

**Sage Point-Dugout Canyon Mine, Sunoco Energy Dev. Co.**  
**Carbon County, Utah U-07746 March 1984**  
**U-092147, U-0144820, U-07064-027821**

# MINING PLAN DECISION DOCUMENT

**Sage Point-Dugout Canyon Mine**  
**Sunoco Energy Development Co.**  
**Carbon County, Utah**



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

**Federal Coal Leases U-07746, U-092147,**  
**U-0144820, U-07064-027821**

**March 1984**



TABLE OF CONTENTS  
DECISION DOCUMENT

Sunoco Energy Development Company

Sage Point-Dugout Canyon Mine

Chapter

1	Table of Contents
2	Memoranda
	Memorandum from the Administrator, Western Technical Center, to the Director, Office of Surface Mining Reclamation and Enforcement (OSM).
	Memorandum from the Director, OSM, to the Assistant Secretary for Land and Minerals Management.
	Letter from Coordinator, Mined Land Development, Utah Division of Oil, Gas and Mining (UDOGM) to Administrator, Western Technical Center, OSM
3	Location Maps
	Project Location
	Initial SMCRA Permit Area
	Life of Mine Area
	Legal Description of Federal Leases
	Mine Plan Information Form
4	Chronology of Events
5	Findings
	OSM's Findings - Application for SMCRA Permit and Mining Plan Approval
	UDOGM Revised Findings - Application for a SMCRA Permit
	Cumulative Hydrologic Impact Assessment
6	National Environmental Policy Act Compliance Documents
	Environmental Assessment
	Finding of No Significant Impact

7 Letters of Concurrence and Consultation

8 Permit with Conditions

9 Technical Analysis (TA)

Technical Analysis (March 16, 1983)

Technical Analysis Addendum (July 14, 1983)

Supplement No. 1 - Technical Analysis (Sept, 15, 1983)

Supplement No. 2 - Technical Analysis (Feb. 17, 1983)

10 Notifications

Affidavit of PAP Publication

Notice of Pending Decision



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

MAR 26 1984

MEMORANDUM

TO: Director, Office of Surface Mining

FROM: *Auty* Administrator, Western Technical Center *PD Tower*

SUBJECT: Recommendation for Approval of Sunoco Energy Development Company's Sage Point-Dugout Canyon Mine Mining Plan and Permit Application, Carbon County, Utah, Federal Leases: U-07746; U-092147; U-0144820; U-07064-027821.

I. Recommendation

I recommend approval with conditions of the Sunoco Energy Development Company's (Sunedco) Sage Point-Dugout Canyon mine permit for an underground operation. This is an application for a new mine. The permit term is for five years and the permit area is 4,475 acres. Sunedco's permit application package (PAP) was reviewed under the Federal Lands Program and the approved Utah State Program. My recommendation is based on the technical analysis and environmental assessment of the complete PAP as updated through January 4, 1984. The permit with conditions included with this memorandum will be in conformance with the applicable Federal regulations, the Utah State Program, and the Mineral Leasing Act as amended.

The Utah Division of Oil, Gas and Mining (UDOGM) and the Office of Surface Mining (OSM), identified elements of the applicant's proposal which require conditions to comply with State and Federal law. The State permit ACT/007/009 with conditions will be issued separately from the proposed Federal permit UT 0041, 3/84. The State Regulatory Authority will issue its permit concurrently with the Federal permit.

Portions of 4 Federal coal leases are included within the proposed mining plan and initial SMCRA permit areas. These include U-7746; U-092147; U-0144820; U-07064-027821. In addition, two areas of fee (private) coal are proposed for mining. Federal coal constitutes 86.5 percent of the coal in the initial SMCRA permit area and Fee coal constitutes 13.5 percent. Sunedco's proposed area of mining plan approval is 3,080 acres and constitutes those portions of the four Federal coal leases included within the initial SMCRA permit area. A portion of a 5th Federal lease (#U-089096) is included within the proposed life of mine area.

The BLM found Sunedco's revised PAP (4,475 acres) to be in compliance with 43 CFR 3480 on March 15, 1984. Accordingly, I also recommend that you advise the Assistant Secretary for Land and Minerals Management, under 30 CFR 746.14, that the Sunedco's Sage Point-Dugout Canyon 3,080-acre mining plan is ready for approval.

I concur that a performance bond in the amount of \$611,875 is adequate. The bond amount required of the applicant will be increased annually to account for inflation.

## II. Background

The proposed Sage Point-Dugout Canyon underground coal mine project is located 15 miles northeast of Price in Carbon County, Utah. Surface ownership of the proposed initial SMCRA permit area is 42.7 percent Federally-owned (1910 acres), 55.4 percent privately-owned (2480 acres) and 1.9 percent (85 acres) is owned by Carbon County.

In December 1982, Sunedco requested approval of a permit application package (PAP) for approximately 40 years of underground coal mining. This application was originally submitted in December 1980 by Eureka Energy Co. The size of this life-of-mine application was 18,242 acres. Several letters were sent to the applicant by the regulatory authorities in 1983 which resulted in Sunedco submitting PAP revisions in June and December 1983 and in January 1984. On November 2, 1983, after considerable discussion with Sunedco and UDOGM, OSM indicated that four major problem areas remained with Sunedco's PAP.

On December 21, 1983, and on January 4, 1984, Sunedco responded to OSM's concerns by addressing the major problems areas, and by substantially revising their SMCRA permit application. This revision provided for a greatly reduced scale of operations. The area of initial SMCRA permit approval being sought was reduced from 18,242 acres (476.5 acres of surface disturbance) to 4,475 acres (70 acres of surface disturbance). Sunedco removed the proposed central facilities area and proposed Fish Creek mine portals area and accompanying facilities from their proposed initial permit area and considerably lessened the area from which they initially planned to remove coal. (See accompanying maps labeled Permit Boundaries, and Life of Mine Permit Area). Sunedco's December 21, 1983 and January 4, 1984 submittals specifically included:

Updated right-of-way information for the initial (4,475 acre) SMCRA permit area, including documentation that the company had been issued Industrial Occupancy Lease #U-52808 by the BLM. This 740-acre lease allows Sunedco to disturb the necessary surface for the construction of the facilities needed to initially commence mining activity in the Dugout Canyon area. This BLM lease satisfies the right-of-entry requirements of Sunedco's revised SMCRA permit area.

