
Reclamation facilities maps 69
Final surface configuration maps 69
Reclamation monitoring and sampling location maps 69
Reclamation surface and subsurface manmade features maps 69
Reclamation treatments maps 70
BONDING AND INSURANCE REQUIREMENTS 70
Form of bond (Reclamation Agreement) 70
Determination of bond amount 70
Terms and conditions for liability insurance 70

CUMULATIVE HYDROLOGIC IMPACT ASSESSMENT

..... 71

RULES INDEX 73

INTRODUCTION

TECHNICAL ANALYSIS**INTRODUCTION**

On August 21, 2000 Lodestar Energy, Inc., submitted a proposal to expand underground mining operations in Horizon Mine. According to R645-303-224.100 the proposed expansion is considered a significant revision (SR) since the permit change increases the subsurface operations 15 percent, or greater, of the current permit area. The SR will add approximately 711 acres to the current permit area identified in the approved MRP. Division determined the SR to be Administratively Complete on 10/26/00. The technical analysis containing 12 minor deficiencies were sent to the applicant on December 12, 2000. The applicant's response to the technical analysis was received by the Division on December 21,

This technical analysis review evaluates the technical completeness issues of the SR. The SR expands coal mining operations north, in the Fish Creek Graben Zone. Mining will still take place in Federal Coal Lease UTU-74804, for which the operator has right of entry.

The SR extends the underground mining operation in the Hiawatha coal seam up to a vertical boundary established by Beaver Creek. The SR proposal should not effect or cause revisions to the mine pad area or surface hydrologic structures. The operator has obtained a UPDES, mine water discharge permit to discharge directly into a receiving stream. Thus no new structure designs are required.

The reason this mining limit was established at the creek is because the groundwater regime has not been characterized beyond the proposed boundary, although the federal lease and coal reserves extend farther north, well HZ-95-1 is the northern most monitoring site established to identify groundwater characteristics at depth, especially in the vicinity of the intended coal seam.

Prior to mine expansion, beyond this proposed boundary, baseline information is needed to characterize the ground-water in and adjacent to the graben.

INTRODUCTION



SUMMARY OF PERMIT CONDITIONS R645-300-100

As determined in the analysis and findings of this Technical Analysis, approval of the plan is subject to the following Permit Conditions. The applicant is subject to compliance with the following Permit Conditions and has committed to comply with the requirements of these conditions as referenced in the approved Permit.

Accordingly, the permittee must address those permit conditions as found within this Final Technical Analysis in accordance with the requirements of:

R645-100-320, The application to add a federal coal lease to the permit requires approval from the Bureau of Land Management. Prior to mining, the BLM must approve the R2P2 (resource recovery and protection plan) for the additional lease #UTU-74804.

R645-100-320, The application to add a federal coal lease to the permit requires Federal Mine Plan approval from the Office of Surface Mining. Prior to mining the applicant must obtain approval to conduct mining activities as described in Lease #UTU-74804 from The Office of Surface Mining.

GENERAL CONTENTS

GENERAL CONTENTS**IDENTIFICATION OF INTERESTS**

Regulatory Reference: 30 CFR 773.22; 30 CFR 778.13; R645-301-112

Analysis:

Chapter 1 of the federal lease application is an introduction describing where mining activities are currently located, and the location of the proposed federal lease addition, (plate 1-1). Over all changes to the current operation and reclamation plan are relatively minor.

Ownership and control information is in Chapter 2 and appendix 2-4. The applicant/permittee is Lodestar Energy Inc., incorporated under the laws of the State of Delaware and is in good standing and has legal corporate existence. The application includes Lodestar's address, telephone number, resident agent, and employer identification number. The officers and directors of Lodestar Energy Inc., and corporate structure are also identified and are in good standing with the Applicant Violator System. The Resident agent accepting service of process is David Miller and the abandoned mine fee will be paid by Marilyn Adamson. The application includes the MSHA numbers for the Horizon # 1 and Horizon # 2 Mines.

Findings:

Information provided in the proposal is adequate to meet the requirements of this section of the regulations. When the application is at or near final approval an AVS check is recommended.

VIOLATION INFORMATION

Regulatory Reference: 30 CFR 773.15(b); 30 CFR 773.23; 30 CFR 778.14; R645-300-132; R645-301-113

Analysis:

Neither the applicant nor any of its subsidiaries, affiliates or persons controlled by or under common control with the applicant has had a federal or state permit revoked or suspended or revoked, nor forfeited a bond in the last five years. There are no outstanding notices of violation.

Findings:

Information provided in the proposal is adequate to meet the requirements of this section of the regulations.

RIGHT OF ENTRY

Regulatory Reference: 30 CFR 778.15; R645-301-114

Analysis:

The Right of Way through BLM lands was incorporated into the Beaver Creek Tract coal lease UTU 74804 on September 1, 1998. Federal coal can only be mined within this right of way. The application includes copies of the leases for the areas proposed to be added to the permit area, and the legal descriptions in these leases match the areas shown on the permit area maps. The applicant with and under the direction of the BLM has requested a modification to stipulation 10 of Exhibit A of the federal lease agreement.

Findings:

Information provided in the proposal is adequate to meet the requirements of this section of the regulations.

LEGAL DESCRIPTION AND STATUS OF UNSUITABILITY CLAIMS

Regulatory Reference: 30 CFR 778.16; 30 CFR 779.12(a); 30 CFR 779.24(a)(b)(c); R645-300-121.120; R645-301-112.800; R645-300-141; R645-301-115.

Analysis:

The application includes the legal description and this matches the areas shown on the permit area maps. Copies of the leases for the areas proposed to be added to the permit area are located in appendix 2-3.

The proposed operations will neither be within 100 feet of a public road nor within 300 feet of an occupied dwelling. Coal haulage at the existing mine is within 100 feet of a public road, but the plan contains approval letters from Carbon County regarding use of the public road. The letters are included in Appendix 3-1 and discussed in chapter 3.

According to the current MRP and application, no portion of the area to be permitted is within an area designated as unsuitable for mining, (plate 1-1).

Findings:

Information provided in the proposal is adequate to meet the requirements of this section of the regulations.

PERMIT TERM

Regulatory References: 30 CFR 778.17; R645-301-116.

Analysis:

The current permit term for the applicant's permit is five years and expires October 1, 2001.

GENERAL CONTENTS

Findings:

Information provided in the proposal is adequate to meet the requirements of this section of the regulations.

PUBLIC NOTICE AND COMMENT

Regulatory References: 30 CFR 778.21; 30 CFR 773.13; R645-300-120; R645-301-117.200.

Analysis:

The application includes a copy of the proof of publication containing the required information. The advertisements ran from October 31, through November 21, 2000, in The Sun Advocate. A copy of the affidavit of publication was received December 4, 2000.

No facilities would be used in common with any other permitted operation.

Findings:

Information provided in the proposal is adequate to meet the requirements of this section of the regulations.

FILING FEE

Regulatory Reference: 30 CFR 777.17; R645-301-118.

Analysis:

A copy of the filing fee is currently on file with the Division, there is no fee required for this revision to the operation and reclamation plan.

Findings:

Information provided in the proposal is adequate to meet the requirements of this section of the regulations.

PERMIT APPLICATION FORMAT AND CONTENTS

Regulatory Reference: 30 CFR 777.11; R645-301-120.

Analysis:

The application format and contents are in concert with the requirements and guidelines of the Utah Coal Regulatory Program.

There are two minor deficiencies noted in the table of contents for chapter three, the page references match the current plan but do not coincide with the text in the application and Plates 3-9, 3-10, and the raptor survey are not listed. These deficiencies have been corrected.

Findings:

Information provided in the proposal is adequate to meet the requirements of this section of the regulations.

REPORTING OF TECHNICAL DATA

Regulatory Reference: 30 CFR 777.13; R645-301-130.

Analysis:

The applicants technical data has been analyzed under the requirements of the regulations. Authorized and certified entities.

Findings:

Information provided in the proposal is adequate to meet the requirements of this section of the regulations.

MAPS AND PLANS

Regulatory Reference: 30 CFR 777.14; R645-301-140.

Analysis:

The maps and plans provided in the application as required are prepared by a certified professional engineer to appropriate scale.

Findings:

Information provided in the proposal is adequate to meet the requirements of this section of the regulations.

COMPLETENESS

Regulatory Reference: 30 CFR 777.15; R645-301-150.

GENERAL CONTENTS

Analysis:

The information in the application was determined to be administratively complete on October 11, 2000. The applicant has also stated in the application that the information is believed to be complete and correct.

Findings:

Information provided in the proposal is adequate to meet the requirements of this section of the regulations.



ENVIRONMENTAL RESOURCE INFORMATION

ENVIRONMENTAL RESOURCE INFORMATION

Regulatory Reference: Pub. L 95-87 Sections 507(b), 508(a), and 516(b); 30 CFR 783., et. al.

GENERAL

Regulatory Reference: 30 CFR 783.12; R645-301-411, -301-521, -301-721.

Analysis:

The application submitted by the operator/applicant pertains largely to the underground extension of the mine. There will not be any new surface development. Surface impacts have been discussed, but not expected. As with all mining there exists the potential of mine subsidence that can migrate to upper geologic units and effect surface and ground water systems, which can in-turn affect land use. The applicant has submitted information which considers potential impacts and describes means and methods to prevent or mitigate any impacts. Information pertaining to the surface disturbance, structures and their reclamation is provided in the Horizon MRP.

Findings:

The applicant has submitted information to evaluate the proposed SR area and mining techniques and methods to conduct mining operations.

PERMIT AREA

Regulatory Requirements: 30 CFR 783.12; R645-301-521

Analysis:

The permittee shows the new and old permit boundaries on Plate 1-1. That plate was certified by David Miller, a registered professional engineer. Plate 1-1 shows the following:

- The old and new permit boundaries
- The disturbed area boundary
- Township, range and sections
- Topography (80-foot contours)
- Roads and stream

The permittee included a legal description of the permit area in Section 114 of the MRP. The legal description is identical to the leases areas. The permit area contains 711 acres of which 305 acres are fee (Hidden Splendor Resources) and 406 acres are leased from the Federal Government.

In Section 117 of the MRP the permittee included a legal description of the disturbed area and acreage. The actual disturbed area contains 8.23 acres. The reclamation bond amount was calculated using 9.15 disturbed acres. The permittee agreed to continue to list 9.15 acres as the official disturbed acreage.

Findings:

Information provided in the proposed amendment is considered adequate to meet the requirements of this section.

HISTORIC AND ARCHEOLOGICAL RESOURCE INFORMATION

Regulatory Reference: 30 CFR 783.12; R645-301-411.

Analysis:

The SR proposal extends the underground operations. There is no change to the approved MRP, Appendix 5-1. The Division has received concurrence from the State Historic Preservation Office.

Findings:

Information provided in the proposed amendment is considered adequate to meet the requirements of this section.

CLIMATOLOGICAL RESOURCE INFORMATION

Regulatory Reference: 30 CFR 783.18; R645-301-724.

Analysis:

Climate is discussed in Chapter 11. The climate information in the plan was gathered the monitoring site of nearby Skyline Mine. The plan puts the respective average annual temperatures for 1993, at the Skyline Mine at 37.7°F. The respective cumulative annual precipitation amounts for these same locations at 27.37 inches. The coldest month of 1993 was January, with an average temperature of -9°F, while the warmest month was August, with an average temperature of 80°F.

Findings:

The plan contains no site-specific climatological data, but an approximate range of data can be determined from the information scattered throughout the plan. The Division finds that this information meets the minimum regulatory requirements. The Division recommends, however, that the operator set up a weather station at the site so that precipitation events can be correlated with other monitoring data.

VEGETATION RESOURCE INFORMATION

Regulatory Reference: 30 CFR 783.19; R645-301-320.

Analysis:

Chapter 9 of the current operation and reclamation plan provides the vegetation resource information. Plate 9-1 depicting the vegetative communities and acreage has been updated to include the proposed permit area expansion. Vegetative communities include Oakbrush, Salina Wildrye, Maple/Oakbrush/Aspen, Fir/aspens, Alpine Herb/Grassland, Manzanita, and Sagebrush/grass/Rabbitbrush. This information is adequate to predict the potential for reestablishing vegetation. Since there is no surface disturbance proposed with the mining in this area it is unlikely that there will be a need for reclamation practices to occur.

Findings:

Information provided in the proposal is adequate to meet the requirements of this section of the regulations.

FISH AND WILDLIFE RESOURCE INFORMATION

Regulatory Reference: 30 CFR 784.21; R645-301-322.

Analysis:

The Fish and Wildlife Information in the application is referenced in section 3.6 et sec, and discussed in chapter 10 of the current plan. Plate 10-1 has been revised to include the proposed addition to the permit area. This map shows the proposed permit boundary, the location of two raptor nests and big game habitat. The map has been revised to show the identification and location of the three nests located during the May 12, 2000 raptor survey. The proposed addition to the permit area is divided into critical year-long elk habitat and critical summer deer and elk habitats. There is an additional map labeled 2000 Raptor Survey Jump Creek Quad. The map has been identified as appendix 10-3 in the table of contents of chapter 10.

Findings:

The information contained in this section of the application is adequate to meet the requirements of the regulations.

SOILS RESOURCE INFORMATION

Regulatory Reference: 30 CFR 783.21; 30 CFR 817.22; 30 CFR 817.200(c); 30 CFR 823; R645-301-220; R645-301-411.

Analysis:

Section 2.117 states that the disturbed area contains 8.23 acres. The bond covers 9.15 acres. The permit and disturbed area boundaries are shown in Plate 1-1.

Chapter 8 covers soil survey information. A soil survey was conducted in 1990. The survey was conducted by Richard Foster, of the SCS. A disturbed area soils map Plate 8-1 was drawn by Patrick Collins (Mt Nebo, Scientific).

This submittal includes a revised permit area soil map, Plate 8-2. The permit area boundary has been redrawn on this map to reflect the new lease.

Findings:

Information provided in the proposed amendment is considered adequate to meet the requirement of this section.

LAND-USE RESOURCE INFORMATION

Regulatory Reference: 30 CFR 783.22; R645-301-411.

Analysis:

The land use information is located in chapter 4. Current land uses consist of grazing , logging, mining , mining reclamation activities, recreation and wildlife habitat. This permit application lies beneath an area that is undeveloped. The names , and addresses of the surface owners are provided and identified on plate 4-2. Plate 4-3 shows the ownership and location of the mineral tracts. The applicants legal right to enter is shown on plate 1-1 and discussed in the lease documentation located in chapter 2.

Findings:

Information provided in the proposal is adequate to meet the requirements of this section of the regulations.

ALLUVIAL VALLEY FLOORS

Regulatory Reference: 30 CFR 785.19; 30 CFR 822; R645-302-320.

Analysis:

There is a letter in Appendix 7-6 from SCS dated 6/13/80 stating that there are no Alluvial Valley Floors in the area of section 17, Township 13 South, Range 8 East. As this letter does not cover the revised permit area and as the Alluvial Valley Floor determination is the responsibility of the Division, the issue will be addressed here, on the basis of the information provided in the application. The additional lease area falls within sections 7 and 8 on the north and sections 18 and 17 on the south. The additional lease area is at an elevation of 7600 - 8400 feet and is bordered by Beaver Creek on the north. Beaver Creek lies in sections 7 & 8.

The soil type along Beaver Creek at ~8300 feet elevation is #109 Silas-Brycan loams. The following soil description comes from the SCS Soil Survey¹: these soils are found in low areas adjacent to stream channels or on alluvial fans adjacent to narrow alluvial valleys. The water table fluctuates between 20 - 25 inches.

Surface mining will not be conducted in the area. The premining land use has been undeveloped rangeland utilized for grazing and the deposits of alluvium are small and do not support farms.

In accordance with R645-302-323, the Division finds that the premining land use is undeveloped rangeland which is not significant to farming and that the area of alluvium is small.

Findings:

The permittee has submitted sufficient information to address this section.

PRIME FARMLAND

Regulatory Reference: 30 CFR 785.16, 823; R645-301-221, -302-270.

Analysis:

The additional lease area is at an elevation of 7600 - 8400 feet and is bordered by Beaver Creek on the north, Gordon Creek on the south and is bisected by Jewkes Creek. In Figure 8-1, the prime farmland determination dated 9/12/1990 by the Soil Conservation Service states that there are no prime farmlands within sections 7, 8, 17, 18 or 20 of Township 13 South, Range 8 East. The area covered in the lease application extends into sections 7 and 8 on the north and section 18 on the south.

The soils within the lease are were designated #107 (Shupert-Winetti complex) along Jewkes Creek, and #72 (Pathead/Curecanti family association) on the south facing slopes, #63 (Midfork family Podo association) on the north facing slopes and #109 (Silas-Brycan loams) in the Beaver Creek drainage with #124 on the north facing slopes and #72 on the south facing slopes.

Soil type #107 is deep and well drained. The mine surface facilities are located within this soil type.

Findings:

The application provides the required information.

GEOLOGIC RESOURCE INFORMATION

Regulatory Reference: 30 CFR 784.22; R645-301-623, -301-724.

¹USDA. SCS. 1988. Soil Survey of Carbon Area, Utah.

Analysis:

Other than a revised plate 6-1, no new or additional geologic information has been submitted with this SR. The current coal mining plan includes geologic information in sufficient detail to assist in determining: the probable hydrologic consequences of the operation upon the quality and quantity of surface and ground water in the permit and adjacent areas, including the extent to which surface- and ground-water monitoring is necessary; whether reclamation can be accomplished; whether the proposed operation has been designed to prevent material damage to the hydrologic balance outside the permit area; and preparing the subsidence control plan.

Chapter 6 of the current plan has a description of the geology of the proposed permit and adjacent areas down to and including the deeper of either the stratum immediately below the lowest coal seam to be mined or any aquifer below the lowest coal seam to be mined that may be adversely impacted by mining. This description includes the areal and structural geology of the permit and adjacent areas, and other parameters that influence the required reclamation, and it also shows how the areal and structural geology may affect the occurrence, availability, movement, quantity, and quality of potentially impacted surface and ground water. It is based on maps and plans required as resource information for the plan, detailed site specific information, and geologic literature and practices.

No new logs have been submitted with the SR. Logs of drill holes LMC-1, LMC-2, and LMC-3, drilled in 1976, and LMC-4, drilled in 1980, are in Appendix 6-1. These logs show lithologic characteristics, including physical properties and thickness of each stratum that may be impacted. There is no indication on these logs that ground water was encountered, and Joseph A. Harvey, a consultant who was present during the drilling, has stated that the holes were dry during drilling (Appendix 7-1). LMC-1, LMC-3, and LMC-4, plugged-back to different depths and in different lithologies, were monitored for ground water from 1992 to 1995 and were always dry. LMC-2 was plugged back to a depth of 50 feet and has always been dry also (MRP pp. 7-7 through 7-12). Locations of LMC-1, LMC-3, and LMC-4 are shown on Plates 3-3 and 6-1.

Logs for water-level observation wells HZ-95-1, HZ-95-2, HZ-95-3, completed in the Spring Canyon Tongue of the Starpoint Sandstone, are in Appendix 7-5. The log for HZ-95-1S, completed in a perched aquifer within the Blackhawk Formation, is also in that appendix.

Additional information on lithologic characteristics for the permit and adjacent areas is shown on geologic cross sections on Plates 6-2 and 6-3 in the current MRP. Approximate locations of the boreholes and measured sections used to make these cross sections are shown on small index maps and tabulated in Tables 6-3 and 6-4.

No new chemical analyses for acid- or toxic-forming or alkalinity-producing materials have been submitted with the SR. Coal quality and acid- and toxic-forming potential of coal, roof, and floor samples from the Hiawatha Seam are summarized in Tables 6-5 and 6-6 in the current MRP. Samples were from bore holes LMC-4 and HZ-95-1, HZ-92-2, and HZ-95-3. Copies of analyses reports for samples from LMC-4, for both the Hiawatha and Castlegate "A" Seams, are in Appendix 6-2. Coal analysis reports in Appendix 6-2 include total sulfur and pyritic sulfur. One sample was analyzed for the Castlegate "A" Seam and one for the Hiawatha Seam. Optical differentiation between marcasite and pyrite was done for the two coal samples: the samples were 0.04 percent pyritic sulfur, of which marcasite accounts for 0.001 to 0.002 percent.

Appendix 6-2 includes proximate analyses, including total sulfur, that were reported by Doelling in his 1972 Monograph on the Central Utah Coal Fields for five coal samples from the McGowen Sean in the Blue Blaze No. 3 Mine.

Information on thickness and engineering properties of clays or soft rock in the stratum immediately above and below each coal seam to be mined is on page 6-17 of the current MRP. This information was obtained from the LMC drill holes and certain of the GCD series of holes drilled by Beaver Creek Coal Company. The locations of the Beaver Creek Coal Company holes are on Plate 3-3 (page 6-17).

The Division has not required the collection, analysis, and description of additional geologic information, nor has the Division determined such additional geologic information necessary to protect the hydrologic balance, to minimize or prevent subsidence, or to meet the performance standards.

The permittee has not requested that the Division waive in whole or in part the requirements of the borehole information or analysis required of this section.

Findings:

Geologic Resource Information is adequate to meet the requirements of this section.

HYDROLOGIC RESOURCE INFORMATION

Regulatory Reference: 30 CFR Sec. 701.5, 784.14; R645-100-200, -301-724.

Analysis:

Sampling and analysis

The operator is required to perform all sampling and analysis in a manner that meets the requirements of R645-301-723.

The groundwater, surface-water and point-source discharge site monitoring will be conducted in accordance with 40 CFR Parts 122 and 123, R645-301-751 and as required by the Utah Division of Water Quality for Utah Pollutant Discharge Elimination System (UPDES) permits. A UPDES discharge permit application has been secured from the Division of Environmental Health for the sediment pond and mine water discharge for the Horizon Mine operation. The UPDES permit for the Horizon Mine is provided in Appendix 3-7.

When analysis of any surface water sample indicates non-compliance with the permit conditions, the company will promptly notify the Division and immediately take actions to identify the source of the problem, correct the problem and, if necessary, to provide warning to any person whose health and safety is in imminent danger due to the non-compliance.

Baseline information

Within the permit area, the surface water resources consist of streams, springs, wells and ponds. The mine is established in Portal Canyon, an ephemeral drainage, yielded only occasionally flows until the mine started discharging water. Portal Canyon drains into Jewkes Creek. The undisturbed runoff generated above the disturbed area is directed into a 36 inch culvert, UC-2, that runs the length of the disturbed area in Portal Canyon. Mine water is discharged directly into the Portal Canyon culvert.

Jewkes Creek is a perennial stream which receives its flow from rainfall, snowmelt and springs SP-1 and SP-4. Spring Two Canyon, a tributary to Jewkes Creek occasionally contributes flow. Part of the disturbed area lies along Jewkes Creek. Another set of undisturbed 36 inch drainage culverts, UC-1 and UC-3, directs flows from Jewkes Creek under the disturbed area and under the sedimentation pond. Drainage diversions are shown on Plate 7-4.

Beaver Creek is a perennial stream which lies in a drainage opposite the ridge of Jewkes Creek. Its flow path bisects the federal coal lease. Although the current mine plan does not extend across Beaver Creek, the operator has intentions of conducting future mining operations in the federal coal lease beyond Beaver Creek. The area surrounding Beaver Creek is privately owned and some concerns regarding subsidence and water interception have been expressed by the landowner.

There are several springs in the vicinity of Beaver Creek. Perennial and intermittent springs appear near above of the mine area. Springs occur where the recharge potential from alluvium and sandstone units in the Price River Formation and Castlegate Sandstone is high or from fractures created by faulting. Ephemeral springs tend to be linked to shallow aquifers consisting of soils, alluvium or colluvium.

Generally, there is flow in Jewkes Creek and Beaver Creek throughout the year. Several of the adjacent canyons contain flows during the spring snowmelt runoff period and also as a result of isolated summer thunderstorms. Due to the limited drainage area and high elevation of some of the canyons the duration of the snowmelt flow is short and limited to the very early spring. Locations of all baseline water data points are shown on Plate 1. Baseline data information is included in Appendix 7-1.

Plate 7-1 shows numerous springs and seeps exist within, and adjacent to, the permit area, especially in the Beaver Cr./Jump Cr. area. Based on results of the PHC determination, base-line study and other available information, the operator will monitor the significant surface water sources, including drainages above and below the disturbed mine site area, and all point-source discharges.

The operator has provided information on water rights included in Appendix 3-5. The point of diversion for water rights near the mine operations are presented on Plate 7-3. Designated uses and season of use for some water rights are not included in the water rights table provided. The operator has indicated that the area is almost exclusively used for stock watering.

The agreement between Horizon and Florence A. Sweet includes water rights, 91-94, 91-353 and, 91-330. The water rights are associated with two unnamed springs and an underground water tunnel. The point of use associated with the spring(s) are proposed to be changed to Sweets Pond. Domestic and Industrial uses are proposed in association with the Horizon Mine operations.

The operator submitted an update to the water rights lease agreement between Horizon Coal Corporation and Florance Sweet. A canceled check for lease of the water shares indicates the a five year term begins on June 20, 2000 and will expire on June 20, 2005.

Table 1
Water Rights Used in Mining

Water Right #	Season of Use	Quantity of Use (cfs)	Potential Total for Season of Use (AF)
91-94	9/1 to 5/1	0.1500	72.00
91-353	5/1 to 9/1	0.0150	3.66
91-330	1/1 to 12/31	0.5570	2565.00

General Baseline Water Quality

Baseline information was collected according to the 1986 Division guidelines. In early baseline data acquisition the operator collected data according to the 1986 guideline. The Division has a new guideline, effective April 1995. The major difference between the data collected through 1996 and the data required by the new guidelines is the acquisition of certain dissolved constituents, total alkalinity, and phosphates as orthophosphates. Although older data acquisition will provide useful information, new data should be collected according to the new guidelines. The baseline data analysis for the parameters obtained according to each guideline should be discussed in the plan. Baseline information is being collected in accordance with the new guidelines starting in 1996. The operator should provide a table of the baseline parameters. Division guidelines request that baseline parameters be collected at low flow for monitored sites every fifth year prior to permit renewal.

Ground-water information

Seeps, springs and potential mine water discharge will be monitored in accordance with the Ground Water Monitoring Plan in Chapter 7.

Section 6.4.1 discusses site stratigraphy and provides information relative to groundwater in relation to the mine operations. Section 7.1.2 discusses the groundwater resources.

The upper Gordon Creek area is considered a regional recharge source for groundwater, although locally in the permit area it is not a region with potential for large scale groundwater development. Snowmelt and rainfall are the main sources of recharge to the groundwater system in the permit and adjacent areas. The operator provides Figure 7-4 to delineate potential recharge areas and shows a limited recharge potential except in the northern portion of the permit area and in canyon bottoms downstream. The "small" number of springs in the Gordon Creek drainage is described to demonstrate of relatively low area permeabilities by the operator. The operator has not clearly described relationship between the "small number" of springs to the local area aquifers, particularly the water in the Starpoint Sandstone.

The regional area aquifers are the Emery and Ferron Sandstone of the Mancos shale, which probably do not extend to Gordon Creek (thus, the mine area), and the Starpoint Sandstone and Blackhawk Formation which are located in the mine area.

The area is also heavily faulted by major fault zones. The North Gordon and Fish Creek fault zones trend North and South, and North 60 degrees West, respectively. The faulting appears to have influenced the development of Gordon Creek and the locations of springs and seeps in the permit area. Faulting and fracturing provide conduits for surface water to enter the groundwater and allows movement between aquifers. Another major structural feature controlling groundwater occurrence is the Beaver Creek Syncline trending NE-SW with dip at approximately 3.5 degrees.

Locally, potential water bearing members below the Hiawatha coal seam includes the Blackhawk and the Blackhawk-Starpoint aquifer. Both the Blackhawk Formation and Starpoint Sandstone serve as sources of spring and seep flows. According to Price and Arnow, 1974, the upper cretaceous sediments of the area have a low hydraulic conductivities and specific yields of 0.2 to 0.7%. Two pump tests from wells drilled in the Blackhawk Formation in Eccles Canyon indicate transmissivities of 21 and 16.3 gallons per day per foot. The Blackhawk aquifers are generally laterally discontinuous perched aquifers and fluvial channel sandstones

The Hiawatha Coal Seam in the Blackhawk Formation directly overlies the Starpoint Sandstone. The Starpoint Sandstone consists of the Panther, Storrs and Spring Canyon Sandstone members from the stratigraphically lowest to highest member respectively. The Spring Canyon Member is composed of fluvial shales siltstone and channel sandstones (Section 6.5.2.1). The Starpoint Sandstone is approximately 900 feet thick in the Gordon Creek area. The recharge to the Starpoint Sandstone occurs primarily from vertical movement thorough the Blackhawk. The operator suggested that due to the low vertical permeability the magnitude of the recharge is limited. However, the vertical permeability from fractures in the area may be relatively significant.

Above the Hiawatha, the Castlegate "A" coal seam overlies the Aberdeen Sandstone. Drill logs indicate this sandstone member thins near the mine and is discontinuous over the permit area pinching out on the east west stratigraphic section between LMC-4 and the Arco section. The sandstone is interbedded with silts tones and shales. The operator indicates this sandstone is not anticipated to be a significant aquifer because it has a thin interbedded lithology and no springs in the permit or adjacent area issue from the formation (Section 6). The operator has determined it is not practical to mine this seam in the permit area.

The floor of the Castlegate "A" seam is carbonaceous silty shale to fine grained fluvial sandstone. Water production was not observed from the floor in previously mined areas according to the operator. The roof consists of carbonaceous silty shales over 80 % of the permit area and the remaining 20% consists of fluvial channel sandstones that initially produce water then tend to dry up. The general channel trend is NE-SW and the channels tend to increase in frequency to the West. If these channels connect with a Fault, water may be diverted to the mine workings and directed/redirected based on the prominent ground water control mechanisms. The flow rate would be dependent on the fault/channel systems transmissivity. Whether or not this connection exists is unknown

Other members containing aquifers above the coal to be mined include the Castlegate Sandstone, the Price River Formation and unconsolidated alluvial sediment deposits. The Castlegate Sandstone is exposed in the central and northeastern section of the lease block and is approximately 300 feet thick in

the Gordon Creek area. The Price River Formation overlies the Castlegate Sandstone and occurs in the north eastern portion of the permit area. Additionally, unconsolidated deposits occur along valley floors and at the base of steep slopes. Some of these deposits are recharged from the Blackhawk and Starpoint aquifers. The thickest alluvial deposits in the permit area occur along Beaver Creek.

Local Drilling Information and Occurrence of Ground Water

Information regarding baseline groundwater data collection is discussed in Chapter 7, Section 7.1.2.2. Four exploratory holes drilled in 1970's and 1980's were monitored for water in 1995. Drill logs of Holes LMC 1, LMC 2, LMC 3, and LMC 4 are found in Appendix 3A. Also, three wells were drilled and completed in the Starpoint Spring Canyon Sandstone in 1995 and are discussed below.

Tables 1A and Table 1B were generated to present information gathered from the LMC drill holes and the HZ wells. Data from the tables were used in determining ground-water occurrence in the permit and adjacent areas.

Table 2.1
LMC Drill Hole Information

HOLE ID	DATE DRILLED	DEPTH DRILLED	DEPTH OF PLUG	1992 Drill Hole Depth ft msl (depth)	CASTLEGATE Elevation ft msl (depth)	HIAWATHA DEPTH*
LMC-1	Sept. 1976	900 ft.	600 ft.	7,852 (599 ft)	7,658 (793 ft)	Unknown*
LMC-2	Oct. 1976	568 ft.	50 ft.	None	518 ft.	Unknown*
LMC-3	Nov. 1976	836 ft.	665 ft.	7,556 (664 ft)	7,590 (630 ft)	791 ft.
LMC-4	Jan. 1980	430 ft.	220 ft.	7,587 (217 ft)	7,698.8 (105.2 ft)	7,588.7 ft.

* Drilling completed before reaching the Hiawatha Seam.

The data shows that groundwater occurs above, within, and immediately below the Castlegate 'A' seam. It is not continuous and may be inconsequential in the strata above the mine. Documentation of the LMC drilling procedure was provided in a notarized letter from Mr. Joseph A. Harvey to Rich White, Engineering Consultant for Horizon Mine, on March 24, 1992 (Appendix 7-1). As stated in Mr. Harvey's letter, all these holes were drilled with air rotary, monitored for water, and found to be dry (during drilling). Thus, no water quality data was collected. Following drilling the drill holes were injected with compressed air and then mud for geophysical logging. The drill holes were abandoned by injecting cement. Mr. Harvey indicated there was an inability to cement the full length of the drill holes because there were large voids connected to the drill hole annulus, thus, resulting in the existing hole depths as measured in the 1995 monitoring.

If one can assume the drill holes would seep water during drilling, and given there were no noted water occurrences in the cuttings, then these drill holes indicate the stratigraphic members above, within, and below the Castlegate 'A' seam are probably dry. LMC 1 was originally drilled to 200 feet above the Castlegate 'A' seam. LMC 2 was originally drilled through the Castlegate "A" seam. LMC 3 was originally drilled through the Hiawatha Seam and 32.8 feet into the Upper Spring Canyon Sandstone. LMC-3 is located north east of old workings developed from the Blue Blaze No.3, Castlegate "A" Seam. Drill hole LMC-4 extended through the Hiawatha Seam, ending 213 feet into the Storrs Sandstone. LMC-4 penetrates old workings in the Hiawatha coal seam and is located in an area that is possibly hydrologically disconnected from the majority of the area to be mined due to the surrounding faults (see Plate 6-1). Therefore, LMC-4 probably does not represent information on groundwater occurrences for the unmined portions of the lease outside of the surrounding faults.

Section 6.5.1.1 states that Drill holes LMC-1, LMC-2 and LMC-3 will be plugged and abandoned following State approved methods. Of the LMC drill holes, it seems as though well LMC-4 could provide information for the mined out area should it flood during or after mining. However, it appears to provide little useful information on aquifers in the baseline/operational phases for the proposed mining area. These wells should be capped now unless they are considered necessary for further monitoring purposes.

Table 2.2
HZ Drill Hole and Well Completion Information

Hole ID	Date Drilled	Drilled Depth ft msl (Depth from surface ft)	Completed Formation	Base of Hiawatha Coal Seam (ft msl)	Screen Completion	Water Elevation Dec.1995
HZ-95-1	12/13/95	7,272.6 (1080)	Starpoint Spring Canyon	7331.6	7,277.6-7,287.6	7570.7
HZ-95-1S	12/5/95	8132.6 (220)	Blackhawk	NA	8,101.6-8,110.6	8221.5
HZ-95-2	12/5/95	7,146.3 (1200).	Starpoint Spring Canyon	7189.3	7,151.3-7161.3	7519.3
HZ-95-3	10/28/95	7,427.6 (470)	Starpoint Spring Canyon	7477.6	7,432.6-7,442.6	7522.7

With the information provided from the HZ wells, the operator has constructed a piezometric map for the Spring Canyon Sandstone. The presented information suggests the Spring Canyon aquifer has a hydraulic gradient of 0.014 and an east southeast direction. The overlay of the potentiometric surface and elevation of the Spring Canyon Tongue was used to estimate the saturated portion of the coal formation. The operator indicates the Hiawatha coal may be saturated very soon in the mining

operations. It should be noted that the coal itself may not be saturated and water that may occur in mine could be produced from the floor.

In building the potentiometric surface map, the operator has assumed maximum water level fluctuations of + or - 30 feet based on Skyline Mine well data from 1982 to the present. The intent in using this data for this purpose is not clear since mining has occurred at Skyline and the change in water levels may not be considered "baseline" information, therefore the use of this data may not be appropriate for the comparison presented.

The HZ wells all appear to be drilled near associated fracture systems. The location of these wells may influence the assumptions used in the potentiometric surface presented in Figure 7-2. Each well, if fracture influenced, may respond according to the behavior of the fracture feature and not the overall piezometric surface of the Starpoint Sandstone.

For instance the piezometric surface elevation varies by 51 feet over approximately 4,000 aerial feet between HZ95-2 and HZ95-1, having an approximate 0.0128 feet/foot water surface gradient between those wells. If one looks further into the structural geology of the area it would be noted that the permit area sits between a WNW-ESE trending fault. A gentle NW-NE dip is associated with the Beaver Creek Syncline. The Beaver Creek Syncline axis trends and plunges to the north. Rocks dip 3-5 degrees on both limbs of the fold except where steepened by fault drag or fault displacement. The fold follows Beaver Creek drainage up to Section 8, T13 S R8 E where Beaver Creek diverges from the axis to the north east along a suspected fault zone. HZ95-1 appears to be located on the other side of the Beaver Creek Fault Zone. If the structural geology controls the piezometric surface such that the south side of the Beaver Creek Fault Zone has a piezometric surface somewhat separate from the north side, a gradient for the piezometric surface may occur on the south side of Beaver Creek in a north west direction.

Except for the HZ-95-1S well, the majority of the springs issue above the presented Piezometric surface of the Starpoint wells. This may indicate the Starpoint is not in connection with the fractures. However, the operator has not completed this well fully through the formation and there is some question as to whether lower sandstone tongues may have a greater connection with the fractures. Additionally, no lithologic or geologic logs are presented and the initial occurrence of water was not presented in the SR. Water levels, other than the December value, could not be located in the MRP. Because many of the formations in this region are fairly slow to transmit water it is unknown if the well has reached equilibrium.