Revised permit term information indicating that while the applicant proposes to operate the Sage Point-Dugout Canyon project for 40 years, the subject PAP is only for 5 years. The revised PAP states that within the initial SMCRA permit area, no mine-related activity will occur on the Soldier Creek alluvial valley floor and sufficient water will continue to be available to irrigate this area. Revised permit maps were also submitted.

An exact legal description of the Dugout Canyon County road that will be permitted for mine access in this permit term.

Revised alternative water supply information justifying that coal mining and related activities would have no adverse effects on the quantity of the water supply in the project area.

Revised and complete reclamation procedures and related information for the Dugout Canyon waste rock disposal site. This information included: final slope configurations for the durable rock fill, soil descriptions, soil salvage depths and procedures, soil replacement procedures, revegetation methods, the methods by which the fill would be constructed, revised drawings of the fill, and the revised cost estimates for reclamation of the fill area.

A geotechnical analysis of the highwall stability of the Dugout Canyon portal.

The Sage Point-Dugout Canyon operation encompasses high quality wildlife habitat. Environmentally sensitive areas within the permit boundaries are raptor nesting sites, and mule deer critical winter range.

Approximately 120 miners will be employed at the mine for this permit term (5 years). Both room and pillar and longwall mining methods will be used to mine the Sunnyside, Rock Canyon and Gilson coal seams. During the initial years of mining, maximum coal production should not exceed 1.2 million tons annually. This production level may increase depending on future coal sales. Newly mined coal will be transported from the mine mouth by truck and would be hauled approximately 20 miles via county road and state highway to an existing railroad siding. All underground mining operations are scheduled to cease around the year 2026 according to Sunedco's life-of-mine plan.

Sunedco has indicated that it intends to submit a revised PAP for the life-of-mine area within 2-3 years after receiving its initial permit approval.

The Sage Point-Dugout Canyon mine permit application was reviewed by the Office of Surface Mining and UDOGM, using the approved Utah State Program and the Federal Lands Program (30 CFR Chapter VII, Subchapter D). The Mineral Leasing Act portion of the plan was also reviewed for compliance with the applicable portion of 43 CFR Part 3480 (i.e., requirements and responsibilities of the Minerals Management Service). The technical analysis for this mine application was prepared by UDOGM and the environmental assessment was prepared by OSM. These documents, other documents prepared by UDOGM, the company's application, and other correspondence developed during the completeness and technical reviews are part of OSM's mining plan and permit application file. The UDOGM and OSM developed proposed conditions to assure compliance with State and Federal regulations.

A chronology of events related to Sunedco's PAP is enclosed. After Sunedco published the newspaper notice as required, no written comments, objections, or requests for an informal conference were received. There was no informal conference or hearing requested on Sunedco's application and no issues have been raised by the public.

Written concurrence was provided by the Bureau of Land Management (BLM). Conditions were incorporated from comments of the BLM, USFWS, Utah State Department of Community and Economic Development, and the State Historic Preservation Office.

The information in the PAP, as well as other information documented in the recommendation package and made available to the applicant, has been reviewed by the UDOGM staff in coordination with the OSM Project Leader. Other information included: the 1979 U.S. Geological Survey Final Environmental Impact Statement (FEIS) titled "Development of Coal Resources in Central Utah".



# United States Department of the Interior

OFFICE OF SURFACE MINING

Reclamation and Enforcement

WASHINGTON, D.C. 20240

APR 24 1984

## Memorandum

To: Assistant Secretary for Land and Minerals Management  
From: ~~Director~~ Director, Office of Surface Mining *J. Lisle Reed*  
Subject: Recommendation for Approval of the Sage Point-Dugout Canyon Mine Mining Plan, Sunoco Energy Development Company, Carbon County, Utah, Federal Leases U-07746; U-092147; U-144820; U-07064-027821

I am prepared to approve a permit for the Sage Point-Dugout Canyon mine pursuant to the Surface Mining Control and Reclamation Act and subject to approval of the mining plan. My decision to approve the Sunoco Energy Development Company's permit is based on: (1) the applicant's complete permit application, (2) our permit conditions, (3) public participation, (4) review of the application by the Office of Surface Mining, (5) review of the application by the State as required by the approved Utah State Program, and (6) compliance with the National Environmental Policy Act. The OSM permit incorporates the State's permit. The proposed operation will be in compliance with all applicable laws and regulations.

The Secretary may approve a mining plan for Federal lands under 30 U.S.C. 207(c) and 1273(c).

I recommend the Sage Point-Dugout Canyon mine mining plan updated through January 4, 1984, be approved.

### Approval:

I approve this proposed mining plan:

*Lona A. Power*  
\_\_\_\_\_  
ACTING Assistant Secretary for Land and  
Minerals Management

*4/26/84*  
\_\_\_\_\_  
Date



STATE OF UTAH  
 NATURAL RESOURCES  
 Oil, Gas & Mining

Scott M. Matheson, Governor  
 Temple A. Reynolds, Executive Director  
 Dr. G. A. (Jim) Shirazi, Division Director

4241 State Office Building • Salt Lake City, UT 84114 • 801-533-5771

OSM-VTC  
 1984 FEB 21 AM 10:23  
 WESTERN TECHNICAL CENTER

February 17, 1984

Mr. Allen D. Klein, Administrator  
 Western Technical Center  
 Office of Surface Mining  
 Brooks Towers  
 1020 Fifteenth Street  
 Denver, Colorado 80202

RE: Revisions to Technical Analysis  
 and Recommendations for Approval  
 Sunoco Energy Development Company  
 Sage Point-Dugout Canyon Mine  
 ACT/007/009, Folder No. 2  
 Carbon County, Utah

Dear Mr. Klein:

Since the Division transmitted the final Technical Analysis (TA) for the Sage Point-Dugout Canyon Mine in March of 1983, several changes have occurred in the Permit Application Package (PAP) that have required corresponding changes in the TA. A Technical Analysis Addendum was submitted in July of 1983 and Supplement I to the Technical Analysis analyzing the PAP's compliance with regulations that were found not to have been legally suspended by the State of Utah, was submitted in September.