Recent monitoring of HZ-95-1, during later 1999 and 2000, indicates that pumping associated with mine water discharge is effecting the water level (head) in the well. HZ-95-1S has not shown extensive drawdown. All wells and springs have shown a decline in the past year, likely the result of a dry year.

Additional water level information should be collected and submitted to substantiate that the wells are at being effected by pumping or are in equilibrium. No pumping test data or drill logs are presented for these wells. Pump testing or other methods of determining the hydraulic conductivity of these wells would provide a great deal of necessary information on whether these wells were influenced by the nearby fracture zones. Logs of these wells should verify whether aquifers exist above the coal seam as identified by the presented LMC holes. Unfortunately it appears these wells are all completed in the upper tongue of the Starpoint Sandstone and are not completed through the formation. The operator

must provide the geophysical and lithologic logs and hydrologic conductivity (pump test data) for these wells.

The advantage to the location of these wells becomes critical should the mining operations intercept the related fracture system. These wells will be useful in determining the first year mining impacts. However, the Operator's five year mine plan proposes to mine through the Beaver Creek Fault Zone and will also mine through well HZ95-1 potentially eliminating the third point used to monitor the Starpoint piezometric surface. There is a possibility the information would be necessary to complete the CHIA if additional information does not adequately describe the groundwater system. It is recommended that the additional well be placed on the north side of Beaver Creek and outside of the proposed mining area, within the graben but, away from a local fracture and be completed through the formation, in each sandstone tongue: not just the first tongue of the Starpoint. It should be noted that the Deficiency from the previous Blue Blaze mine proposal required the well be drilled through the formation in order to mine into the Hiawatha coal seam.

Previous Mining History

According to the operator the Gordon Creek #2 Mine operated by BCCC in the Castlegate A seam received sporadic occurrences of groundwater inflow which dried in a short time period. The Gordon Creek #3 Mine operated by BCCC in the Hiawatha Seam (located east and down gradient of the permit area) received approximately 400 g.p.m. inflow when a 12 foot graben was encountered in the northeast section of the mine. Water was produced from the floor. When retreat mined later the area was dry as a result of previous dewatering or elevation differences upgradient of the mine. It was also deemed possible that groundwater stored in the fault zone did not have a significant recharge rate that maintained the flow.

The location and extent of all known abandoned underground mine workings within the permit area and adjacent area are not shown on Plate 3-3. This information is critical to the development of the PHC and the CHIA.

Springs

The PAP indicates baseline reconnaissance information was gathered in the field with an Oil, Gas and Mining employee named Darin Worden from 1988 to 1990. Other information was derived from state and federal published open file reports. A complete spring and seep survey in the proposed permit and adjacent area was not conducted. Currently the PAP does not contain a map showing spring locations in the permit and adjacent area.

The baseline sampling information is gathered from springs which issue from the Blackhawk Formation and were characterized as Calcium Bicarbonate type waters.

Table 2.3
Baseline Spring Sampling Summary

(Summary of information from Plate 7-1, Figure 7-3 and Sections 7.1.3, 7.1.5 and 7.2.6)

Sampling Point	Monitoring History	Location (Formation)	Water Quality	Water Quantity	Comments
SP-1 1989 to present	Station #1 1989 through 1993	Issues from Hillside and flows into Jewkes Creek (Blackhawk Sandstone unit above coal seams 8195 ft msl.)	TDS 230-330 mg/l pH 7.5 - 8.5	Late Spring 10-15 gpm High flow on 5/89 was 45 gpm Late Summer/Fall 5 to 6 gpm	
SP-2 1989 to present	Station #2 1989 through 1993 (This description matches the station number 1 previously; Channel in North Fork of Gordon Creek.)	Issues from Hillside and usually flows approximately 100 feet (Blackhawk, 8005 ft msl)	TDS 480-540 mg/l pH 7.5 - 8.5	Flow in Late Spring 1-2.5 gpm Flow in Late Summer/Fall <1 gpm Dry 7/1991, 8/1991, through 12/1992	Spring flows through alluvium below the point of origin.
SP-4 1989 to present	#4 1989 through 1993	Jewkes Creek Drainage flows along road empties into Jewkes Creek (Blackhawk, 8102 ft msl)	TDS 350-480 mg/l pH 7.5 - 8.5	Flow in Late Spring 1-2.25 gpm Flow in Late Summer/Fall <1 gpm	Location not clearly mapped
SP-6 1989 to 1995	#6 1989 to 1995	Upstream from the proposed mine portal (Blackhawk)	N/A	dry from 1989 through 1995	This location is not a spring and will not be included in future monitoring

Sampling Point	Monitoring History	Location (Formation)	Water Quality	Water Quantity	Comments
not found	Gunnison Homestead Spring/Tributary to Beaver Creek near confluence of spring discharge channel and Beaver Creek	(Blackhawk)	not discussed	3-136 gpm the 136 gpm included snowmelt runoff.	Location removed from Figure 7-3
SP-9	Jewkes Spring U.S.G.S. 1979-1983 Station 2-5-W Beaver Creek Coal Company 1985-1995	Near Beaver Creek Channel, south west corner of proposed LOM permit area. (Blackhawk, 8550 ft msl)	TDS 240-300 mg/l pH 7.5 - 8.5	Typical Late Spring flow 20 to 60 gpm decreasing late fall 1.10 to 38 gpm (Maximum flow on 7/85 was 1372 gpm considered inaccurate)	Location mapped on Figure 7-3 Information on flow discussion in Section 7.2.2.2 varies from Section 7.1.2.2

In Section 6.4.2 the operator has indicated a series of springs in the North Fork of Gordon Creek in the north west corner of Section 18 T13S R8 E may be related to faults bisecting the area. The North Fork drainage may have formed subsequent or contemporaneously with the movement along the Gordon Creek Fault Zone.

The operator has stated the Homestead Spring is one of the main contributing springs to Beaver Creek. However, the operator has not included this spring in the baseline or operational monitoring regime. The operator has identified this spring as important to Beaver Creek flows, but has not indicated why the spring should not be part of a sampling point (i.e.; why is this spring considered outside the zone of potential impact?).

Groundwater Quality

Two water quality samples were collected in the Blue Blaze No. 1 Mine workings, one in May 1992 and one in November 1995. The water was determined to be a calcium bicarbonate type with TDS ranging from 414 to 452 mg/l and pH from 6.8 to 7.66.

Groundwater collected from the HZ wells in December 1995, November 1996, and January 1996 may have been somewhat affected from the foam drilling fluid used during installation. Data analyses indicate TDS ranged from 380 to 680 mg/l. Due to the potential effects from the foam drilling additional water quality data is necessary.

Surface-water information

The Horizon Mine lies within the headwater streams of the Price River Basin. Major drainages within the permit and adjacent area are; Beaver Creek north of the mine site, and the North Fork of Gordon Creek and Gordon Creek south of the mine site. The disturbed area drains into the North Fork of Gordon Creek. The State Division of Water Quality classifies Gordon Creek as Class 3C and Class 4 waters. These classifications are designated as; non-game and aquatic life, and agricultural uses, respectively. Beaver Creek, located over the future proposed mine workings, is classified as 1C and 3A, designated as domestic and agricultural uses respectively. Down stream of the proposed disturbed area in Gordon Creek there are fisheries. Information on the fisheries is lacking in the plan. For further discussions see the **Fish and Wildlife** sections in this TA.

Drainages adjacent to the proposed disturbed area are named for referencing purposes as shown on Plate 7-4. The following designated names are assigned for the drainages flowing through the proposed disturbed area:

- 1) Jewkes Creek - the main drainage through the site which joins the North Fork of Gordon Creek's main stem at the southern boundary of the permit area.
- 2) Portal Canyon - this drainage is the first drainage entering from the west after crossing the permit area boundary and joins Jewkes Creek. The portal entries are located in this drainage.
- 3) Spring Two Canyon - is the second drainage entering from the west after crossing the permit area boundary and joins Jewkes Creek. This drainage is upstream of the disturbed area.

Streams within the permit area receive their maximum flows in late spring and early summer as a result of snowmelt runoff. Flows decrease significantly during the autumn and winter months. Jewkes Creek has experienced no flow during the winter and late summer months.

Beaver Creek is a perennial stream with base flow maintained by seeps and springs. Beaver ponds are common in Beaver Creek and also play a part in providing perennial flows. Springs contributing to base flow include the Gunnison Homestead Spring, within one mile west of the proposed additional lease area, and Jewkes Springs one mile west of the permit area near the north west corner. Discharges from these springs vary between 3 to 136 gpm and 1.1 to 38 gpm respectively.

The USGS maintains a gauging station (09312700) near the mouth of Beaver Creek several miles northeast of the permit area with a period of record from 1960 through 1989. The minimum annual discharge for this period was 338 acre feet in 1961. The maximum annual discharge of 1,610 occurred in 1973. The average annual discharge for the 29 year period of record was 3,310 acre feet. Decreases in downstream flow are observed in Beaver Creek between monitoring stations SS-7 and SS-8. The decrease is most prevalent during the low flow season. This losing stream section may occur due to either alluvium, fracture and fault systems or other unknown factors.

The operator discusses the annual variability of flow in Beaver Creek. Although there is annual variability, the variability in base flow related to snowfall and possibly spring run off would provide

more significant information. Snowmelt survey and precipitation information, where available, should be used to compare annual base flow changes with the precipitation rates.

Jewkes Creek drains a watershed area slightly greater than 1 square mile and discharges to the North Fork of Gordon Creek. The operator has referred to this stream as intermittent. The flow data submitted indicate that normally the creek flows all year at Sampling Point 5, but becomes intermittent at Sampling Point 3. The flow diminishes in a downstream direction beyond sampling point SS-5, infiltrates into the alluvium and does not reappear immediately downstream according to information in the PAP. Water may reappear one half mile down stream in the North Fork Gordon Creek where the Mancos shale outcrops. A potential reason for the diminished flows in this area may be due to recharge of subsurface soils in the riparian area near this monitoring site. Characterization, by collecting water quantity data and by observation in the North Fork of Gordon Creek, to determine whether this stream re-emerges as constant flow downstream should be made.

The North Fork of Gordon Creek flows along County Road 290 southeast of the permit area. The elevation of the creek is lower than the Hiawatha coal seam. The operator suggests the mining of the Hiawatha would not affect the quantity or quality of flow in the North Fork of Gordon Creek. However, the operator has shown the Spring Canyon Aquifer below the Hiawatha coal seam contains water and mining might reduce the piezometric water elevation potentially affecting the surface water in this stream. Discharge from the Starpoint aquifer to this stream section should be determined. Losing and gaining reaches in this section of the stream should be identified.

The proposed Five Year Mine Plan as shown on Plate 3-3, illustrates a proposed lease area to the north and east of the currently designated permit area. The surface water descriptions and baseline information for the permits adjacent area have not been presented. The Operator's future mining operations are proposed to take place under Sand Gulch and an unnamed drainage to the north. No baseline information was collected for this area. In addition, Plate 3-3 shows the major fault systems which run northeast and southwest of the proposed mine operations. This fault system should be used to describe the geologically defined adjacent area. The graben and fault system appears to extend all the way up to Jump Creek. Additional baseline information will be necessary to permit this site in the future and may be necessary to complete the CHIA. Further baseline sampling should focus on the springs and surface waters potentially impacted through intercepting water from faults and fractures and diverting. Baseline information should extend to Jump Creek until adequate information is supplied to the Division to consider Jump Creek outside of the adjacent area.

Table 2.4
Baseline Surface Water Sampling

Sampling Point	Location	Flow	Water Quality	Comments
#3 1993 through 1995	Channel in Jewkes Creek /below disturbed area upstream of the intersection with the North Fork of Gordon Creek and below the surface facilities.	Intermittent	TDS 388 to 799 mg/l. Total Fe <0.02 to 8.7 mg/l Total Mn <0.01 to 0.05 mg/l TSS <1 to 72 mg/l pH 6.25 to 9.5	Information presented in the text does not match the data in appendices
#5 1993 through 1995	Jewkes Creek upstream of disturbed area but downstream of the confluence with Spring Two Canyon.	Perennial	TDS 198 to 550 mg/l. Total Fe .05 to 3.9 mg/l Total Mn 0.05 to 1.0 mg/l TSS 1 to 245 mg/l pH 6.7 to 8.99	Information presented in the text does not match the data in appendices
#6 1991 through present	Right Fork North Fork Gordon Creek In the east Drainage above proposed portals and disturbed area	Ephemeral	Removed from proposed monitoring schedule. Samples were never obtained.	This should be monitored on the same day as sites 3 and 7 when sampling during a precipitation event or snowmelt period
#7 1991 through present	Beaver Creek above pond upstream of the proposed future permit area outside of potential subsidence zone?.	Perennial	TDS 216 to 353 mg/l. Total Fe 0.05 to 5.19 mg/l Total Mn <0.1 to 0.19 mg/l TSS <1 to 297 mg/l pH 6.0 to 8.54	Beaver Creek tends to have a lower TDS than Jewkes Creek.

ENVIRONMENTAL RESOURCE INFORMATION

Sampling Point	Location	Flow	Water Quality	Comments
#8 1991 through present	Beaver Creek station downstream, does not appear to be downstream of potential impact area for future mine plan.(see Plate 3-3 and 7-1).	Perennial	TDS 192 to 357 mg/l. Total Fe <0.02 to 1.3 mg/l Total Mn <0.01 to 0.078 mg/l TSS 4.0 to 52 mg/l pH 6.6 to 8.69	Flows tend to be lower than the upstream Beaver Creek station. Located near the Fault system.
2-2-W	Gordon Creek above confluence of North Fork Gordon Creek below the Hiawatha	Perennial	Not discussed.	Impact more likely to be below confluence because of fracture system.
2-3-W	Beaver Creek	Perennial	Not discussed	Monitored by Beaver Creek Coal. Not found on any map
2-4-W 1982-	Beaver Creek 1 -1/2 mile west of permit area	Perennial	Not discussed	Monitored by Beaver Creek Coal.

The operator has not adequately discussed the variation in the data presented as baseline information. Data presented in the text does not reflect data presented in the appendices.

Baseline cumulative impact area information

The Division will make a findings of the cumulative impacts when the SR application is complete.

Modeling

Actual surface and ground water information is supplied in this application; therefore, modeling is not proposed. No surface water modeling has been conducted.

Alternative water source information

In Section 7.1.6 the operator purports no significant impacts are foreseen to ground water as a result of mining in the permit area. In Section 3.4.3, page 3-18, the operator states, "As noted in Section 7.1.6, alternative sources will be developed and provided if water rights or uses are affected by mining operations", however, no discussion on alternative sources were presented in this section. Section 3.4.3

states, "Should Horizon's mining activities cause an adverse impact on the areas water supply, the operator intends to mitigate the effects. The mitigation will be negotiated between Horizon and the injured party".

Because "Alternative Water Source Information" applies to Surface Mining and Reclamation activities under R645-301-727 there are no requirements under this regulation as it applies to underground mining. However, the operator is required to notify the Division of Oil Gas and Mining when analysis of any ground-water or surface water sample indicates non compliance with the permit conditions, which include the performance standards under 752.220 through 752.250. The Division of Water Rights and other agencies may also request notification should a water use be disrupted.

Information provided in the PAP indicate the water rights applied for are a leased right and not an acquired right. Therefore, the operator would not be able to replace a right with these sources should diminution or quality of a water right be impacted through mining activities.

In the MRP, Section 3.4.3, the operator should remove the reference to discussions found in Section 7.1.6, regarding replacement of water rights, since there are no such discussions. The operator should cross reference Section 3.4.3, which describes the actions to be taken should loss of a water right use result from mining activities under Section 7.1.6 in order to provide a clear plan. The requirements under R645-301- 731.223 and 731.212, should be addressed. The operator should provide a plan which clarifies who will be notified should it be known that a water resource has been impacted by mining activities

Probable hydrologic consequences determination

Acid- and Toxic-Forming Material

Operational Monitoring and Identification of Acid- and Toxic-Forming Materials

The operator has not provided a specific discussion for the potential for acid and toxic forming materials under the Probable Hydrologic impacts. However, the operator provided the following in other sections of the plan:

- Disposal of waste rock from partings and splits will be in underground workings. No acid or toxic forming materials are present in the overburden or underburden for samples analyzed (Section 6.5.7.1), suggesting no acid or toxic forming materials will be in the partings. The waste rock will be backfilled and compacted after second mining subsidence occurs and the waste rock will not be saturated, thus, water quality would not be impacted (Section 3.3).
- If underground waste cannot be blended, sold, or gobbed, arrangements will be made to dispose of this material in permitted refuse piles at a nearby mine.
- Noncoal waste rock from initial development will be incorporated as fill in the mine yard (Section 3.3).

Table 6-5 summarizes the quality of the Hiawatha Coal seam. The acid base potential of each of the three coal samples collected from the HZ-series holes indicate the coal has a potential to be acid-

forming (Section 6.5.6). Coal will be stored on the surface for short periods and run off from the coal stockpile will be routed through the sedimentation pond where it will mix with run off water that is more alkaline.

Tests for acid and toxic forming materials were conducted on roof and floor samples in LMC-4 and HZ drill holes. One sample contained a high pyritic sulfur content of 0.24 percent. The operator suggests this pyritic sulfur content is likely of limited areal extent. This information conflicts with the statement in Section 6.5.7.1.

In Section 6.5.6, the operator has presented analysis from a core sample of the coal obtained from the Hiawatha Seam, drill hole LMC-4. The presented analyses has a sulfur content of 0.47% of which 0.04% is pyrite sulfur with marcasite, 0.038% pyrite and 0.002% is marcasite.

All of the coal will not be removed from underground. Much of this coal will be in contact with air and water during the mining operations and may cause a lowering in the pH of those waters. Currently water from the old Blue Blaze No.1 Mine workings are shown to have a pH of 6.8 to 7.66. In general, these are lower than the surrounding area pH values.

Acid forming discharges have been uncommon and are generally not regionally extensive. Should the presence of pyrite in the mine area cause a decreased pH locally the mixing with higher pH waters in the system would result in localized affects due to downstream buffering.

Where material is trucked to permitted refuse piles at a nearby mine, the acid and toxic characteristic of this material should be known at the permitted mine receiving the waste.

Potential Groundwater Impacts

The operator indicates inter basin transfer out of the Price River drainage cannot occur in this region. However, inter basin transfer between Beaver Creek and Gordon Creek could occur. Because the coal seams dip away from the portal entrance, flow is likely to be sumped underground and could be directed toward the fault systems to the northwest, however, the Operators information indicates the Piezometric surface for the Starpoint regional aquifer is to the east southeast. Flow will occur in the direction influenced by the prevailing geologic controls which are not definitively known at this time.

The control of faulting on groundwater flow can be seen by comparing the potentiometric surface map to the geologic structure. The operator indicates that due to low permeability, and due to the plan to avoid mining into faulted zones, in flow to the mine from faulted zones is projected to be minimal (Section 7.1.2.2). Discussions on how the faults will be avoided were not presented.

The operator has concluded that the Hiawatha coal seam will be saturated from the beginning of mining operations. The rate of inflow will depend primarily on whether a faulted zone is encountered that contains groundwater in storage or that is in connection with an overlying perched aquifer. Although the possibility of a significant sustained inflow occurring is probably low to moderate, the actual potential impact from intercepting a fracture reservoir and depleting or intercepting the flow is moderate to high. A resulting loss of head could disrupt stream and spring flows and possibly recharge the fracture zone down dip to the north east or in the direction of regional flow to the east southeast. Changes in quantity and quality to spring and surface water discharges associated with the faults could be the result.

Waste rock from the mining procedure is proposed to be gobbled underground and backfilled. Because the materials will have an increased surface area due to removal the potential impacts, should water and air come in contact with the materials, would be increased TDS (ions in solution) and potential acid and toxic formation. Data from a recent underground mine water sample from the No. 1 Mine is found in Chapter 7 and may be indicative of some potential water quality changes. See the section above on **Acid and Toxic Forming Materials** in this TA.

Section 3.3.1, Plate 3-3, does not show all known and existing mine workings in the permit and adjacent area. These areas are critical to supporting documentation regarding the Probable Hydrologic Consequences of mining as it might relate to other mines v.s. the proposed Horizon Mine. The operator must include this information in the plan for all seams and mining in the permit adjacent area.

The operator states, "It is not anticipated that large quantities of ground water will be encountered throughout the duration of mining". The Division believes the potential for impact increases, if water is intercepted by mining through paleochannels associated with fractures, or a water bearing fault/fracture system is intercepted by mining activities. The potential for impact appears to be highest if fracture associated flows in the Hiawatha Seam are intercepted as occurred in the Beaver Creek Coal Mine.

The operator has estimated the "worst case" potential inflow through a porous formation (exclusive of fracture flows) to be 2.6×10^{-4} and to have an average potential inflow of 1.5×10^{-4} . Or, a flow rate of 9 and 5 gpm per section. Assuming six sections the total potential inflow would vary between 30 and 54 gpm. This information assumes a worst case scenario between 270 to 130 feet of head. Therefore, the potential is that a decrease of head in the Starpoint aquifer of between 270 and 130 feet could occur over time. The extent to which this affects the adjacent area is limited to the interaction of the members along the fault zones and determination of discharge areas. The aquifer may be dewatered within the graben with out interaction with the fracture/fault related waters or, may affect the waters associated with the fault system.

Potential Surface Water Impacts

On page 7-22, the operator states that proposed mining operations will occur north of Gordon Creek and should not effect the quantity or quality of water in this drainage. However, it was noted that approximately 400 g.p.m. inflow was produced from the floor when mining the Hiawatha Seam. This information, along with the dewatering estimates discussed above under the *Potential Groundwater Impacts* of this T.A., indicate there may be a potential to intercept groundwater flow from below the Starpoint aquifer, below the Hiawatha Seam. This flow interception could impact base flow to Gordon Creek, or relocate the source of the flow. Supporting information can be determined by assuming the control point for the piezometric surface would likely be at the elevation related to the dip. With a dip of 5.3% to the northwest an outcrop elevation of approximately 7,600 and a maximum linear distance down dip of 5,000 feet the zone of influence most likely to be impacted below the Hiawatha Seam would be from approximately 7,600 ft to 7,335 ft. This is also within the range of the piezometric surface of 7,500 and is in the general direction of the assumed groundwater flow. Water quantity, water quality, and losing and gaining sections for reach segments should be determined for Gordon Creek above and below this section. A continuous recording flume is recommended for operational monitoring if the characteristic of the stream is determined to be potentially impacted.

The operator indicates the water associated with the Beaver Creek Coal Company No. 3 Mine is believed to be in communication with Beaver Creek and will be avoided when mining the proposed Horizon No. 1 Mine. Avoidance will occur by closely monitoring the activities in the fault area. The operator has not demonstrated why they believe the communication with Beaver Creek exists and has not provided a monitoring plan which addresses this potential impact.

Subsidence Control and Renewable Resource Protection

The Stream Buffer Zones will be maintained beneath Beaver Creek and the North Fork of Gordon Creek should mining proceed beneath either creek (Section 3.3.2.2).

The proposed stream channel buffer zone is shown on Plates 3-3. Retreat mining will not occur under those areas shown to be within the buffer zone. A discussion on the width of the buffer zone was not found. The operator has stated that mining is designed to preclude subsidence of perennial and intermittent stream reaches. Specifics to the statements regarding these buffer zone areas could not be located. However, comments made by the operator suggest that massive sandstone units make it unlikely that subsidence will reach the surface, and swelling shales in the overburden would have a tendency to heal fractures.

According to the Operators subsidence plan a measurable subsidence effect would include a marked decrease in flow of 30%. In order to determine whether a marked decrease in flow occurred frequent monitoring would be required. The operator should describe how the monitoring plan monitors for this potential impact.

The operator suggests the following reasons indicate potential for damage due to subsidence will be low because no noticeable mining subsidence has occurred in the Gordon Creek #2 area (mined over 40 years ago) and in the Consumers No. 3 Mine, Section 3.2.3. The following areas were previously mined beneath Beaver Creek

- Swisher Coal Company mined under Beaver Creek in the northern most west panel of the Castlegate "A" seam in January 1978. Overburden is approximately 650 ft.
- Beaver Creek Coal company mined under Beaver Creek in the "A" panel in September 1981. Overburden was approximately 425 feet.

Although longwall mining subsidence occurs immediately following mining, room and pillar subsidence may not occur for a long period of time. The proposal to monitor subsidence annually for two years following cessation of mining is probably adequate for determining immediate subsidence response. However, prior to bond release the lack of, or presence of, subsidence should be confirmed.

Statements in the PAP indicate that if significant inflow of groundwater occurs mitigation measures may include; attempts to seal the inflow, increased monitoring program, lining the stream bed through an effected area, and replacement of water, should it be indicated through monitoring to be mining related (Section 3.4.8.2). In Section 3.4.8.4, the operator commits to notify the Division in writing and begin implementation of the approved mitigation plan if adverse impacts to Beaver Creek are noted as a result of mining. The operator will be encouraged to complete short term mitigation measures such as sealing the flow from in the mine. However, Division notification should occur as soon as possible and coordination with concerned parties may be necessary prior to approval of a site specific mitigation plan.

Water Use

"Water will be pumped from the North Fork of Gordon Creek into the mine for use in dust abatement". Based on the predicted inflow information the operator has estimated approximately 31 acre feet per year will need to be pumped into the mine, while it is estimated that 41 acre feet will be removed with the coal each year. The water rights applied for by the operator exceeds the predicted water needs.

Sediment Yield

The potential for increased suspended solids and sediment loading to Gordon Creek is probably highest during the construction phase of operation and reclamation. The operator has committed to monitor for turbidity of the water upstream and downstream of the site during the construction phases. A criteria for Class 3C allows a turbidity increase of 15 (NTU).

Increases in sediment during the operational period will be minimized through the use of a sedimentation pond and drainage controls. The operator has also committed to store snow in sites that will directly drain to the sedimentation pond (Section 3.3). During the reclamation period it is not clear whether alternate sediment control measures or sedimentation pond measures will be used.

During the past four years logging activities have taken place in the Beaver Creek area on Stamatakis property. Logging and transport activities have disturbed substantial areas along the roads and riparian areas of Beaver Creek, the North Fork of Gordon Creek and Jewkes Creek. Trees are removed from the property and transported out over the county road which connects to State road 139, the North Fork of Gordon Creek. There have been no Best Management Practices for logging conducted

on this logging site. Sediment yield from the logging sites and roads has been substantial. During the summer of 1997 the team conducting a subsidence noticed areas logged down to the Beaver Creek without a protection barrier. Sediments from the logging sites and access road flowed directly into the creek. Trees and branches littered the side of the creek. The dirt road along Beaver Creek was ground to a fine powder, in some places as much as 1 foot deep. The point bars and bottom of Beaver were covered with silt.

Logging continued during the winter months. As roads became muddy the logging company used a graders and bulldozers to excavate the muddy layers which were pushed in mounds above the roads and creeks, where they could easily flush into the creeks (Beaver Creek, a tributary to the North Fork of Gordon Creek and Jewkes Creek. Sediment loading into the creeks will likely continue until logging is completed. Operational monitoring could show significant changes in water quality and aquatic wildlife levels as a result of the logging practices.

Surface Water Quality

Currently coal mining waste may exist near Test Pit No. 8. This waste (potentially 9,718 cubic yards) is proposed to be stockpiled adjacent to the coal stockpile and blended (Section 3.3.2.7). The operator has stated that if acid and toxic materials remain on site they will be buried by 4 feet of cover. Currently water moves through the fill and seeps toward Jewkes Creek. The water quality of this site is likely to be improved with the proposed reclamation measures.

The operator should provide a discussion on potential changes in water quality based on data obtained from the Blue Blaze in mine waters. Based on impacts from other mining operations the potential for increased TDS is likely in the permit area. The operator sites downstream increases in TDS when flowing over Mancos as a factor in considering impact as minimal. Because downstream waters are naturally degraded the use and quality of the upstream waters retains its importance. However, impacts to downstream waters would probably not be notable.

The road to the mine is maintained as a gravel road therefore the use of road salting is not likely to affect water quality.

Hydrocarbons

Loadstar Energy Inc. indicates Diesel fuel, oils, greases and hydrocarbon products will be stored above-ground and may be spilled in the mine and on the surface during mining operations. An above ground 5,000 gallon diesel fuel tank will be located between the coal stockpile and the truck turn around as indicated on Plate 3-1 (review plate for proximity to surface water). A shop maintenance area will be located next to the mine office area.

The operator proposes the berm surrounding the tank will be adequate to contain the total volume of the tank, in the event water needs to be drained from the berm. The operator indicates spills will be handled in accordance with the Spill Prevention Control and Countermeasure (SPCC) Plan. This plan is provided in draft form without a certified signature in the PAP under Appendix 7-8. Elements of the plan include:

- Visual inspection of all tanks, associated valves piping and containment areas.

ENVIRONMENTAL RESOURCE INFORMATION

- Notification to the Mine Manager and containment of the spill Reporting requirements for spills.
- Procedures for preventing spills during filling tanks.
- A copy will be maintained on file in the Mine Manager's Office and the Mine Engineer's office.

The Operator's proposal uses accepted practices for their SPCC plan. The operator should include clean up procedures for small scale spills, commit to retain absorbent materials on site and, should provide either a concrete containment structure with a drain or provide for disposal and sampling of the earth material below the fuel tanks and areas of hydrocarbon use.

The operator can provide additional reasonable operation measures to minimize hydrologic impacts on and off the permit area.

Flooding or Streamflow Alteration.

The operator discusses the potential for flooding as being diminished due to the sedimentation pond reducing peak flows. In addition to the Operators comments, it is likely that the water flowing through the culvert will have increased flow velocity over the natural velocities for the same discharge rates. A potential impact includes downstream erosion. The operator has provided riprap channel designs for the velocities than may occur from a 100 year- 6 hour event which meets the minimum regulatory requirements. Other potentials for streamflow alteration are discussed under Potential Surface Water Impacts and Potential Groundwater Impacts.

Findings:

The operator has submitted sufficient information to address this section.

MAPS, PLANS, AND CROSS SECTIONS OF RESOURCE INFORMATION

Regulatory Reference: 30 CFR 783.24, 783.25; R645-301-323, -301-411, -301-521, -301-622, -301-722, -301-731.

Analysis:

Affected Area Boundary Maps

The affected area, as defined by R645-100-200, includes both the area of actual surface disturbance and the area above the underground mine workings, which might be affected by subsidence resulting from the underground mining operation.

The boundary of the disturbed area of the Horizon Coal operation, which includes proposed as well as previous disturbance, is shown on Plate 3-1--Surface Facilities. The boundaries of all areas which are to be newly disturbed by this operation are also shown on Plate 3-6--Premining Topography and Plate 3-7--Post Mining Topography.

Archeological Site Maps

No archeological sites have been identified on the SR.

Coal Resource and Geologic Information Maps

Plate 6-1 has been revised to show the proposed boundary. Other than that change, there has been no addition or change to Plate 6-1.

Additional information on lithologic characteristics for the permit and adjacent areas is shown on geologic cross sections on Plates 6-2 and 6-3 in the current MRP. Approximate locations of the bore-holes and measured sections used to make these cross sections are shown on small index maps and tabulated in Tables 6-3 and 6-4. The relationship of these cross sections to the proposed revised permit area is not clear. A few bore holes are shown on Plate 7-1, but only one (LMC-4) of the bore holes used to construct these cross sections is shown on that map, and none are shown on Plate 6-1. Locations of the bore-holes and measured sections used to construct these cross sections need to be shown accurately on Plate 6-1 or 7-1 or other suitable map.

Cultural Resource Maps

The SR proposal extends the underground operations. There is no change to the approved MRP. An evaluation of cultural resources has been conducted and a negative findings is presented, Appendix 5-1 of the MRP.

Existing Structures and Facilities Maps

No new structures will be developed above the SR area. All surface facilities and structures are described in the MRP.

Existing Surface Configuration Maps

Pre-mining, operational and reclamation surface configuration maps are located in the MRP.

Mine Workings Maps

Old mine workings are shown on Plates 3-9 and 3-10. Projected mine workings are on Plate 3-3. The location and extent of all known abandoned underground mine workings, including mine openings to the surface within the proposed permit and adjacent areas, are shown on Plate 3-3--Five Year Mine Plan. There are no active underground mines and there has been no surface mining within the permit and adjacent areas.

Monitoring Sampling Location Maps

The permit application package identifies that the location of all known seeps and springs, as well as watering ponds or tanks are shown on Plate 7-1. There are no streams, lakes or ponds or irrigation ditches known to exist within the proposed permit or adjacent areas. Both geologic and groundwater information were obtained from test borings done at sites designated LMC-1, LMC-2,

LMC-3, and LMC-4. The locations of these sites are shown on Plate 6-1--Geology and Plate 7-1--Water Monitoring Locations.

Permit Area Boundary Maps

The permittee shows the new and old permit boundaries on Plate 1-1. That plate was certified by David Miller, a registered professional engineer. Plate 1-1 shows the following:

- The old and new permit boundaries
- The disturbed area boundary
- Township, range and sections
- Topography (80-foot contours)
- Roads and stream

Surface and Subsurface Ownership Maps

The topography of the proposed disturbed area is shown by contours on Plate 3-6--Premining Topography and by profiles on Plate 3-2--Premining and Operational Cross Sections. Plate 3-6 also shows the extent and nature of existing disturbance and all existing manmade structures.

Representatives of the Division visited this site several times in 1991 and 1992, in connection with the Division's review of the original Blue Blaze proposal, in order to observe the site and check the accuracy and completeness of the maps, which are identical to the maps found in the present plan. The Division found that the maps cited in this section--Plate 3-6--Premining Topography and Plate 3-2--Premining and Operational Cross Sections--accurately show the existing surface configuration of the proposed disturbed area, as defined in this section, and thus fulfill the requirements of this section.

Subsurface Water Resource Maps

The aquifers associated with the Castlegate "A" seam were determined to be discontinuous over the area to be mined and therefore have not been mapped. Information for the Hiawatha seam is presently being gathered.

Surface Water Resource Maps

All surface and subsurface manmade features within and adjacent to the permit area are shown on Plate 3-1--Surface Facilities and Plate 1-1--Permit Boundary. These include the concrete ruins of several abandoned buildings, a substation, a short segment of power line which feeds the substation and continues to the west, a short, gravel surfaced segment of Utah State Highway 139, and an unimproved dirt road which starts at the state highway, crosses the southwest corner of the permit area, and continues to the northwest. There are no major electric transmission lines, pipelines, agricultural drainage tile fields, or occupied buildings in or within 1,000 feet of the permit area.

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 Plate 4-1--Land Use and on Figure 4-1--Surface Ownership (page 4-4) and Figure 4-2--Coal Ownership (page 4-5).

Well Maps

There are no gas or oil wells within, and no water wells within or adjacent to, the proposed permit area, as shown by Plate 3-1--Surface Facilities and Plate 1-1--Permit Boundary. These maps, as stated above, show all surface and subsurface manmade features within and adjacent to the permit area. Three water monitoring wells were drilled in the area, IPA #1, IPA #2 and IPA #3, to monitor mine water levels. These wells are shown on Plate 7-1.

Findings:

Information provided in the proposed amendment is considered adequate to meet the requirements of this section.

OPERATION PLAN

OPERATION PLAN**MINING OPERATIONS AND FACILITIES**

Regulatory Reference: 30 CFR 784.2, 784.11; R645-301-231, -301-526, -301-528.

Type and Method of Mining Operations**Analysis:**

The permittee proposes to do all mining with room-and-pillar mining methods. First mining only will be done to protect all entries, mains and no subsidence areas. The no subsidence zone is the buffer zone around Beaver Creek. Second mining will be done to maximize coal recovery when possible.

Findings:

The requirements of this section of the regulations are considered adequate in regard to the proposed permit changes for the addition of the permit boundary to include part of the federal coal lease UTU-74804.

EXISTING STRUCTURES:

Regulatory Reference: 30 CFR 784.12; R645-301-526.

Analysis:

All surface structures for this SR should remain status quo and are shown in the MRP.

Findings:

Sufficient information has been submitted to address this section.

PROTECTION OF PUBLIC PARKS AND HISTORIC PLACES

Regulatory Reference: 30 CFR 784.17; R645-301-411.

Analysis:

No public parks or historic places will be impacted as a result of this SR.

Findings:

The applicant has submitted information in the previous permit application to address this section.

RELOCATION OR USE OF PUBLIC ROADS

Regulatory Reference: 30 CFR 784.18; R645-301-521, -301-526.

Analysis:

No new roads will be developed or relocated in relation to developing the SR.

Findings:

Sufficient material has been submitted to make a determination on this matter.

AIR POLLUTION CONTROL PLAN

Regulatory Reference: 30 CFR 784.26, 817.95; R645-301-244.

Analysis:

Chapter 3 section 3.4.7 of the current operation and reclamation provides for the protection of air quality. Since there is no surface disturbance associated with this federal lease addition the current air pollution control plan is adequate.

Findings:

Information provided in the proposal is adequate to meet the requirements of this section of the regulations.

COAL RECOVERY

Regulatory Reference: 30 CFR 817.59; R645-301-522.