This letter and its attachments serve to notify you of further changes in the TA, brought about by changes to the PAP submitted by Sunoco Energy Development Company (Sunedco) on December 21, 1983 and January 4, 1984.

A major change in the permit area has occurred with this latest submittal. Sunedco had originally requested a life-of-mine permit for a permit area covering a total of 18,242 acres. Due to Sunedco's inability to gain legal right-of-entry to the entire permit area at this time, the permit has been revised to a five-year permit with a total permit area of 4,475 acres. Approximately 70 surface acres will be disturbed during the five-year permit term. Maps D03-002A and B (attached) show the boundaries of the originally proposed life-of-mine permit area and the five-year permit area currently proposed.

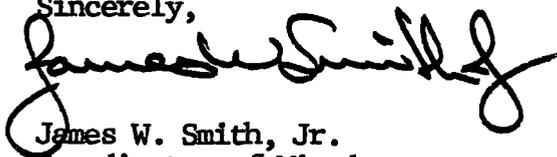
Mr. Allen D. Klein, Administrator  
ACT/007/009  
February 17, 1984  
Page 2

The December 21, 1983 submittal also addressed several technical issues that were of concern to the regulatory authority. These issues included Alternative Water Supply, Reclamation of the Dugout Canyon Waste Rock Disposal Site, the Alluvial Valley Floor issue and Stability of Highwalls. The technical adequacy of this submittal in these four areas is addressed in Supplement II to the Technical Analysis (February 17, 1984).

The recent changes to the PAP have also necessitated changes to certain of the original Findings, to the Mine Plan Information form, to the Stipulations list and to the Bond. Updated Findings and Mine Plan Information sections have been prepared accordingly. A revised Final Stipulations List and Bond Estimate are included in Supplement II to the Technical Analysis.

It is the Division's opinion that Sunedco has answered all requirements for a five-year permit, and the Division is ready to issue a five-year permit with conditions. It is recommended that the Office of Surface Mining do the same at this time. The Division will be happy to provide any additional information or clarification to make this possible.

Sincerely,



James W. Smith, Jr.  
Coordinator of Mined  
Land Development

JWS/SCL:btb

Enclosures

cc: Shirley Lindsay, OSM  
Charlie Durrett, Sunedco  
S. Linner, DOGM

MINE PLAN INFORMATION FORM

February 17, 1984

Mine Name: Sage Point-Dugout Canyon Mine State ID: ACT/007/009

Operator: Sunedco Coal Company County: Carbon

Controlled By: Sunoco Energy Development Company

Contact Person(s): Charles Durrett Position: Environmental Coordinator

Telephone: (303) 989-9280

New/Existing: New Mining Method: Room & Pillar; Longwall

Federal Lease No(s): U-07746; U-092147; U-0144820; U-07064-027821

Legal Description(s): See attached sheet.

State Lease No(s): None.

Legal Description(s): None.

Other Leases (identify): Fee Coal (Fish Creek Canyon); Fee Coal (Dugout Canyon).

Legal Description(s): T. 13 S., R. 12 E., Sec. 16: E1/2; T. 13 S., R. 12 E., Sec. 23: W1/2 NE1/4, E1/2 NW1/4

Ownership Data:

<u>Surface Resources (acres)</u>	<u>Existing Permit Area</u>	<u>Total Life of Mine Area</u>	<u>Proposed Permit Area</u>
Federal	<u>NA</u>	<u>6,999</u>	<u>1,910</u>
State	<u></u>	<u>960</u>	<u>0</u>
Private	<u></u>	<u>10,243</u>	<u>2,480</u>
Other (County)	<u></u>	<u>40</u>	<u>85</u>
TOTAL	<u></u>	<u>18,242</u>	<u>4,475</u>

Coal Ownership (acres):

Federal	<u>NA</u>	<u>15,186</u>	<u>3,080</u>
State	<u></u>	<u>2,256</u>	<u>0</u>
Private	<u></u>	<u>800</u>	<u>480</u>
Other	<u></u>	<u></u>	<u>0</u>
TOTAL	<u></u>	<u>18,242</u>	<u>3,560</u>



LEGAL DESCRIPTIONS OF FEDERAL LEASES

Lease No. U-07746

T. 13 S., R. 12 E., Sec. 10: S1/2; Sec. 11: S1/2; Sec. 14: All; Sec. 15: All; Sec. 22: N1/2, N1/2 S1/2; Sec. 23: W1/2 NW1/4

Lease No. U-092147

T. 13 S., R. 12 E., Sec. 17: E1/2 SW1/4, SE1/4; Sec. 20: E1/2 NW1/4, SW1/4 NW1/4, N1/2 NE1/4; Sec. 21: N1/2 NW1/4, NE1/4

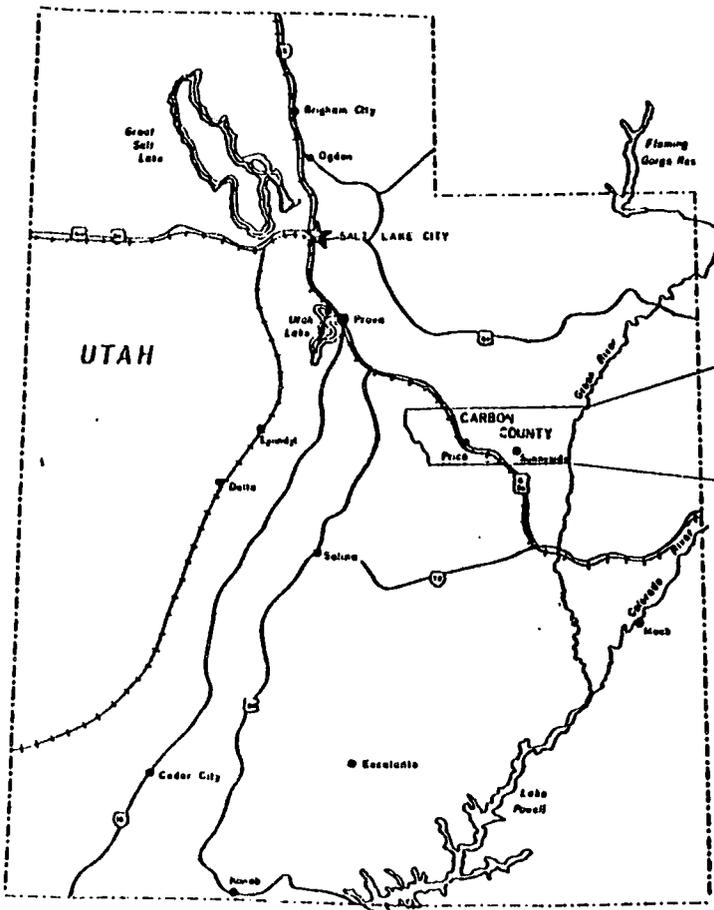
Lease No. U-0144820

T. 13 S., R. 12 E., Sec. 3: Lots 1, 2, 3, 4 S1/2 (All); Sec. 4: Lots 1, 2, 3, 4, S1/2 (All); Sec. 5: Lots 1, 2, SE1/4; Sec. 9: All; Sec. 10: N1/2; Sec. 11: N1/2

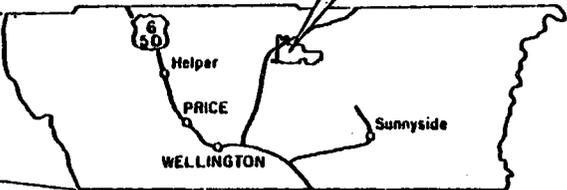
Lease No. U-07064-027821

T. 13 S., R. 12 E., Sec. 13: S1/2; Sec 23: E1/2 E1/2, W1/2 SE1/4, NE1/4 SW1/4; Sec. 24: All; Sec. 25: N1/2 N1/2; Sec. 26: N1/2 NE1/4,

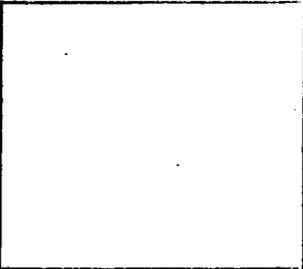
T. 13 S., R. 13 E., Sec. 18: Lots 3, 4, E1/2 SW1/4, SE1/4; Sec. 19: Lots 1, 2, 3, 4, E1/2 W1/2, NE1/4, NW1/4 SE1/4; Sec. 30: Lot 1



**SAGE POINT -  
DUGOUT CANYON  
PROJECT**



**CARBON COUNTY**



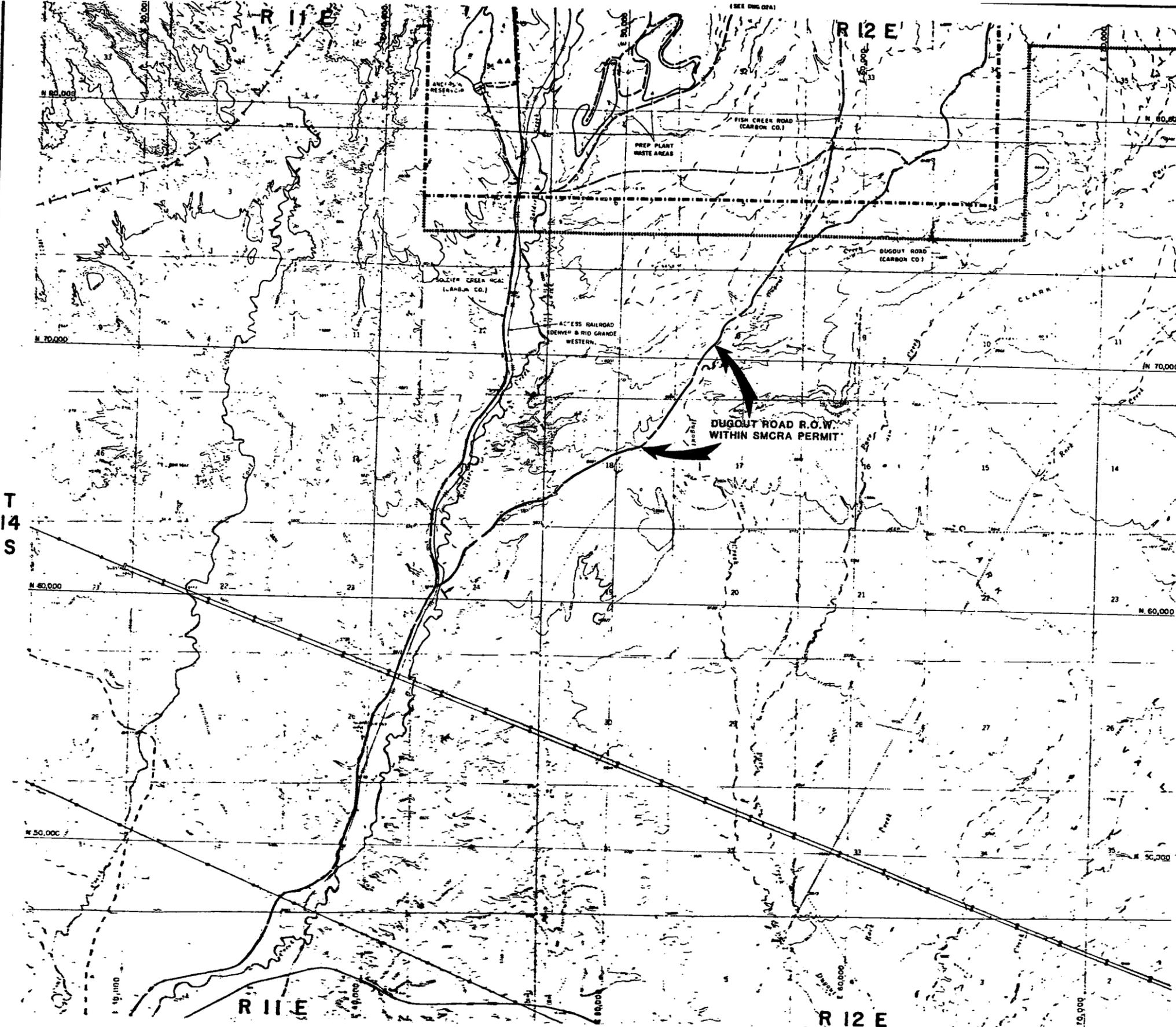
MICROFILM	
BILL OF MATL	
DWG LIST	
SUPSDS	
SUPSD BY	
SHEET NO. / OF / SHEET	
REV.	