Analysis:

Since the permittee proposed to add a federal coal lease to the permit area they must get approval for the coal recovery plan from the BLM. The BLM has approved the R2P2 (resource recovery and protection plan) for the additional lease area. The Division relies on the findings in the R2P2 when evaluating the coal recovery plan. Therefore, the permittee has submitted the R2P2.

Findings:

Information provided in the proposed amendment is considered adequate to meet the requirements of this section.

OPERATION PLAN

SUBSIDENCE CONTROL PLAN

Regulatory Reference: 30 CFR 784.20, 817.121, 817.122; R645-301-521, -301-525, -301-724.

Analysis:**Renewable resources survey**

Hydrologic and vegetative renewable resources are the in the permit boundary. Seeps and springs also exist in the permit area. Beaver Creek is the only perennial stream near the permit area. Plate 3-3 shows that the permit boundary and the 100-foot buffer zone for Beaver Creek that is beyond the permit boundary.

Subsidence control plan

Since the permit area contains renewable resource lands that could be damaged by subsidence the Division requires the permittee to supply the following information.

- The type of mining method that the permittee will use is room-and-pillar. Second mining will occur in areas that can be safely subsided. Plate 3-3 shows the timing and sequence of mining.
- Plate 3-3, Mine Plan and Subsidence Monitoring Points, shows the location of current and proposed mine workings. The areas of first mining only and second mining are shown on Plate 3-3. The permittee shows the extent of second mining areas but does not show the limits of subsidence. The Division is concerned that subsidence will occur outside the permit boundary since second mining will occur on the west border of the permit area.
- The permittee listed the physical conditions that are likely to affect subsidence.
- The permittee shows the existing and proposed subsidence monitoring stations on Plate 3-3. The permittee proposes to have 1 base station in the permit area 1 base station outside the permit area. The permittee proposes to have 3 monitoring stations inside the permit area and an equal number outside the area.

The Division reviewed the location of the monitoring stations and the critical areas for subsidence. The critical areas for subsidence monitoring are along the permit boundary with particular interest in Beaver Creek. The permittee proposes to have monitoring stations along the western edge of the permit boundary where second mining is scheduled to occur up to the permit boundary.

- The permittee will protect no subsidence zones by first mining only. In first mining the permittee committed to leaving no less than 48% of the coal in the pillars. The Division usually considers leaving that amount of coal adequate to prevent subsidence.

- In Section 3.4.8.4 (Subsidence) the permittee described the past mining practices in the surrounding areas and the measured effects of planned subsidence. Past subsidence did not cause any surface damage. The permittee also maintains that since many beds of swelling shale under lie Beaver Creek that fractures would be self sealing.
- If subsidence damages water resources, the permittee committed to develop a mitigation plan with Water Rights and the Division. Mitigation plans for damage to water rights usually include the purchase of the damaged water rights or replacement.

If subsidence caused surface cracks or depressions then the permittee would fill the fractures or grade the depression. Should damage occur to vegetation then the permittee committed to revegetate the damaged sites.

Findings:

Information provided in the proposed amendment is considered adequate to meet the requirements of this section.

SLIDES AND OTHER DAMAGE

Regulatory Reference: 30 CFR Sec. 817.99; R645-301-515.

Analysis:

The SR proposal extends the underground operations. There is no change to the approved reclamation plans.

Findings:

The applicant has submitted sufficient information to address this section.

FISH AND WILDLIFE INFORMATION

Regulatory Reference: 30 CFR Sec. 784.21, 817.97; R645-301-322, -301-333, -301-342, -301-358.

Analysis:

Protection and enhancement plan

A description of the wildlife mitigation and management plan is located in section 10.5 of the current operation and reclamation plan. Potential impacts from mining would be best characterized as habitat loss. Since there will be no surface disturbance the only potential impact would be habitat loss resulting from subsidence. The 2000 raptor survey provided by the applicant shows the existence of one

OPERATION PLAN

active Kestrel nest, one inactive Golden Eagle nest and one Golden Eagle old/dilapidated nest. Plate 10-1 also identifies two unoccupied Golden Eagle nests. The applicant has proposed to verify the status of the identified raptor nests prior to full pillar extraction being completed within 500' of an active nest. Should a nest be active, mining practices will provide for a 200' barrier around the nest location. A 100' barrier will be provided around inactive nest locations. Nests lost or damaged due to subsidence or other mine related causes will be replaced under the guidelines and assistance from The Division of Wildlife Resources.

Endangered and threatened species

The list of threatened, endangered and candidate species that may occur within the proposed lease area are the Bald Eagle, Black-Footed Ferret, Bonytail Chub, Colorado Pike Minnow, Humpback Chub, and Razorback Sucker. They are listed in table 10-1 of chapter 10 of the current operation and reclamation plan. Most threatened or endangered species that could occur in Carbon County occur at lower elevations than the mine and have no habitat in the proposed permit area expansion. There have been no confirmed sightings of Black-Footed Ferrets in Carbon County in several years. However, the mine has potential, through water depletions, of adversely affecting four listed threatened and endangered fish species of the upper Colorado River drainage. The Fish and Wildlife Service requires mitigation when water depletions exceed 100 acre-feet annually. Chapter 7, section 7.3.2 (PHC Determination), provides for the criteria and volumes used to calculate an estimate of 60 acre feet of water per year.

Bald and golden eagles

Bald eagles are common in the area during the winter and could occasionally fly through or roost in the proposed addition to the permit area. Mining would have negligible effects on these birds.

Wetlands and habitats of unusually high value for fish and wildlife

Beaver Creek and several springs and ponds are adjacent to or lie within the proposed permit area revision. The applicant is currently monitoring Beaver Creek and certain springs, and wells in the proposed addition to the permit area., (plate7-1). The applicant has proposed to maintain a 100' Buffer zone along beaver Creek to prevent impacts to the stream. Subsidence monitoring points are identified on plate 3-3

Findings:

The information contained in this section of the application is adequate to meet the requirements of the regulations.

TOPSOIL AND SUBSOIL

Regulatory Reference: 30 CFR Sec. 817.22; R645-301-230.

Analysis:

Plate 3-1 shows the planned surface facilities. Section 3.5.2 states that during any future disturbance, topsoil will be stockpiled, contoured, fertilized and vegetated with seed mix #1 (Table 3-2). The piles will be protected with markers and berms or strawbales. And (section 3.4.4) that disturbed soils will be carefully handled for use as substitute topsoil materials. There is no change to the approved operations plan.

Findings:

Information provided in the proposal is adequate to meet the requirements of this section of the regulations.

VEGETATION

Regulatory Reference: R645-301-330, -301-331, -301-332.

Analysis:

Chapter 9 of the current operation and reclamation plan provides the vegetation resource information. Plate 9-1 depicting the vegetative communities and acreage has been updated to include the proposed lease area. Vegetative communities include Oakbrush, Salina Wildrye, Maple/Oakbrush/Aspen, Fir/aspens, Alpine Herb/Grassland, Manzanita, and Sagebrush/grass/Rabbitbrush. This information is adequate to predict the potential for reestablishing vegetation. No surface disturbance is anticipated other than minimal subsidence. Mining practices would have a minimal effect on the vegetation resources. Potential impacts to vegetation caused by subsidence during active mining operations may be mitigated by implementing Contemporaneous reclamation practices as described in section 3.5.1 of the reclamation plan.

Findings:

Information provided in the proposal is adequate to meet the requirements of this section of the regulations.

SPOIL AND WASTE MATERIALS

Regulatory Reference: 30 CFR Sec. 701.5, 784.19, 784.25, 817.71, 817.72, 817.73, 817.74, 817.81, 817.83, 817.84, 817.87, 817.89; R645-100-200, -301-210, -301-211, -301-212, -301-412, -301-512, -301-513, -301-514, -301-521, -301-526, -301-528, -301-535, -301-536, -301-542, -301-553, -301-745, -301-746, -301-747.

OPERATION PLAN

Analysis:

There is no change to the approved operating plan.

Disposal of noncoal waste

Section 3.2.3 *Surface Facilities* indicates that there will be no disposal of non-coal waste on site other than rock type construction materials. And further that the disposal of rock-type construction materials will be disposed of in underground workings within the Horizon Mine, not on the surface. Garbage will be hauled to the state-approved landfill (section 3.2.3.8).

Coal mine waste

Section 3.2.3.100 states that no coal mine waste disposal facilities will exist on the surface in the permit area. Section 3.2.600 indicates that coal mine waste will be handled as outlined in this section and previously in this MRP. Section 3.2.3 *Surface Facilities*. Indicates that underground development waste will be disposed of underground with the Horizon Mine. If waste is brought to the surface, a permanent stockpile will be permitted.

Section 3.3.2.5 states that approximately 2500 CY of coal mine waste was buried in the facilities pad during construction. Appendix 3-8 contains a plate showing approximate locations of buried coal mine waste.

Refuse piles

Section 3.2.3.500 no refuse piles will exist in the permit area. Section 3.2.600 *Coal Mine Waste* indicates that underground development waste will be disposed of underground in a dry state. The acid-toxic nature of the material is discussed in Chapter 6.

Plate 3-1 shows the location of the sediment pond and ditch clean out material (behind the substation and behind the fan). The designated areas can hold 260 CY. The material may be sampled for use as substitute topsoil or fill material.

Findings:

Information provided in the proposal is adequate to meet the requirements of this section of the regulations.

HYDROLOGIC INFORMATION

Regulatory Reference: 30 CFR Sec. 773.17, 774.13, 784.14, 784.16, 784.29, 817.41, 817.42, 817.43, 817.45, 817.49, 817.56, 817.57; R645-300-140, -300-141, -300-142, -300-143, -300-144, -300-145, -300-146, -300-147, -300-147, -300-148, -301-512, -301-514, -301-521, -301-531, -301-532, -301-533, -301-536, -301-542, -301-720, -301-731, -301-732, -301-733, -301-742, -301-743, -301-750, -301-761, -301-764.

Analysis:

Soils at the site tend to be silty clay loam to loam within the Shupert-Winetti Complex and gravelly loam to loam within the Brycan, Rabbitex, Senchert and Curecanti Series. The SCS information the use of hydrologic groups B and C (undisturbed soils) are considered adequate. In cases where the soil phases were in group B or C the operator used group B.

The operator has used a CN of 89 for the undisturbed areas. This number is adequate at this time. However, should the operator propose additional buildings, road surfacing or pad surfacing the design CN would require re-analysis. The operator used a CN of 70 for the additional areas draining to the pond considered "undisturbed" by the operator. Some of these areas are disturbed from previous mining operations.

Groundwater Monitoring

**Table 3.1
 Operational Spring Water Sampling**

Sampling Point	Location	Formation	Monitored Frequency	Water Parameters	Comments
SP-1	Channel in North Fork of Gordon Creek/Marakis spring	Blackhawk sandstone unit above coal seams	Quarterly (when accessible)	Flow/ Parameters Table 7-2	Spring sampling should be done at source when at base flow. Location relative to numerous springs in area is not identifiable on map.
SP-2 1989 through 1993	Right Middle Fork North Fork Gordon Creek Hillside out of Creek Bottom	Blackhawk	Quarterly (when accessible)	Flow/ Parameters Table 7-2	Spring flows through alluvium below the point of origin.
SP-4 1989 through 1993	North Fork Gordon Creek Drainage bottom	Not presented	Quarterly (when accessible)		
SP-9			Not discussed		

OPERATION PLAN

**Table 3.2
Operational Groundwater Sampling**

Sampling Point	Location	Frequency	Water Quality Parameters	Water Quantity	Comments
Sustained in mine flows as close to point of issuance as possible	where exceeding 1 gpm for at least 30 days	Quarterly while accessible	Identified in Table 7-2	yes Table 7-1	2 year review period
Discharge d mine water	If necessary treated in underground sumps or the Sedimentation Pond. Currently not expected and not a permitted activity. Will need permit approval if it occurs.	In accordance with permit.	In accordance with permit.	In accordance with permit.	Should be conducted in accordance with UPDES permit according to emergency discharge clause.
Well HZ-1 HZ-1S HZ-2 HZ-3	Completed into the Starpoint Sandstone	Quarterly while accessible	none proposed	Water level corrected to depth from ground surface	

The operator committed to submit quarterly and annual reports. These reports should be in the format required by the Division memo regarding annual report submittals, as is forwarded to the operators under R645-301-742.420. The operator is required to provide the information requested by the Division. The operator includes a commitment to notify the Division if data indicate non-compliance with permit conditions.

The operator has not adequately described how surface data sites will be used to determine the PHC of mining. The operator has stated that springs monitoring data will provide information or impacts to localized perched aquifers within the Blackhawk Formation. It is established that these aquifers are associated with fault systems. The description of monitoring based on hydrologic impacts should be further expanded upon. Similar information will be obtained by monitoring inflows. The HZ monitoring wells will assist in evaluation potential losses of ground water from the Blackhawk Starpoint Aquifer. See discussions under

Environmental Resource Description, Hydrology

Specifics in monitoring during the construction period were included and the operator has committed to collect weekly samples during the operational and reclamation construction period up stream and downstream of construction. The parameter is to be analyzed in the field is turbidity.

Proposed operational surface water monitoring is summarized in the following table:

**Table 3.3
 Operational Surface Water Monitoring**

Sampling Point	Location	Flow	Water Quantity and Water Quality	Water Quantity	Comments
#3	Channel in Jewkes Creek /below disturbed area upstream of the intersection with the North Fork Gordon Creek and below the bypass culvert	Intermittent	Quarterly According to Table 7-5	Quarterly	
#5	Jewkes Creek upstream of disturbed area but downstream of the confluence with Spring Two Canyon.	Perennial	Quarterly According to Table 7-5	Monthly	
#6	Portal Canyon Drainage and Spring Two Canyon Drainage	Ephemeral	Not proposed	Not proposed	These sites should be monitored on the same day as sites 3 and 7 when sampling during a precipitation event or snowmelt period
#7	Beaver Creek above pond upstream of the permit area outside of potential subsidence zone.	Perennial Monthly	Quarterly According to Table 7-5	Late Spring gpm Late Summer/Fall gpm	

OPERATION PLAN

Sampling Point	Location	Flow	Water Quantity and Water Quality	Water Quantity	Comments
#8	Beaver Creek downstream north east of permit area. Out of potential subsidence zone.	Perennial Monthly	Quarterly According to Table 7-5		Bear Creek is dry below surface water monitoring point 8 as shown in Appendix 7-5 "Historic Mine Development" map 8. This section of the stream is affected by the Fish Creek Fault and Graben.
2-2-W	Gordon Creek above confluence of North Fork Gordon Creek below the Hiawatha	Perennial Monthly	not proposed		Impact more likely to be below confluence because of fracture system.
2-3-W	Beaver Creek	Perennial Monthly	not proposed		Currently monitored by Beaver Creek Coal previously proposed to be monitored by Horizon. Not found on any map
2-4-W	Beaver Creek 1 -1/2 mile west of permit area	Perennial Monthly	not proposed	Flume installed	Currently monitored by Beaver Creek Coal previously proposed to be monitored by Horizon.

Surface-water monitoring

Discharges of water from this operation will be made in compliance with all Utah and federal water quality laws and regulations and with effluent limitations for coal mining promulgated by the U. S. Environmental Protection Agency set forth in 40 CFR Part 434. See Sections 731 and 742.

Acid and toxic-forming materials

Drainage from acid- and toxic-forming materials and underground development waste into surface water and ground water will be avoided by implementation of a Spill Prevention Control and Countermeasure (SPCC) Plan and by the following:

Potentially acid- or toxic-forming materials will be identified by use of Material Safety Data Sheets (MSDS), or by direct sampling and analysis in the case of underground development waste.

The operator has indicated that overburden and underburden samples will be gathered at 2,000 foot intervals throughout the mine and tested according to the Division requirements (Section 6.5.7.1). The Division understands this statement to mean the operator will test the materials according to current Division guidelines for acid and toxic forming materials. See further discussions under **Acid and Toxic** headings of this T.A.

Any material which exhibits acid- or toxic-forming characteristics will be properly stored, protected from runoff, removed to an approved disposal site or buried on site beneath a minimum of 4' of non-acid, non-toxic material.

Storage of potentially acid- or toxic-forming materials, such as fuel, oils, solvents and non-coal waste will be in a controlled manner, designed to contain spillage and prevent runoff to surface or ground water resources.

All oils and solvents will be stored in proper containers within enclosed structures. Fuels will be stored in appropriate tanks, enclosed within concrete or earthen bermed areas designed to contain any spillage.

Non-coal waste (garbage) will be stored in a designated location, in dumpsters, and removed to an approved landfill (East Carbon Development Contractors - ECDC) on a regular, as-needed basis.

Transfer of wells

There are presently three monitoring wells on this permit. When these wells are no longer required, they will be sealed in a safe, environmentally sound manner in accordance with regulations.

Discharges into an underground mine

There are no plans to discharge any water into an underground mine.

Gravity discharges

Based on historical data from other mines in the area, some mine water can be expected to be encountered during the mining operation. Typically, such water is stored in "sumps" or designated areas in the mine and used for mining operations or discharged to the surface.

OPERATION PLAN

Water quality standards and effluent limitations

Any discharge will be made in compliance with all Utah and federal water quality laws and regulations and with effluent limitations for coal mining promulgated by the U.S. Environmental Protection Agency set forth in 40 CFR Part 434.

Appendix 3-7 provides information about the Utah Pollutant Discharge Elimination System (UPDES), general discharge permit for coal mining. The UPDES discharge permit UTG 040019, became effective July 15, 1999 and will expire on April 30, 2003. Two sites are identified under the permit, outfall 001, minewater discharge from the sedimentation pond to Jewkes Creek and 002, mine discharge outfall to Jewkes Creek, which indicates the Department of Environmental Quality (DEQ) accepted the use of sumps for treatment of minewater.

With the minewater being directly discharged to the bypass culvert. It will be difficult to determine the visual permitting requirements as the discharge will mix with Jewkes Creek water before exiting the bypass culvert. Additional monitoring requirements required by the Division included: 1) collecting quarterly monitoring data from locations upstream and downstream from the disturbed area within a reasonable time on the same day, the minewater discharge sample is obtained, and 2) monitoring for the monthly maximum discharge flow rate as well as providing in-mine water consumption estimates.

The operator included a commitment to monitor discharge 002 on the same day during the quarterly sampling of surface water sites SS-3 and SS-5 according to the monthly UPDES discharge permit to meet the Divisions Requirement. The maximum flow for the discharge point each month required by the UPDES permit.

Information on mine consumption was provided as an estimate for full production. Information providing an estimate of use for each month during production was what was intended by the requirement to get a better idea on total minewater inflow. The monthly estimates can be incorporated during future mine plan amendment changes.

Diversions*Undisturbed*

All diversions will be constructed and maintained to comply with the requirements of R645-301-742.100 and R645-301-742.300. Details are described under those respective sections of this chapter.