NO.	DATE	DESCRIPTION	GM	ENR	CHKD.	SUPV.	APVD.
1	7-22-80						

REVISIONS

APPROVED BY	<i>[Signature]</i>
GM	
SUPV.	
DSGN.	
DWN. MDS	
CHKD. JAD	
O.K. JA	
DATE 7-22-80	
SCALES	1/A

**PROJECT LOCATION**  
Figure I-A.1  
**EUREKA ENERGY COMPANY**  
SAN FRANCISCO, CALIFORNIA



**TOPICAL SYMBOLS**

- ▲ Life of Mine Boundary
- ▭ Initial SMCR Permit Boundary
- ▭ Adjacent Area
- ▭ Storage Area
- ▭ Water Line
- ▭ Overhead Gasline
- ▭ County Road
- ▭ Improved/New Road
- ▭ Railroad
- ▭ Existing Power Line

Description	REVISIONS				Description	REVISIONS			
	Number	Date	By	For		Number	Date	By	For

Scale: 1" = 2000'

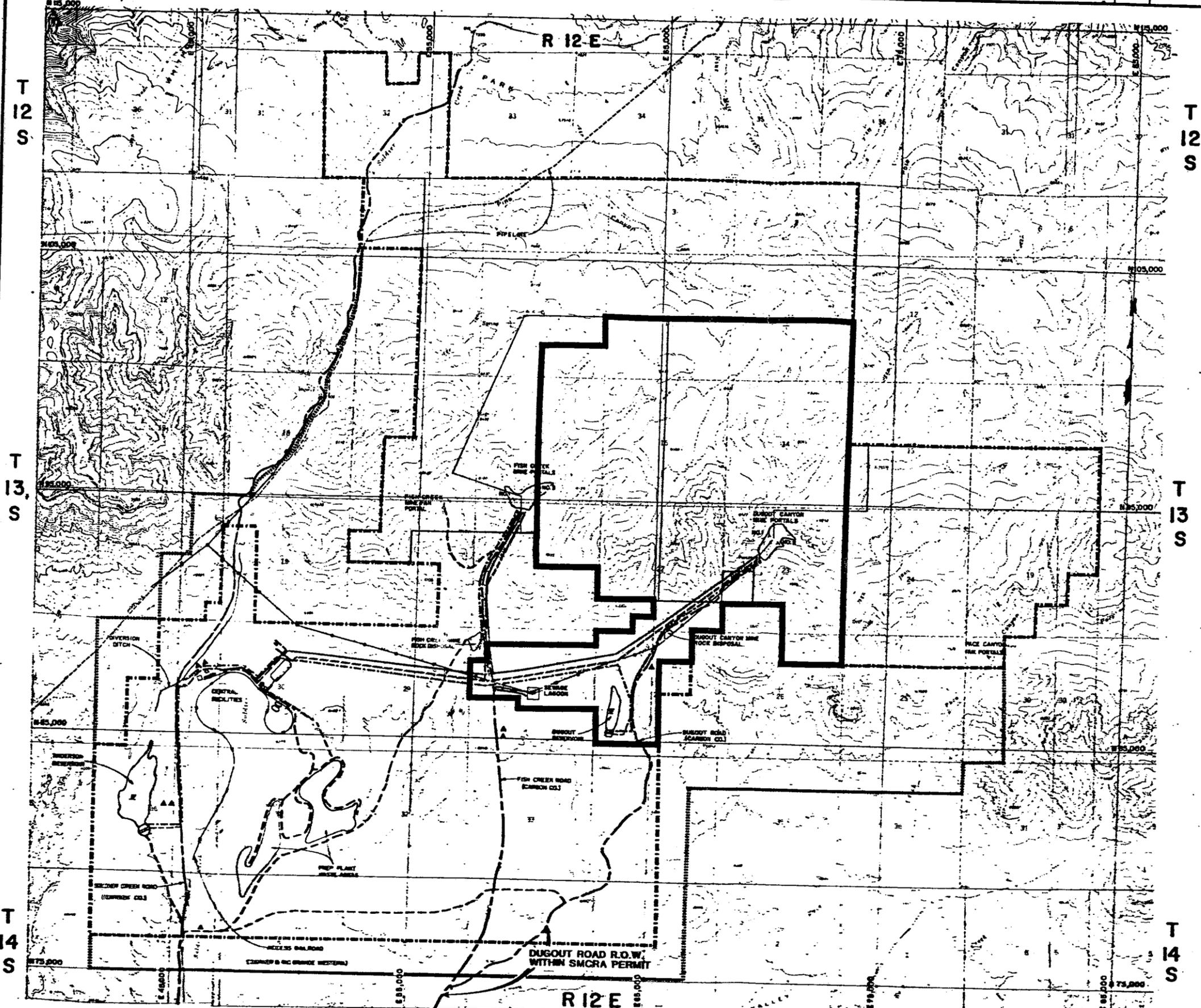
Drawn by: F. COOPER  
 Checked by: EXTERNAL AFFAIRS  
 Approved by: ENGINEERING

Date: 2-04  
 Date: 2-04  
 Date: 2-04

**LIFE OF MINE PERMIT AREA**

**SUN** Serrano Coal Co.  
 SAGE POINT / DUGOUT CANYON  
 CARBON COUNTY, UTAH

Drawing No. 028



	Topographic Stationing		County Road
	Life of Mine Boundary		Improved/New Road
	SMCRA Permit Boundary		Railroad
	Aspect Zone		Existing Power Line
	Storage Pond		
	Water Line		
	Cherted Conglomerate		

Author	Checked	Date	By	Scale	Drawn	Date	By

Scale	2000	4000
Designed By		
Drawn By	F. GOPEN	2-84
Checked By	EXTERNAL AFFAIRS	2-84
Approved By	ENGINEERING	2-84
Approved By		4-77

**LIFE OF MINE PERMIT AREA**

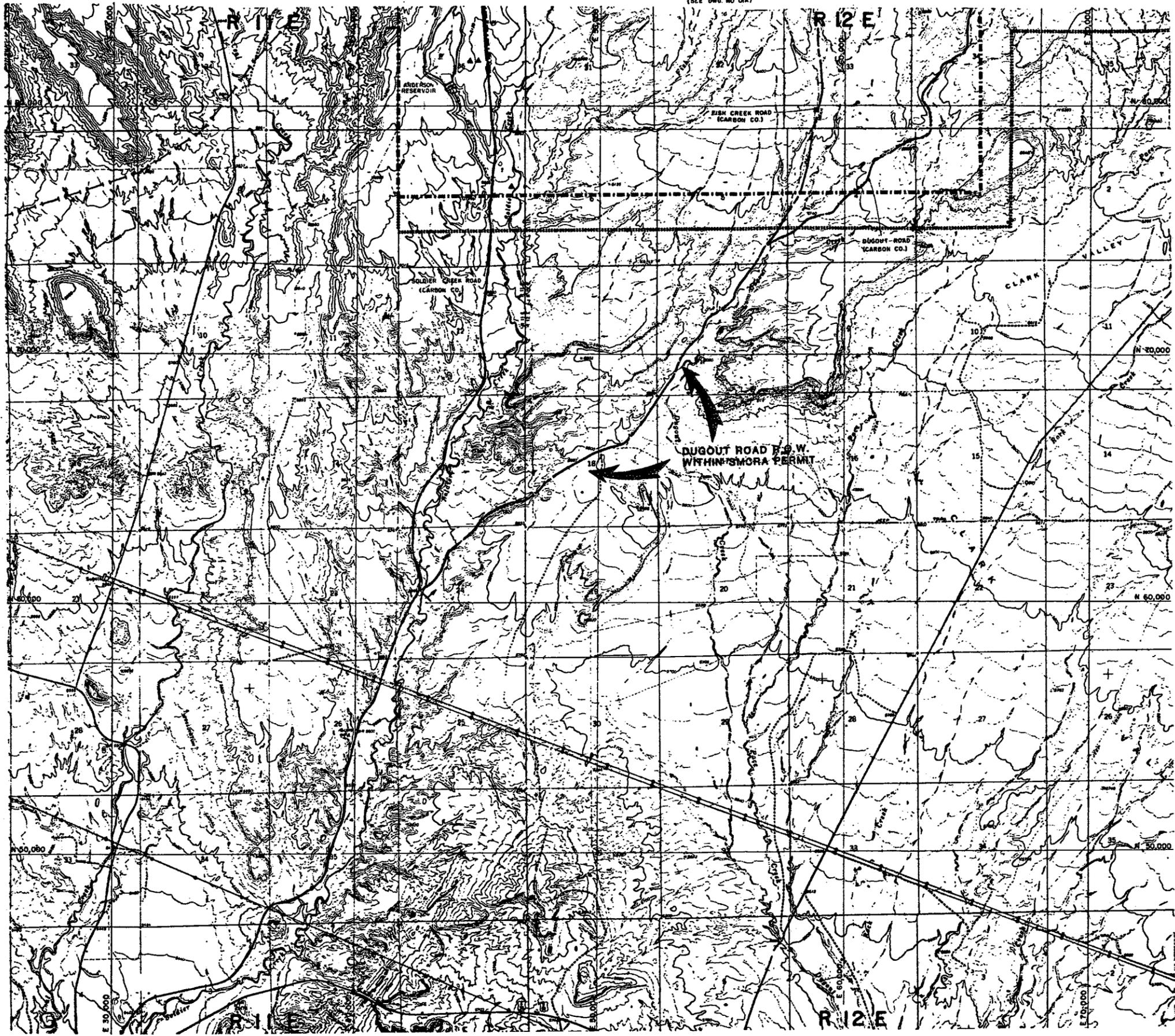
**SUN** Service Coal Co.

CARBON COUNTY, UTAH

Rev 1 Drawing No. 02A



(SEE DWG. NO 01A)



T 14 S

T 14 S

R 12 E

	TOPSOIL STOCKPILE		County Roads
	Life of Mine Boundary		Improved/New Roads
	Initial SMORA Permit Boundary		Railroad
	Adjacent Area		Existing Power Lines
	Sewage Line		
	Water Line		
	Vertical Curvature		

NO.	DESCRIPTION	DATE	BY	APPROVED BY
1	DRAWN	2-84	FC RB	

Scale	0 2000 4000	Date	
Designed By			
Drawn By	F. COPEN		2-84
Checked By	EXTERNAL AFFAIRS		2-84
Approved By	ENGINEERING		2-84

### PERMIT BOUNDARIES

**SUN** Suncoast Coal Co.  
SAGE POINT / DUGOUT CANYON  
CARBON COUNTY, UTAH  
Drawing No. 01B

## CHRONOLOGY OF EVENTS

### SUNOCO ENERGY DEVELOPMENT COMPANY SAGE POINT-DUGOUT CANYON MINE

#### Application for SMCRA Permit Approval and Mining Plan

DATE	EVENT
December 12, 1980	Eureka Energy Company (EEC) submits permit application and mining and reclamation plan (MRP), under the approved Utah State program, to the Utah Division of Oil, Gas and Mining (UDOGM).
December 17, 1980	EEC files application in County Courthouse.
May 5, 1981	The Office of Surface Mining Reclamation and Enforcement (OSM) furnishes comments on the permit application, generated during its Apparent Completeness Review (ACR) for National Environmental Policy Act (NEPA), to UDOGM.
August 7, 1981 September 8, 1981	EEC submits additional material in response to ACR and amends application and MRP in County Courthouse.
December 2, 1981	UDOGM announces that EEC's permit application and MRP is complete and commences its technical analysis.
January 13, 1982	EEC publishes fourth consecutive weekly notice in the Price Sun Advocate that its permit application and MRP has been filed.
February 4, 1982	UDOGM notifies EEC deficiencies discovered in the Sage Point-Dugout Canyon mine State permit application and MRP as a result of their preparation of the draft TA.
February 16, 1982	The public comment and informal conference request period for the Sage Point-Dugout Canyon MRP expires.
March 12, 1982 April 2 & 19, 1982	EEC responds to UDOGM concerning those February 4, 1982 deficiencies.