Culvert details are provided in Chapter 7. Undisturbed area culvert UC-1 will receive bypass drainage from culverts UC-2 and UC-3, Portal Canyon and Jewkes Creek. The culverts are designed to pass the peak flow resulting from the 100 yr.- 6 hr. precipitation event. Calculations supporting these designs are presented in Appendix 7-4. The combined discharge for the two drainages that will be passed through UC-1 is 27.9 cfs. The 100 yr.-6 hr. peak flow to reach UC-2 is calculated to be 8.3 cfs, and the peak flow calculated at UC-2 is 19.6 cfs. Culverts

Calculations indicate that the flow capacity of the unaltered Jewkes Creek is 27.7 cfs above culvert UC-3 and 38.7 cfs below UC-1. The design capacities of the two culverts are 69.5 cfs and 100

cfs, respectively. The capacities of the culverts exceed the expected high capacity of Jewkes Creek. Culvert capacity for UC-2 is calculated to be 83 cfs. This capacity exceeds the Portal Canyon capacity of 13.1 cfs above the culvert in its unaltered state.

A trash rack has been installed on culvert UC-2. A generalized drawing of the trash rack is shown in Figure 7-8. There is no mention of a trash rack installed on UC-2 and no mention of a face protection at the culvert inlet. These culverts are temporary and will be removed during the reclamation phase.

Undisturbed diversions are described in the following table. All undisturbed and disturbed diversions are designed to carry the flow from a 10-year, 6-hour event. Culverts UC-4 and UC-5 receive drainage coming from the Jewkes Creek, an intermittent stream, designed to carry the flow from a 100 year - 6 hour event. The operator provided culvert sizes that may carry greater flows than the designed flow for the 10-year, 6-hour event.

**Table 3.4
 Undisturbed Drainage Diversions**

Diversion	Ditch (D) or Culvert ©	Diameter (culvert)	Function
UC-1	C	24"	Collects flow from UD-4 and UD-5 and Portal Canyon and routes it into UC-3.
UC-2	C	36"	Collects flow from UD-3 and routes it into UC-3.
UC-3	C	36"	Collects flow from UC-1 and UC-2 and routes it into UC-5.
UC-4	C	24"	Collects flow from UD-2 and from Left Fork North Fork and routes it into UC-5.
UC-5	C	24"	Collects all undisturbed flow from UC-3 and UC-4, bypasses sediment pond, and discharges it into main drainage.
UC-6	C	42"	Carries flow of main drainage (all undisturbed flow) beneath haul road and into Gordon Creek drainage.
UD-1	D	--	Collects runoff from area above topsoil stockpile and routes it into road ditch of Carbon County Road 290.
UD-2	D	--	Collects runoff from above coal stockpile and handling area and routes it into Jewkes Creek above UC-2.
UD-3	D	--	Collects runoff from area above the portal area on south east side of Portal canyon and routes it along the south and east side to a natural channel below the operations then to Jewkes Creek.

OPERATION PLAN

Diversion	Ditch (D) or Culvert ©	Diameter (culvert)	Function
UD-4	D	--	Collects runoff from area above the portal area on the north side of Portal Canyon to the disturbed area below the operations.
UD-5	D	--	Collects flow from above the disturbed area in Portal Canyon and routes it into bypass culvert UC-1.

Disturbed area diversions are designed to handle the 10-year, 6-hour event and are described in Table 7. Many of the undisturbed drainage ditches are proposed to be designed with an elevated berm. Most of these berms are located where undisturbed drainage is routed around the mine site. While most disturbed area diversions built with a berm are less likely to be an environmental problem, because drainage would still reach the pond if there was a failure, failure of a bermed undisturbed area ditches would send water to the sedimentation pond which is not designed to receive and treat those waters. More prudent designs, including improved grading plans, could be conducted to meet the design requirements rather than building elevated berms for water control. Since the pond is designed to contain or treat the 10 year - 24 hour event, it would be prudent to design the undisturbed bermed diversion drainages to safely handle the flow velocity and volume from a 10 year -24 hour event. If the ditches fail with a peak flow smaller than the 10 year - 24 hour event, the operator would have failed to adequately treat the run off from the disturbed area 10 year- 24 hour event through their pond.

The operator has provided a general channel configuration in Figure 7-7. The operator has stated that channel configuration may vary but the minimum cross sectional area will remain the same. While the channel may continue to meet design volume requirements with this statement, the stability of the design may not be prudent for slopes greater than 2:1 for certain geologic materials under certain conditions. It would be more prudent for the operator to provide a range of acceptable configurations through specific types of geologic materials and commit to maintain these ditches should they fall out of the acceptable range. Additionally, the typical designs do not match the descriptions provided for the ditches. The proposed designs are likely to require high maintenance. However, the operator has met minimum design requirements.

Disturbed

There are five diversion ditches that collect the disturbed area runoff. Most disturbed area runoff will be directed to the sedimentation pond. Only two small areas at the upper end of the disturbed area will use alternative sediment control. Table 7-7 provides the sizing and characteristics of the disturbed diversions. Most of the disturbed area drainage will be collected by ditch DD-1, on the southwest side of the disturbed area. This diversion consist of eight segments. The location of diversion ditches in relation to the minesite are shown on Plate 7-4.

Disturbed area culverts are used in conjunction with diversions to convey runoff beneath roadways and to the lower minepad. Table 7-8 provides the sizing and characteristics of the culverts on the minepad. Culvert DC-1 is 18 inches in diameter and was installed to carry runoff between DD-1F and DD-1G, under the access road to the temporary office and substation. Culvert DD-2, also 18 inches, was installed to convey runoff under the coal loadout and main facility roadway.

The operator considers any flow velocities less than 5 feet per second (fps) as non-erosive flows. However, in the literature there are values which indicate velocities less than 5 feet per second are erosive with earthen ditches that have erosive soil types. The operator has not considered soil type in the determination of erosive velocities. In some cases vegetation will be adequate to control erosion. Degradation and additional erosion control needs for drainages within the pad area draining to the sedimentation pond will be determined through site inspection. Where velocities exceed 5 fps designs must be implemented to minimize erosion.

Drainages are developed by the operator to route undisturbed drainage around the site channels. Drainages with slopes up to 0.5 feet/foot have failed when riprapped. Riprap design procedures were not based on slopes of this steepness. Adequate grading, fill and angular riprap and filter blanket designs are necessary. The operator has provided sizing for graded riprap but no filter blanket designs. It is the opinion of the Division that the operator has not minimized potential impacts to the adjacent area and undisturbed drainage slopes should be reduced where possible.

The proposed topsoil pile directs drainage from DD-3 to DC-2 into the sedimentation pond. No drainage designs specific to road drainage could be located.

**Table 3.5
 Disturbed Drainage Diversions**

Diversion	Ditch (D) or Culvert ©	Diameter (culvert)	Function
D-1	D	--	Collects runoff from entire No. 1 and No. 2 Mine areas and routes it into the sediment pond. according to Appendix 3-3 the portal bench will drain to D1
DC-1	C	12"	Collects runoff from area below the facilities pad and routes it beneath the haul road and into the sediment pond.
DC-2	C	12"	Collects runoff from the topsoil stockpile area and routes it beneath the haul road and into the sediment pond.

Stream buffer zones

The operator has submitted a stream alteration permit to the Division of Water Rights. The submittal proposes a 3 foot and 2 foot culvert respectively in Jewkes and Portal Canyon. Comments on the proposal were due by May 19, 1996.

Sediment control measures

The operator proposes to begin site construction prior to installation of the sediment pond. During this period alternative sediment control measures are proposed to be used. Straw bales and silt

OPERATION PLAN

fences are proposed to be placed in the stream channels of Portal and Spring Two Canyon Fork to capture sediment. Berms, straw bale dikes and silt fences will be located between stream channels and areas being disturbed. The operator has committed to cleaning these structures once construction is completed using backhoes and shovels.

The culvert is proposed to be installed from the lower end of the pad in an upstream direction. Horizon Coal Company has committed to limit construction to periods when the stream is not flowing to the extent possible. Stream flow will be bypassed around construction activities using a diversion dike and flexible culvert. The operator has committed to construct the sedimentation pond as soon as possible following construction of the downstream culvert sections and must obtain a stream alteration permit prior to approval.

The proposed measures for culvert construction are acceptable practices. The ability of these proposed measures to control sediment can only be judged in the field by inspection and technical staff and will be determined adequate based on the ability to meet the performance standards and requirements of R645-301-745.111.

Roads are proposed to be surfaced with 12 inches of crushed gravel road base. These roads are proposed to be crowned and therefore the east portion of the road from the crown at the south end to the limit of the sedimentation pond will drain toward the creek. The main access road will be 20 feet wide not to exceed a 6% vertical grade. Highwalls near the first bend will be 0.33H:1V degrees and 1.2H:1V following removal. Maximum embankment height is 100 feet at 40 degrees and maximum slope height is 50 feet at 32 degrees. Appendix 3.3 indicates the road will be sloped toward the disturbed drainage ditches. This conflicts with the road surfacing designs.

Ditch UD-2 receives extensive drainage from cut slopes as shown in Plate 3-7A, cross sections E, F, and G. These slopes are steep and can be significant sources of sediment. The operator has committed to provide erosion control matting and seeding according to Table 3-2, for all cut slopes which will drain directly to an undisturbed area diversion. As presented in Section 3.3.5.3 mulching and roughening will occur on areas before seeding where slopes are 2½:1 or less. The matting will be applied on slopes 2½:1 or steeper. It should be noted that where competent bedrock is exposed matting may not be practicable.

Currently this road is located on the east side of the stream and outside the permit area, and therefore is a potential source of additional sediment to the stream flow. The fan portal road is to be considered an ancillary road and will be cut into native materials without an engineered surface.

The topsoil is also proposed to be vegetated with interim cover as discussed in Sections 3.4.4.1, page 3-19 and Section 3.5.2. The piles will be contoured, fertilized and seeded. A berm will be placed around each topsoil pile to minimize soil transport. Prior to achieving adequate vegetation establishment other measures are necessary to control erosion.

Siltation structures

Sediment ponds and all other treatment facilities are defined as siltation structures. The two siltation structure at this site include Sweets Pond, a pond developed for water rights use, and the

sedimentation pond. For a discussion of the mine site sedimentation pond, see the **Sedimentation Ponds** heading below.

Sweets Pond currently is associated with the Gordon Creek Mines 2, 7, and 8. This site would be double permitted until Gordon Creek has obtained bond release. Because this is an impoundment to be associated with the Horizon Mine appropriate regulatory requirements must be addressed.

Sweets Pond also has an existing pumphouse and a water gate to control inlet flows. The operator has proposed to build a water line from the pond to the mine. This should be included in the permit area as part of the disturbed area. The pond itself need not be part of the permit area for which bonding is required as described under the "Disturbed Area" and "Permit Area" definition in R645-100, as long as the structures are constructed and maintained in accordance with R645-301 and R645-302.

Sedimentation ponds

There will be only one sediment pond. The sediment pond will be a non-MSHA structure. The sediment pond will be inspected during and after construction by a qualified, registered, professional engineer. The pond will be inspected after each storm and cleaned as necessary. Its embankments will be vegetated, to control erosion, with a temporary seed mix as described in Section 3.5.5.2.

The operator has analyzed the pond embankment designs for stability. Using a standard, circular failure model and the Hoek Circular Failure Charts, the operator has found that the pond embankments have a static safety factor of 4.81 for dry conditions and 4.44 for saturated conditions (Appendix 3).

The operator proposes to divert all disturbed area run off to the sedimentation pond, including the proposed north return air fan, receiving runoff from 10.7 acres (Appendix 7-4). The sedimentation pond will be mostly incised except at the downstream face, which will be an earthen embankment. The pond has been designed to contain the runoff from a 10-year, 24-hour precipitation event calculated to be 0.83 acre-feet. The permit area surfacing is described as a gravel parking lot. The full extent of gravel is not defined.

The operator has assumed sediment production of 0.05 acre feet/acre from the disturbed area. The operator has not provided a technical method or calculation to determine where the 0.05 acre feet/acre comes from, Appendix 7-4. However, the final design allowed 1.48 acre-feet for maximum sediment storage, which is closer to 0.1 acre foot/acre per year sediment production for disturbed areas and is considered a conservative estimate. Although the maximum sediment storage is considered adequate at this time, if the operator should need additional increases in the sedimentation pond capacity the 0.05 acre feet/acre will not be considered valid until demonstrated to meet standard through accepted design methods. The operator must remove the discussions of excess design capacity or provide technical design information.

The total capacity of the pond below its emergency spillway will be 2.3 acre-feet. The sediment will be cleaned out of the pond at 60% of the total sediment volume, or 0.88 acre-feet. The cleanout volume will be marked by a calibrated pole. One pole is generally not adequate to determine sediment capacity because the sediment tends to be deposited in deltaic form at the inlets. The operator will be expected to maintain the capacity required for runoff volume.

OPERATION PLAN

The pond will also have a 2" decant pipe with a locking valve. Twenty-four hours after a storm, the pond is to be drained by opening the valve on the two inch decant line in the pond. This valve is to remain locked at all times except when decanting storm runoff. The inlet of the decant line is to be located at an elevation of 7576.0 feet, which is 24 inches above the 60% cleanout level and 3.4 feet below the elevation of the spillway.

Should the quantity of water encountered in mining exceed the amount required by the underground operations the operator proposes the water be treated by the sediment pond in order to meet effluent standards. This action may be used as an emergency measure but is not an approved design. The use of the pond for this purpose would need to be approved prior to handling any runoff which might exceed the design requirements.

The sediment pond's spillway is designed to pass the peak flow of the 25-year, 6-hour precipitation event. Calculations for the spillway assume the pond is full to the elevation of the spillway prior to the onset of the event. With a depth of 2.3 feet, a width of 10 feet and side slopes of 2h:1v, the spillway will have 2 foot of freeboard between the top of the pond embankment and the maximum flow elevation. The operator designed a non-erodible, open channel emergency spillway for which the outlet will have a riprap with a D50 of 4 inches. However, no filter blanket designs were included.

Although the spillway designs meet the requirements of a single -open channel spillway design under R645-301-743.00, the spillway does not provide the protection of aquatic life through providing an oil skimmer. Since this pond will be receiving oils and grease from the site the pond should provide for some type of oil skimmer.

Pond designs, maps and calculations have been prepared under the direction and certification of Richard H. White (State of Utah, Registered Professional Engineer #7102). The information and calculations contained in Appendix 6E are also certified by Mr. White.

The pond safety factor calculations assume an 11 foot embankment height and a slope angle of 2H:1V (26.56 degrees). The soils are assumed to have soil cohesion and friction angle of 35 psi and 30 degrees respectively, which results in a safety factor of 4.81 dry and 4.44 saturated conditions.

Other treatment facilities

Two small areas above the disturbed area have been proposed for alternate sediment control. One area is at the upstream end of the topsoil stockpile in Portal Canyon, adjacent to the inlet of Culvert UC-2. This area slopes toward the culvert and will be treated with berms and straw bales. The second alternative sediment control area is the exterior embankment slopes of the sedimentation pond, which will be treated with a combination of straw bales and silt fence.

Appropriate sediment control measures will be designed, constructed and maintained using the best technology currently available to prevent, to the extent possible, additional contributions of sediment to stream flow or to runoff outside the permit area and meet the effluent limitations under R645-301-751.

Exemptions for siltation structures

No exemptions requested by the operator.

Discharge structures

The sedimentation pond discharge structure is discussed under Siltation Structures.

Impoundments

No other treatment facilities are planned for this operation.

Casing and sealing of wells

The operator has stated that approvals and permits to drill wells will be received from the Division of Water Rights and appropriate Government agencies. The final casing and sealing of wells is discussed in more detail in the section entitled **MINE OPENINGS** under **RECLAMATION PLAN** below.

Findings:

The applicant has submitted sufficient information to address this section.

SUPPORT FACILITIES AND UTILITY INSTALLATIONS

Regulatory Reference: 30 CFR Sec. 784.30, 817.180, 817.181; R645-301-526.

Analysis:

All support facilities are described in the MRP. No support facilities will exist on the surface of the SR. Sufficient information concerning support facilities has been supplied in the MRP.

Findings:

Information provided in the proposal is adequate to meet the requirements of this section of the regulations..

SIGNS AND MARKERS

Regulatory Reference: 30 CFR Sec. 817.11; R645-301-521.

Analysis:

Surfaces above the SR are private or inaccessible lands. No signs or markers other than water monitoring location markers will be installed. The applicant has supplied sufficient information for this section.

OPERATION PLAN

Findings:

Information provided in the proposal is adequate to meet the requirements of this section of the regulations..

USE OF EXPLOSIVES

Regulatory Reference: 30 CFR Sec. 817.61, 817.62, 817.64, 817.66, 817.67, 817.68; R645-301-524.

Analysis:

There will be no use of explosives above ground in the SR. The applicant has addressed the use of explosives in the MRP. Sufficient information has been submitted for this section.

Findings:

Information provided in the proposal is adequate to meet the requirements of this section of the regulations.

MAPS, PLANS, AND CROSS SECTIONS OF MINING OPERATIONS

Regulatory Reference: 30 CFR Sec. 784.23; R645-301-512, -301-521, -301-542, -301-632, -301-731, -302-323.

Analysis:**Affected area maps**

Plate 1-1 shows the permit boundaries. The Division considers the permit boundary to be identical to the affected area. The Division reviewed the Plate 1-1 and found it to be adequate.

The boundaries of the disturbed area, as well as those of its component areas of previous and proposed disturbance, are shown adequately on Plates 3-1, 3-6, and 3-7.

Mining facilities maps

The locations and approximate dimensions of all mine facilities are shown on Plate 3-1--Surface Facilities. Included on this map are all buildings, portals, fans and earthen structures (pads, cuts and embankments), both of the large main drainage bypass culverts, the mine supply substation adjacent to the main portals, the large main substation at the mouth of the canyon, the Main Haul Road, the Hiawatha Fan Portal Access Road, the conveyor from the mine, the coal storage and loading facilities, the topsoil storage area and the sediment pond. This plate was certified in 1996, after its latest revision, by Richard B. White, a professional engineer registered in the state of Utah.

Design details of the sediment pond are shown on Plate 7-6--Sedimentation Pond Detail Map. This plate was certified in 1996 by Richard B. White, a professional engineer registered in the state of Utah.

Mine workings maps

The location and extent of all known abandoned underground mine workings, including mine openings to the surface within the proposed permit and adjacent areas, are shown on Plate 3-3--Five Year Mine Plan. There are no active underground mines and there has been no surface mining within the permit and adjacent areas.

Monitoring and sample location maps

Both geologic and groundwater information were obtained from test borings done at sites designated LMC-1, LMC-2, LMC-3, and LMC-4. The locations of these sites are shown on Plate 6-1--Geology and Plate 7-1--Water Monitoring Locations.

Information on water quality and quantity was obtained from monitoring stations designated 1, 2, 3, 4, 5, 6, and 7. The elevations and locations of these sites are shown on Plate 7-1--Water Monitoring Locations.

Findings:

The applicant has submitted sufficient information to address this section.

RECLAMATION PLAN

RECLAMATION PLAN**GENERAL REQUIREMENTS**

Regulatory Reference: PL 95-87 Sec. 515 and 516; 30 CFR Sec. 784.13, 784.14, 784.15, 784.16, 784.17, 784.18, 784.19, 784.20, 784.21, 784.22, 784.23, 784.24, 784.25, 784.26; R645-301-231, -301-233, -301-322, -301-323, -301-331, -301-333, -301-341, -301-342, -301-411, -301-412, -301-422, -301-512, -301-513, -301-521, -301-522, -301-525, -301-526, -301-527, -301-528, -301-529, -301-531, -301-533, -301-534, -301-536, -301-537, -301-542, -301-623, -301-624, -301-625, -301-626, -301-631, -301-632, -301-731, -301-723, -301-724, -301-725, -301-726, -301-728, -301-729, -301-731, -301-732, -301-733, -301-746, -301-764, -301-830.

Analysis:

The only surface disturbance that has occurred on the SR is the development of water monitoring wells. Plans have been presented in the MRP which describe how the wells will be reclaimed.

Findings:

The applicant has submitted sufficient information to address this section.

POSTMINING LAND USES

Regulatory Reference: 30 CFR Sec. 784.15, 784.200, 785.16, 817.133; R645-301-412, -301-413, -301-414, -302-270, -302-271, -302-272, -302-273, -302-274, -302-275.

Analysis:

No surface disturbance other than minimal subsidence will take place on the SR. The post mining land use for the area included in this application will remain the same as premining conditions i. e., grazing , logging, mining, recreation and wildlife habitat.

Findings:

Information provided in the proposal is adequate to meet the requirements of this section of the regulations.

PROTECTION OF FISH, WILDLIFE, AND RELATED ENVIRONMENTAL VALUES

Regulatory Reference: 30 CFR Sec. 817.97; R645-301-333, -301-342, -301-358.

Analysis:

No surface disturbance is anticipated other than minimal subsidence. Beaver Creek and several springs and ponds are adjacent to or lie within the proposed permit area. The applicant is currently monitoring Beaver Creek and certain springs, and wells in the proposed addition to the permit area.,

(plate7-1). The applicant has proposed to maintain a 100' Buffer zone along beaver Creek to prevent impacts to the stream. Subsidence will be monitored during mining and for a period of two years following final cessation of mining practices. The subsidence monitoring points are identified on plate 3-3 of the application.

Findings:

Information provided in the proposal is adequate to meet the requirements of this section of the regulations.

APPROXIMATE ORIGINAL CONTOUR RESTORATION

Regulatory Reference: 30 CFR Sec. 784.15, 785.16, 817.102, 817.107, 817.133; R645-301-234, -301-270, -301-271, -301-412, -301-413, -301-512, -301-531, -301-533, -301-553, -301-536, -301-542, -301-731, -301-732, -301-733, -301-764.

Analysis:

The SR proposal extends the underground operations. There is no change to the approved reclamation plans. AOC will be met.

Findings:

The applicant has submitted sufficient information to address this section.

BACKFILLING AND GRADING

Regulatory Reference: 30 CFR Sec. 785.15, 817.102, 817.107; R645-301-234, -301-537, -301-552, -301-553, -302-230, -302-231, -302-232, -302-233.

Analysis:

Plate 3-1 shows the location of the sediment pond and ditch clean out material (behind the substation and behind the fan). The designated areas can hold 260 CY. The material may be sampled for use as substitute topsoil or fill material.

Contemporaneous reclamation is discussed in section 3.5. Plate A of Appendix 8-1 shows areas which were contemporaneously reclaimed in 1997. This work is discussed in section 8-8.

General plans for backfilling and grading are found in Section 3.5.4. Plates 3-7 and 3-7A show the topography post-mining. Cut and fill calculations are in Table 3-1. There is a 4,240 CY deficit which will require lowering the site 5 inches.

Findings:

There is no change from the approved reclamation plan.

RECLAMATION PLAN

MINE OPENINGS

Regulatory Reference: 30 CFR Sec. 817.13, 817.14, 817.15; R645-301-513, -301-529, -301-551, -301-631, -301-748, -301-765, -301-748.

Analysis:

No new mine openings are proposed under the SR. Closure and reclamation of mine openings is discussed in Section 3.5.3.1 (page 3-31).

Findings:

Mine Openings information for the Reclamation Plan is adequate to meet the requirements of this section.

TOPSOIL AND SUBSOIL

Regulatory Reference: 30 CFR Sec. 817.22; R645-301-240.

Analysis:

Twenty inches of topsoil will be placed over 8.23 acres of graded fill (section 2.117). The figure of 9.15 acres was used for bonding purposes and is listed in (section 3.5.4 and Table 3-1). This amounts to approximately 14,417 CY of topsoil (section 3.5.4 and Appendix 8-1). There is no change from the approved reclamation plan.

Findings:

Sufficient information has been provided to meet this section of the regulations.

ROAD SYSTEMS AND OTHER TRANSPORTATION FACILITIES

Regulatory Reference: 30 CFR Sec. 701.5, 784.24, 817.150, 817.151; R645-100-200, -301-513, -301-521, -301-527, -301-534, -301-537, -301-732.

Analysis:

No roads or transportation facilities will be affected as a result of the SR. The plan contains information to show that no roads or transportation facilities overly the proposed SR area. Sufficient in

Findings:

Sufficient information has been submitted to address this section.

HYDROLOGIC INFORMATION

Regulatory Reference: 30 CFR Sec. 784.14, 784.29, 817.41, 817.42, 817.43, 817.45, 817.49, 817.56, 817.57; R645-301-512, -301-513, -301-514, -301-515, -301-532, -301-533, -301-542, -301-723, -301-724, -301-725, -301-726, -301-728, -301-729, -301-731, -301-733, -301-742, -301-743, -301-750, -301-751, -301-760, -301-761.

Analysis:

Reclamation plans dealing with ground water are identified in the approved permit. The reclamation criteria extends to the SR area.

All surface and groundwater monitoring will continue throughout the reclamation period. The permittee will monitor for acid or toxic materials and provide treatment if adverse conditions occur. Wells will be sealed and the sites reclaimed. There will be no discharges into the underground mine. The mine will be sealed and no gravity discharge is expected. All diversions will be removed and flow distributed over the surface. Sediment control measures will be implemented using the best technology available during reclamation. Sediment ponds will remain until vegetation is established and effluent limitations are met.

Findings:

The applicant has submitted sufficient information to address this section.

CONTEMPORANEOUS RECLAMATION

Regulatory Reference: 30 CFR Sec. 785.18, 817.100; R645-301-352, -301-553, -302-280, -302-281, -302-282, -302-283, -302-284.

Analysis:

No surface disturbance is anticipated other than minimal subsidence. Mining practices would have a minimal effect on the vegetation resources. Potential impacts to vegetation caused by subsidence during active mining operations may be mitigated by implementing contemporaneous reclamation practices as described in section 3.5.1 of the reclamation plan.

Findings:

Information provided in the proposal is adequate to meet the requirements of this section of the regulations.

REVEGETATION

Regulatory Reference: 30 CFR Sec. 785.18, 817.111, 817.113, 817.114, 817.116; R645-301-244, -301-353, -301-354, -301-355, -301-356, -302-280, -302-281, -302-282, -302-283, -302-284.

RECLAMATION PLAN

Analysis:

No surface disturbance is anticipated other than minimal subsidence. Mining practices would have a minimal effect on the vegetation resources. Potential impacts to vegetation caused by subsidence during active mining operations may be mitigated by implementing Contemporaneous reclamation practices as described in section 3.5.1 of the reclamation plan.

General requirements

The general requirements for revegetation are provided for in section 3.5 of the reclamation plan.

Timing

The approximate schedule for reclamation activities is outlined in table 3-4 of section 3.5.7.1 of the reclamation plan.

Mulching and other soil stabilizing practices.

Sections 3.5.4.3, 4, 5.1, 2, and 3 of the reclamation portion of the plan and proposal describe the mulching and other stabilizing practices to be implemented during reclamation.

Standards for success

The standards for success are provided for in section 3.5.6 of the reclamation plan.

Findings:

Information provided in the proposal is adequate to meet the requirements of this section of the regulations.

STABILIZATION OF SURFACE AREAS

Regulatory Reference: 30 CFR Sec. 817.95; R645-301-244.

Analysis:

The backfilling and grading schedule is detailed in section 3.5.7.1 and outlined in Table 3-4.

All acid-toxic material, exposed coal or refuse will be covered with 4 feet of material. The regraded surface will be scarified. Topsoil will be replaced.

Silt fences will be used at the bottom of fill slopes and along the reclamation channel during topsoil placement. The site will be seeded and mulched as described in section 3.5.5.3 (1 ton mulch/acre) and section 3.5.4. Erosion control matting on slopes 2½H:1V or greater and sediment controls will be placed as needed (Plate 7-7a; section 3.5.4.3).

Findings:

There has been no change to the approved reclamation plan

CESSATION OF OPERATIONS

Regulatory Reference: 30 CFR Sec. 817.131, 817.132; R645-301-515, -301-541.

Analysis:

The SR proposal extends the underground operations. There is no change to the approved reclamation plans.

Findings:

The applicant has submitted sufficient information to address this section.

Ground-water monitoring

Analysis:

Both geologic and groundwater information were obtained from test borings done at sites designated LMC-1, LMC-2, LMC-3, and LMC-4. The locations of these sites are shown on Plate 6-1--Geology and Plate 7-1--Water Monitoring Locations.

Information on water quality and quantity was obtained from monitoring stations designated 1, 2, 3, 4, 5, 6, and 7. The elevations and locations of these sites are shown on Plate 7-1--Water Monitoring Locations.

Findings:

The applicant has submitted sufficient information to address this section.

MAPS, PLANS, AND CROSS SECTIONS OF RECLAMATION OPERATIONS

Regulatory Reference: 30 CFR Sec. 784.23; R645-301-323, -301-512, -301-521, -301-542, -301-632, -301-731.

Analysis:

Affected area boundary maps

Plate 1-1 shows the permit boundaries. The Division considers the permit boundary to be identical to the affected area. The Division reviewed the Plate 1-1 and found it to be adequate.

RECLAMATION PLAN

Bonded area map

Plate 1-1

Reclamation backfilling and grading maps

Plate 7-7A

Reclamation facilities maps

The SR proposal extends the underground operations. There is no change to the approved reclamation plans.

Final surface configuration maps

Plate 3-7 and 3-7A

Reclamation monitoring and sampling location maps

Both geologic and groundwater information were obtained from test borings done at sites designated LMC-1, LMC-2, LMC-3, and LMC-4. The elevations and locations of these sites are shown on Plate 6-1--Proposed No. 1 & 2 Mine Geologic/Structure Map, Plate 7-1--Hydrology Map, and Plate 7-2--Drill Hole Data of the Horizon Mine Area. These plates were certified in 1996, after their latest revision, by Richard B. White, a professional engineer registered in the state of Utah.

Information on water quality and quantity was obtained, and will continue to be obtained through final reclamation, from monitoring stations designated 1, 2, 3, 4, 5, 6, and 7. The elevations and locations of these sites are shown on Plate 7-1--Hydrology Map. This plate was certified in 1996, after its latest revision, by Richard B. White, a professional engineer registered in the state of Utah.

Vegetation information was obtained, and will continue to be obtained through final reclamation, from transects done at locations designated A through E. These locations are shown on Plate 9-2--Vegetation Map No. 2. This plate was certified in 1996, after its latest revision, by Richard B. White, a professional engineer registered in the state of Utah.

A network of subsidence monitoring stations will be established, subsidence data from which will be submitted to the Division with each Annual Report. Monuments will be steel rebar with aluminum caps. There will be a total of 26 stations: four base stations and 22 monitoring stations, five of which will be above Beaver Creek. The locations of all subsidence monitoring stations are shown on Plate 3-5--Subsidence Monitoring Plan. Plate 3-5 was certified in 1996, after its latest revision, by Richard B. White, a professional engineer registered in the state of Utah.

Reclamation surface and subsurface manmade features maps

Plate 3-1 shows surface contours of undisturbed areas adjacent to disturbed areas which are indicative of the original land slopes in the vicinity of the disturbed area and which were used to create the reclamation final contour maps Plates 3-7 and 3-7A. Plate 3-6 shows conditions prior to disturbance by Horizon.

Reclamation treatments maps

Plate 7-7A

Findings:

There has been no change to the approved reclamation plan.

BONDING AND INSURANCE REQUIREMENTS

Regulatory Reference: 30 CFR Sec. 800; R645-301-800, et seq.

Analysis:

Form of bond (Reclamation Agreement)

The SR proposal extends the underground operations. There is no change to the approved reclamation plans.

Determination of bond amount

The Division reviewed the reclamation and found that no additional surface disturbance would take place. Therefore, the Division found that the bond does not have to be adjusted at this time.

Terms and conditions for liability insurance

The SR proposal extends the underground operations. There is no change to the approved reclamation plans. Liability insurance will continue.

Findings:

The applicant has submitted sufficient information to address this section.

CUMULATIVE HYDROLOGIC IMPACT ASSESSMENT

CUMULATIVE HYDROLOGIC IMPACT ASSESSMENT

Regulatory Reference: 30 CFR Sec. 784.14; R645-301-730.

A cumulative hydrologic impact assessment will be compiled when all deficiencies are addressed.

O:\007020.HZN\FINAL\TA\TA_SR00B-1.wpd



RULES INDEX

773.13	7
777.14	8
777.17	7
778.21	7
779.12(a)	6
701.5	17, 46, 65
773.15	5
773.17	47
773.22	5
773.23	5
774.13	47
777.11	7
777.13	8
777.15	8
778.13	5
778.14	5
778.15	5
778.16	6
778.17	6
779.24(a)(b)(c)	6
783	11
783.12	11, 12
783.18	12
783.19	12
783.21	13
783.22	14
783.24	37
783.25	37
784.11	41
784.12	41
784.13	63
784.14	17, 47, 63, 66, 71
784.15	63, 64
784.16	47, 63
784.17	41, 63
784.18	42, 63
784.19	46, 63
784.2	41
784.20	43, 63
784.200	63
784.21	13, 44, 63
784.22	15, 63
784.23	61, 63, 68
784.24	46, 63, 65
784.25	46, 63
784.26	42, 63
784.29	47, 66
784.30	60

785.15	64
785.16	15, 63, 64
785.18	66
785.19	14
800	7
817.100	66
817.102	64
817.107	64
817.11	60
817.111	66
817.113	66
817.114	66
817.116	66
817.121	43
817.122	43
817.13	65
817.131	68
817.132	68
817.133	63, 64
817.14	65
817.15	65
817.150	46, 65
817.151	46, 65
817.180	60
817.181	60
817.200	13
817.22	46, 65
817.41	47, 66
817.42	47, 66
817.43	47, 66
817.45	47, 66
817.49	47, 66
817.56	47, 66
817.57	47, 66
817.59	42
817.61	61
817.62	61
817.64	61
817.66	61
817.67	61
817.68	61
817.71	46
817.72	46
817.73	46
817.74	46
817.81	46
817.83	46
817.84	46
817.87	46
817.89	46
817.95	42, 67

-301-354	66
-301-355	66
-301-356	66
-301-358	66
-301-411	44, 63
-301-412	11-14, 37, 41, 63
-301-413	46, 63, 64
-301-414	63, 64
-301-422	63
-301-512	63
-301-513	46, 47, 61, 63, 64, 66, 68
-301-514	46, 63, 65, 66
-301-515	46, 47, 66
-301-521	44, 66, 68
-301-522	11, 37, 42, 43, 46, 47, 60, 61, 63, 65, 68
-301-524	42, 63
-301-525	61
-301-526	43, 63
-301-527	41, 42, 46, 60, 63
-301-528	46, 63, 65
-301-529	41, 46, 63
-301-531	63, 65
-301-532	47, 63, 64
-301-533	47, 66
-301-534	47, 63, 64, 66
-301-535	46, 63, 65
-301-536	46
-301-537	46, 47, 63, 64
-301-541	63-65
-301-542	68
-301-551	46, 47, 61, 63, 64, 66, 68
-301-552	65
-301-553	64
-301-622	46, 64, 66
-301-623	37
-301-624	15, 63
-301-625	63
-301-626	63
-301-631	63
-301-632	63, 65
-301-720	61, 63, 68
-301-721	47
-301-722	11
-301-723	37
-301-724	63, 66
-301-725	12, 15, 17, 43, 63, 66
-301-726	63, 66
-301-728	63, 66
-301-729	63, 66
-301-730	63, 66
-301-731	71
	37, 47, 61, 63, 64, 66, 68

817.97	44, 63
817.99	44
823	15
R645	
-100-200	17, 46, 65
-300-120	7
-300-121.120	6
-300-132	5
-300-140	47
-300-141	6, 47
-300-142	47
-300-143	47
-300-144	47
-300-145	47
-300-146	47
-300-147	47
-300-148	47
-301-112	5
-301-112.800	6
-301-113	5
-301-114	5
-301-115	6
-301-116	6
-301-117.200	7
-301-118	7
-301-120	7
-301-130	8
-301-140	8
-301-150	8
-301-210	46
-301-211	46
-301-212	46
-301-220	13
-301-221	15
-301-230	46
-301-231	41, 63
-301-233	63
-301-234	64
-301-240	65
-301-244	42, 66, 67
-301-270	64
-301-271	64
-301-320	12
-301-322	13, 44, 63
-301-323	37, 63, 68
-301-331	63
-301-333	44, 63
-301-341	63
-301-342	44, 63
-301-352	66
-301-353	66

-301-732	46, 47, 63-65
-301-733	47, 63, 64, 66
-301-742	47, 66
-301-743	47, 66
-301-745	46
-301-746	46, 63
-301-747	46
-301-748	65
-301-750	47, 66
-301-751	66
-301-760	66
-301-761	47, 66
-301-764	47, 63, 64
-301-765	65
-301-800	70
-301-830	63
-302-230	64
-302-231	64
-302-232	64
-302-233	64
-302-270	15, 63
-302-271	63
-302-272	63
-302-273	63
-302-274	63
-302-275	63
-302-280	66
-302-281	66
-302-282	66
-302-283	66
-302-284	66
-302-320	14
-302-323	61

Federal

FINDINGS

Lodestar Energy, Inc.