Date	Event
April 28, 1982	UDOGM submits the draft TA for the Sage Point-Dugout Canyon mine to OSM for its review and comment.
May 28, 1982	Sunoco Energy Development Company (Sunedco) informs OSM of the purchase of the Eureka Energy Company's Sage Point-Dugout Canyon properties.
June 9-30, 1982	Sunedco republishes weekly notice in the Price Sun Advocate that a permit application and MRP for the Sage Point-Dugout Canyon has been submitted. Regulatory authority puts the permit review process on hold until the Sunedco staff has time to completely review the Eureka application to determine if they wished to adopt the entire application.
November 24, 1982	Eureka Energy Company supplies supplemental information to UDOGM and OSM.
December 20, 1982	Sunedco indicates to OSM and UDOGM that no major modifications to the application have been identified and request that the permitting process for a life-of-mine application proceed.
March 16, 1983	UDOGM submits the final TA for the Sage Point-Dugout Canyon life-of-mine application to OSM for its review and comment.
May 19, 1983	OSM submits its comments regarding the final TA for the Sage Point-Dugout Canyon life-of-mine application to UDOGM.
June 13, 1983	Sunedco submits supplemental permit application package (PAP) information to UDOGM.
July 14, 1983	UDOGM submits Addendum to the TA to OSM.
August 24, 1983	OSM-WTC submits draft Secretarial decision document to OSM Headquarters for comment.
September 15, 1983	Sunedco submits Supplement No. 1 to the TA to OSM.

Date	Event
November 2, 1983	OSM informs Sunedco by letter of four major deficiencies remaining with their PAP.
December 21, 1983	Sunedco submits substantial revisions to their PAP in which their 5-year application area was reduced from 18,272 acres to 4,475 acres.
January 4, 1984	BLM issues 740 AC surface lease #U-52808 to Sunedco that provides for special use to construct Dugout Canyon mine facilities.
January 4, 1984	Sunedco submits supplemental PAP information to UDOGM and OSM.
January 17, 1984	UDOGM submits draft TA revisions, revised list of stipulations, and revised findings to OSM.
February 17, 1984	UDOGM submits final TA revisions, revised list of stipulations, and revised findings to OSM.
March, 1984	OSM submits final Secretarial decision document recommending approval of mining plan and permit.

OSM  
FINDINGS  
SUNOCO ENERGY DEVELOPMENT COMPANY  
SAGE POINT-DUGOUT CANYON MINE

Application for SMCRA Permit and Mining Plan Approval

- I. The State of Utah has determined that the permit application package (PAP) submitted on December 17, 1980, and revised through January 4, 1984, is complete and accurate and the applicant has complied with the Utah State Program [UMC 786.19(a)]. OSM has determined that the PAP as revised through January 4, 1984, and the Federal permit with conditions is accurate and complete and complies with the requirements of the Utah State Program, the Surface Mining Control and Reclamation Act (SMCRA), and the Federal Lands Program [30 CFR 773.15(c)(1)]
- II. The Utah Division of Oil, Gas and Mining (DOGM) has reviewed the PAP and prepared the technical analysis (TA). OSM has prepared the environmental analysis (EA) and reviewed the TA and incorporated documents and based on this has made the following findings:

1. The applicant proposes acceptable practices for the reclamation of disturbed lands. These reclamation practices have been shown to be effective in the short-term; there are no long-term reclamation records utilizing native species in the Western United States. Nevertheless, the DOGM staff has determined that reclamation, as required by the Act, can be feasibly accomplished under the reclamation plan contained in the PAP [UMC 786.191(b); TA, page 39, MRP pages II-303 to II-346]

OSM has determined that issuance of a permit would be in compliance with section 522(b) of SMCRA.

2. The probable cumulative hydrologic impact assessment (PCHIA) of all existing and anticipated mining by underground coal mines in the general area has been completed. OSM finds that the surface facilities and underground mine operations proposed under the application have been designed to prevent damage to the hydrologic balance off-site. See Cumulative Hydrologic Impact section, attached to this Findings Document. [UMC 786.19(c); TA, page 17, 18; MRP pages II-63 to II-118]
3. After reviewing the description of the proposed initial SMCRA permit area, DOGM and OSM determine this area is:
  - a. Not included within an area designated unsuitable for surface facilities and underground coal mining operations [UMC 786.19(d)(1)]
  - b. Not on or within an area under study for designating lands unsuitable for surface coal mining operations. (See Bureau of Land Management correspondence of October 23, 1981 [UMC 786.19(d)(2)].

c. Not on any lands subject to the prohibitions or limitations of 30 CFR 761.11(a)(national parks, etc.), 761.11(f) (public buildings, etc.), and 761.11(g) (cemeteries). [UMC 786.19(d)(3)]

d. Within 100 feet of the outside right-of-way of a public road, however, the conditions of UMC 761.12(d) have been met. A public hearing was advertised for December 3, 1981. No adverse comments were received [UMC 786.19(d)(4); See State Findings Document]

e. Not within 300 feet of any occupied dwelling [UMC 786.19(d)(5); (See State Findings Document)]

4. OSM's issuance of a SMCRA permit and the Secretarial decision on the mining plan are in compliance with the National Historic Preservation Act and implementing regulations (36 CFR 800). [UMC 786.19(e); TA Addendum, page 13; State Historic Preservation Officer concurrence letter of December 6, 1982]