Horizon Mine

C/007/020

Carbon County, Utah

February 26, 2001

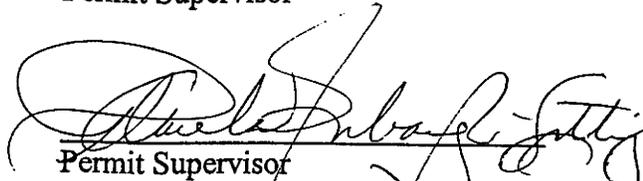
1. All procedures for public participation required by the Act, and the approved Utah State Program have been complied with. See Affidavit of Publication in Appendix 2-2 of PAP. (R645-300-120)
2. The permit application for the extraction of coal from the Beaver Creek Federal Lease (U-74804) using the associated surface facilities for the Horizon Mine is accurate and complete and all requirements of the Surface Mining Control and Reclamation Act, and the approved Utah State Program (the "Act") have been complied with. See Technical Analysis dated February 23, 2001 (R645-300-133.100)
3. The proposed lands to be included within the permit area are:
 - a. Not included within an area designated unsuitable for underground coal mining operation (R645-300-133.220);
 - b. not within an area under study for designated land unsuitable for underground coal mining operations (R645-300-133.210);
 - c. not on any lands subject to the prohibitions or limitation of 30 CFR 761.11 {a} (national parks, etc), 761.11 {f} (public buildings, etc.) and 761.11 {g} (cemeteries);
 - d. not within 100 feet of a public road except where the Consumer's Canyon road overlies a portion of the Beaver Creek Lease near the south west boundary of the lease. In this case the road will be protected since, mining is not proposed to occur beneath the road. (R645-300-133.220); and
 - e. not within 300 feet of any occupied dwelling (R645-300-133.220).
4. The applicant has the legal right to enter and complete mining activities in the Beaver Creek Tract through the federal coal lease issued by the Bureau of Land Management. (See verification of leases in Appendix 2-3, in PAP and lease document attached) (R645-300-133.300)
5. An assessment of the probable cumulative impacts of all anticipated coal mining and reclamation activities in the general area on the hydrologic balance has been conducted by the Division and no significant impacts were identified. See CHIA dated February 23, 2001. The

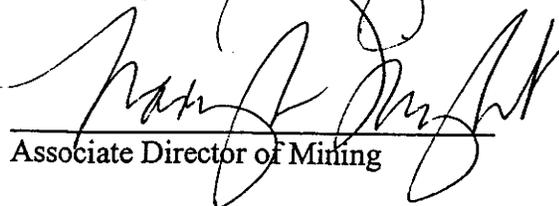
Mining and Reclamation Plan (MRP) proposed under the revised application has been designed to prevent damage to the hydrologic balance in the permit area and in associated off-site areas. (R645-300-133.400 and UCA 40-10-11 (2)(c))

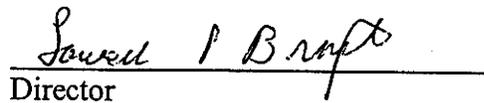
6. The operation would not affect the continued existence of any threatened or endangered species or result in the destruction or adverse modification of their critical habitats as determined under the Endangered Species Act of 1973. See Technical Analysis dated February 23, 2001 and letter from the Fish and Wildlife Service dated February 22, 2001. (16 USC 1531 et seq.) (R645-300-133.500)
7. The Division's issuance of a permit is in compliance with the National Historic Preservation Act and implementing regulations (36 CFR 800). See Technical Analysis dated February 23, 2001 and letter from the Governor's Office of Planning and Budget determining no historic properties affected, dated December 11, 2000. (R645-300-133.600)
8. The applicant proposes acceptable practices for the reclamation of disturbed lands. The Division has determined that reclamation, as required by the Act can be feasibly accomplished following the approved plan as outlined in the PAP. See Technical Analysis dated February 23, 2001. (R645-300-133.710)
9. The applicant has demonstrated that all mine facilities and structures will comply with the applicable performance standards of R645-301. No special categories of mining are proposed so the R645-302 regulations do not apply. Addition of the federal lease will not change the surface facilities being used at the mine. (R645-300-133.720 R645-300-133.740)
10. A 510 (c) report has been run on the Applicant Violator System (AVS), which shows that: prior violations of applicable laws and regulations have been corrected; neither Lodestar Energy, Inc. or any affiliated company, are delinquent in payment of fees for the Abandoned Mine Reclamation Fund; and the applicant does not control and has not controlled mining operations with demonstrated pattern of willful violations of the Act of such nature, duration, and with such resulting irreparable damage to the environment as to indicate an intent not to comply with the provisions of the Act (A 510 (c) report was run on February 16, 2001, see memo to file dated February 20, 2001). (R645-300-133.730)
11. The proposed postmining land-use of the permit area will remain the same as the pre-mining land use. (R645-300-133.750)
12. The applicant has posted a surety bond for the Horizon Mine payable only to the Division of Oil, Gas and Mining in the amount of \$711,000, however since this action now involves federal lands, the bond must be revised to make it payable to the Office of Surface Mining as well as the Utah Division of Oil Gas and Mining. This must be accomplished prior to issuance of the permit. (Frontier Insurance Company, Surety Number 21-60-38 dated March 19, 1999) (R645-300-134)

13. No lands designated as prime farmlands or alluvial valley floors occur on the permit area. See January 23, 2001 Technical Analysis (R645-302-313.100 and R645-302-321.100)
14. The Division has made all specific approvals required by the Act, the Cooperative Agreement, and the Federal Lands Program.


Permit Supervisor


Permit Supervisor


Associate Director of Mining


Director

*Fireproof File
#10079000*PERMIT
C/007/020

May 7, 2001

Ca

STATE OF UTAH
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING
1594 West North Temple
Suite 1210
Box 145801
Salt Lake City, Utah 84114-5801

RECEIVED
MAY 10 2001
DIVISION OF
OIL, GAS AND MINING

This permit, C/007/020, is issued for the State of Utah by the Utah Division of Oil, Gas and Mining (Division) to:

Lodestar Energy, Inc.
333 West Vine Street, Suite 1700
Lexington, Kentucky 40507-1628
(606) 255-4006

for the Horizon No. 1 Mine. A Performance Bond is filed with the Division in the amount of \$711,000.00, payable to the State of Utah, Division of Oil, Gas and Mining and the Office of Surface Mining Reclamation and Enforcement (OSMRE). The Division must receive a copy of this permit signed and dated by the permittee.

- Sec. 1 STATUTES AND REGULATIONS** - This permit is issued pursuant to the Utah Coal Mining and Reclamation Act of 1979, Utah Code Annotated (UCA) 40-10-1 et seq, hereafter referred to as the Act.
- Sec. 2 PERMIT AREA** - The permittee is authorized to conduct coal mining and reclamation operations on the following described lands within the permit area at the Horizon Mine situated in the State of Utah, Carbon County, and located in:

Township 13 South, Range 8 East, SLM

Section 8: W1/2SE1/4, SE1/4SW1/4, S1/2SW1/4NE1/4, S1/2NE1/4SW1/4, NE1/4NE1/4SW1/4NE1/4, S1/2SW1/4SW1/4, NE1/4SW1/4SW1/4, S1/2NW1/4SW1/4SW1/4, S1/2NE1/4SW1/4NE1/4, NE1/4NE1/4SW1/4, SE1/4NW1/4NE1/4SW1/4, SE1/4SE1/4SE1/4NW1/4, SE1/4SE1/4NW1/4SW1/4, Portion NW1/4NE1/4SW1/4NE1/4, Portion NE1/4NW1/4SW1/4NE1/4, Portion SE1/4NW1/4SW1/4NE1/4, Portion SW1/4NW1/4SW1/4NE1/4, Portion SW1/4NW1/4NE1/4SW1/4,

Page 2
C/007/020
Federal Permit
May 7, 2001

Portion NW1/4NW1/4NE1/4SW1/4,
Portion NE1/4NW1/4NE1/4SW1/4,
Portion SE1/4SW1/4SE1/4NW1/4,
Portion SW1/4SE1/4SE1/4NW1/4,
Portion NW1/4SE1/4SE1/4NW1/4,
Portion NE1/4SE1/4SE1/4NW1/4,
Portion SE1/4NE1/4NW1/4SW1/4,
Portion NE1/4SE1/4NW1/4SW1/4,
Portion NW1/4SE1/4NW1/4SW1/4,
Portion SW1/4SE1/4NW1/4SW1/4,
Portion SE1/4SW1/4NW1/4SW1/4,
Portion NE1/4NW1/4SW1/4SW1/4,
Portion NW1/4NW1/4SW1/4SW1/4,

Section 17: NW1/4NE1/4, N1/2NW1/4SW1/4, NE1/4SW1/4, NW1/4SE1/4,
N1/2SE1/4SW1/4, N1/2SW1/4SE1/4, SW1/4NE1/4, NW1/4

Section 18: NE1/4NE1/4

Section 7: SE1/4SE1/4SE1/4, S1/2SW1/4SE1/4SE1/4,
NE1/4SW1/4SE1/4SE1/4, S1/2SE1/4SW1/4SE1/4, Portion
NE1/4NE1/4SE1/4SE1/4,
Portion SE1/4NE1/4SE1/4SE1/4,
Portion SW1/4NE1/4SE1/4SE1/4,
Portion SE1/4NW1/4SE1/4SE1/4,
Portion NW1/4SW1/4SE1/4SE1/4,
Portion NE1/4SE1/4SW1/4SE1/4,
Portion NW1/4SE1/4SW1/4SE1/4,
Portion SW1/4NW1/4SE1/4SE1/4

The permit area of the Horizon Mine contains 711 acres, more or less, consisting of 305 acres, more or less of Fee coal and 406 acres, more or less of Federal leased coal. The permittee is authorized to conduct coal mining and reclamation operations on the foregoing described property subject to the conditions of all applicable conditions, laws and regulations.

Sec. 3 COMPLIANCE - The permittee will comply with the terms and conditions of the permit, all applicable performance standards and requirements of the State Program.

Page 3
C/007/020
Federal Permit
May 7, 2001

- Sec. 4 PERMIT TERM** - This permit becomes effective on May 7, 2001 and expires on October 11, 2001.
- Sec. 5 ASSIGNMENT OF PERMIT RIGHTS** - The permit rights may not be transferred, assigned or sold without the prior written approval of the Division Director. Transfer, assignment or sale of permit rights must be done in accordance with applicable regulations, including but not limited to 30 CFR 740.13 (e) and R645-303-300.
- Sec. 6 RIGHT OF ENTRY** - The permittee shall allow the authorized representative of the Division, including but not limited to inspectors, and representatives of the Office of Surface Mining Reclamation and Enforcement (OSM), without advance notice or a search warrant, upon presentation of appropriate credentials and without delay to:
- (a) have the rights of entry provided for in 30 CFR 840.12, R645-400-220, 30 CFR 842.13 and R645-400-110;
 - (b) be accompanied by private persons for the purpose of conducting an inspection in accordance with R645-400-100 and R645-400-200 when the inspection is in response to an alleged violation reported to the Division by a private person.
- Sec. 7 SCOPE OF OPERATIONS** - The permittee shall conduct underground coal mining activities only on those lands specifically designated as within the permit area on the maps submitted in the approved plan and approved for the term of the permit and which are subject to the performance bond.
- Sec. 8 ENVIRONMENTAL IMPACTS** - The permittee shall take all possible steps to minimize any adverse impact to the environment or public health and safety resulting from noncompliance with any term or condition of the permit, including, but not limited to:
- (a) Any accelerated or additional monitoring necessary to determine the nature of noncompliance and the results of the noncompliance;
 - (b) Immediate implementation of measures necessary to comply; and

Page 4
C/007/020
Federal Permit
May 7, 2001

- (c) Warning, as soon as possible after learning of such noncompliance, any person whose health and safety is in imminent danger due to the noncompliance.

Sec. 9 DISPOSAL OF POLLUTANTS - The permittee shall dispose of solids, sludge, filter backwash or pollutants in the course of treatment or control of waters or emissions to the air in the manner required by the approved Utah State Program and the Federal Lands Program which prevents violation of any applicable state or federal law.

Sec. 10 CONDUCT OF OPERATIONS - The permittee shall conduct its operations:

- (a) In accordance with the terms of the permit to prevent significant, imminent environmental harm to the health and safety of the public; and
- (b) Utilizing methods specified as conditions of the permit by the Division in approving alternative methods of compliance with the performance standards of the Act, the approved Utah State Program and the Federal Lands Program.

Sec. 11 EXISTING STRUCTURES - As applicable, the permittee will comply with R645-301 and R645-302 for compliance, modification, or abandonment of existing structures.

Sec. 12 RECLAMATION FEE PAYMENTS - The operator shall pay all reclamation fees required by 30 CFR Part 870 for coal produced under the permit, for sale, transfer or use.

Sec. 13 AUTHORIZED AGENT - The permittee shall provide the names, addresses and telephone numbers of persons responsible for operations under the permit to whom notices and orders are to be delivered.

Sec. 14 COMPLIANCE WITH OTHER LAWS - The permittee shall comply with the provisions of the Water Pollution Control Act (33 USC 1151 et seq.), and the Clean Air Act (42 USC 7401 et seq.), UCA 26-11-1 et seq., and UCA 26-13-1 et seq.

Sec. 15 PERMIT RENEWAL - Upon expiration, this permit may be renewed for areas within the boundaries of the existing permit area in accordance with the Act, the approved Utah State Program and the Federal Lands Program.

Page 5
C/007/020
Federal Permit
May 7, 2001

Sec. 16 CULTURAL RESOURCES - If, during the course of mining operations, previously unidentified cultural resources are discovered, the permittee shall ensure that the site(s) is not disturbed and shall notify the Division. The Division, after coordination with OSM, shall inform the permittee of necessary actions required. The permittee shall implement the mitigation measures required by Division within the time frame specified by Division.

Sec. 17 APPEALS - The permittee shall have the right to appeal as provided for under R645-300-200.

Sec. 18 SPECIAL CONDITIONS - The permittee shall comply with the special conditions in Attachment A.

The above conditions (Secs. 1-18) are also imposed upon the permittee's agents and employees. The failure or refusal of any of these persons to comply with these conditions shall be deemed a failure of the permittee to comply with the terms of this permit and the lease. The permittee shall require his agents, contractors and subcontractors involved in activities concerning this permit to include these conditions in the contracts between and among them. These conditions may be revised or amended, in writing, by the mutual consent of the Division and the permittee at any time to adjust to changed conditions or to correct an oversight. The Division may amend these conditions at any time without the consent of the permittee in order to make them consistent with any federal or state statutes and any regulations.

THE STATE OF UTAH

By

Date:

Walter J. Smith, Associate Director, Mining
May 8, 2001

I certify that I have read, understand and accept the requirements of this permit and any special conditions attached.

PERMITTEE (Authorized Representative)

By:

Date:

David B. Hill, Business Mgr
May 15, 2001

Attachment A

Conditions

- Condition #1 - Lodestar Energy, Inc. must comply with all of the requirements of the midterm review as currently specified and in accordance with their respective timeframes. The Technical Analysis that discusses the remaining midterm deficiencies is attached.

- Condition #2 - Underground coal mining and reclamation activities in federal coal lease UTU-74804 may not commence until a mining plan approval is authorized by the Secretary of the Interior.

sm
O:\007020.HZNF\FINAL\PERMIT\05072001.DOC

MINING PLAN INFORMATION

Mine Horizon #1 & No.2 County: Carbon
 Permit ID ACT/007/020 () New (X) Revision ID SR00B
 Permittee Lodestar Energy, Inc.
 Address HC 35, P.O. Box 370, Helper, Utah 84526 Phone: (435) 448-9454
 Official & Title David B. Miller - Resident Agent

Proposed Operations

Federal Lease(s) Addition of UTU-74804 Beaver Creek Tract

() Surface (X) U/G Mining Method(s) Room & Pillar W/Continuous Miner

Coal Seam(s) to be Mined:

<u>Seam Name</u>	<u>Coal Thickness(es)</u>	<u>Seam Depth</u>
<u>Hiawatha</u>	<u>5 to 8 feet</u>	<u>200 to 1500 feet (~700 feet ave.)</u>

Surface Ownership (Acres)	Existing Permitted Area	Proposed Permitted Area	Total Mine Permitted Area
Federal	<u>17.5*</u>	<u>388.5</u>	<u>406</u>
Non-Federal	<u>305</u>	<u>305</u>	<u>305</u>
TOTAL Acres	<u>322.5</u>	<u>388.5</u>	<u>711</u>

Coal Ownership (Acres)

Federal Lease(s)	<u>0</u>	<u>406</u>	<u>406</u>
Unleased Federal (Row)	<u>17.5*</u>		
Non-Federal	<u>305</u>		<u>305</u>

TOTAL Acres	<u>322.5</u>	<u>388.5</u>	<u>711</u>
--------------------	--------------	--------------	------------

Disturbed Acres	<u>9.15</u>	<u>0</u>	<u>9.15</u>
------------------------	-------------	----------	-------------

Mineable Coal (Tons)

Federal	<u>0</u>	<u>2,100,000</u>	<u>2,100,000</u>
Non-Federal	<u>1,300,000</u>	<u>0</u>	<u>1,300,000</u>

TOTAL Tons	<u>1,300,000</u>	<u>2,100,000</u>	<u>3,400,000</u>
-------------------	------------------	------------------	------------------

Recoverable Coal (Tons based on 60% recovery)

Federal	<u>0</u>	<u>1,300,000</u>	<u>1,300,000</u>
Non-Federal	<u>800,000</u>	<u>0</u>	<u>800,000</u>



IN REPLY REFER TO:

United States Department of the Interior

OFFICE OF SURFACE MINING

Reclamation and Enforcement

1999 Broadway, Suite 3320

Denver, Colorado 80202-5733

July 30, 2001

UT-00077

Mr. David B. Miller, Business Manager
Lodestar Energy, Inc.
HC 35 P.O. Box 370
Helper, Utah 84526

Dear Mr. Miller:

On July 9, 2001, the Department of the Interior approved a new mining plan for Federal lease UTU-74804 at Lodestar Energy, Inc.'s Horizon Mine. This mining plan action relates to Federal lands associated with Utah Division of Oil, Gas, and Mining Permit No. C/007/020, for your mine and approved on May 8, 2001.

I have enclosed a copy of the mining plan approval document and associated map for this new mining plan. Please read the terms and conditions of the mining plan approval document carefully. Mining and reclamation operations must be conducted in accordance with both the Utah state permit and the approved mining plan.

The July 9, 2001, approval allows you to mine an additional 2.1 million tons of Federal coal from 406 acres of Federal lease UTU-74804, as shown on the attached map.

If you have any questions, please contact me at (303)844-1400 ext. 1465.

Sincerely,

Joseph O. Wilcox,
Project Manager

Enclosure

cc: BLM Price Field Office
Utah Division of Oil, Gas, and Mining
OSM - Denver Field Division