5. The applicant has the legal right to enter and begin underground activities in the initial SMCRA permit area through four Federal leases and two fee leases. In addition, in response to an objection by OSM that the applicant did not have the right to construct certain structures on BLM surface within the permit area but off the coal lease area, federal surface lease U-5208 (740 acres) was assigned to Sunedco on January 3, 1984 by the Bureau of Land Management. [See MRP, pages I-26 through I-34; UMC 786.19(f)]

6. OSM's records confirm that all fees for the Abandoned Mine Reclamation Fund have been paid. [UMC 786.19(h); personal communication with John Sender, OSM Fee Compliance Officer, in OSM Albuquerque Field Office on February 14, 1984]

7. The applicant has submitted proof and OSM's records indicate that prior violations of applicable law and regulations have been corrected. [UMC 786.19(g); MRP, page I-25; personal communication with Jodi Merriman in OSM Albuquerque Field Office and Gene Filer, OSM Casper Field Office on February 16, 1984]

8. OSM records show that the applicant does not control and has not controlled mining operations with a 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. [UMC 786.19(i); personal communication with Jodi Merriman, in OSM Albuquerque Field Office and Gene Filer in the Casper Field Office on February 16, 1984]

9. Surface coal mining and reclamation operations to be performed under the permit will not be inconsistent with the Soldier Creek underground mine in the immediate vicinity of the Sage Point-Dugout Canyon Mine [UMC 786.19(j); and State findings]

10. There are no prime farmlands within the proposed mining plan and initial SMCRA permit areas.

11. Negative alluvial valley floor determinations have been made for the drainages in the proposed mining plan and initial SMCRA permit areas. These determinations were made on the basis of a field review of the proposed permit area and a technical review of the hydrologic data in the PAP. The only adjacent drainage determined to be an alluvial valley floor (AVF) is Soldier Creek and a determination has been made that this AVF would not be affected by mining activity within the initial SMCRA permit area. (See pp. 45-49 of the March 1983 TA, the January 1984 TA Supplement, and the State Findings Document.)

12. The proposed postmining land use of the permit area has been approved by the Utah Division of Oil, Gas and Mining, Bureau of Land Management and OSM [UMC 786.19(m); letter of concurrence from Bureau of Land Management; State findings, page 3].

13. The Utah Division of Oil, Gas and Mining and OSM have made all specific approvals required by the Act, the approved Utah State Program and the Federal Lands Program. [UMC 786.19(n); State findings, page 3].

14. The proposed operation will not affect the continued existence of threatened or endangered species or result in the destruction or adverse modification of their critical habitats. [UMC 786.19(o); TA, page 35; December 23, 1982 memorandum from U.S. Fish and Wildlife Service].

15. Procedures for public participation have complied with requirements of the Act, the approved Utah State Program, the Federal Lands Program, and Council on Environmental Quality regulations (40 CFR Part 1500 et seq.). (30 CFR 740.13(c)(3); Chronology of Events.)

16. The applicant has complied with all other requirements of applicable Federal laws and either has or has applied for permits from Environmental Protection Agency and State of Utah Department of Health and State of Utah Division of Water Rights; [30 CFR 741.17(d); letters of concurrence and clearance are appended to the TA].

*auth* Richard E. Dawes  
Administrator  
Western Technical Center

Headquarters Reviewing Officer

## CUMULATIVE HYDROLOGIC IMPACTS

Book Cliffs Coal Field, Sage Point-Dugout Canyon Mines  
ACT/007/009, Carbon County, Utah

The most probable cumulative impacts 1/ to the hydrologic system have been assessed by the Utah Division of Oil, Gas and Mining (DOG M). The applicant's Mining and Reclamation Plan (MRP) proposals indicate the methods that will be used to comply with Utah State regulations to minimize diminution to the hydrologic regime on the minesite and adjacent areas. Based on the information presented in the MRP (and summarized in the Technical Analysis), the Division has established that Sunoco Energy Development Company (Sunedco) can implement mining operations that will not significantly impact the local or regional hydrologic system. The following is a worst-case scenario of negative impacts which could potentially affect the hydrologic regime and the mitigative measures which will be implemented to minimize these potential impacts and/or justification as to why the significant impacts are not expected to occur.

### Ground-Water Impacts

Mining will take place below and within strata that are units of a very low-yielding and undeveloped areal aquifer system. This areal aquifer includes the interbedded sandstone and shale units of the Blackhawk Formation, the Castlegate Sand sandstone and the Price River Formations. These formations lie beneath the North Horn and Flagstaff formations which create a perched aquifer system that is hydraulically discontinuous with the areal aquifer. Subsidence fractures in the roof of the mine could form and drain some areas within the overlying water-bearing beds of the areal aquifer. If the fractures were to extend into the perched aquifer, a conduit could form which would drain parts of the perched aquifer and increase flow to lower strata (coal beds). If fractures were to extend to the land surface, it may result in additional recharge from overland flow, particularly if the fractures intersect surface streams. This additional recharge could reduce the flow of streams by an approximately equal quantity, but due to the nature of the formations overlying the coal seams this reduction would only be temporary. Similarly, if the fractures extend to the perched aquifers there could be additional induced flow to the lower strata and a reduction of discharge now occurring at the springs. However, due to the nature of the formations overlying the coal and due to the very localized recharge area for the springs, the reduction in flow would be temporary, with only springs in a small area being affected at any one time.

There are several shale beds in the formations overlying the coal seams. These shales contain clays that expand when they become hydrated. If water is introduced to these clays from fractures caused by subsidence, these shales would become saturated and under lithostatic pressure would become plastic. The shale would tend to squeeze into fractures and restrict or limit the movement of ground water down and along fractures. As water seeps through the

1/Note: This CHIA was prepared for Sunedco's original life-of-mine application, and in addressing the larger area has presented a worst-case analysis.

fractures it carries fine mineral particles that are deposited in the restrictions. Eventually the fractures are filled and water circulation ceases. Consequently, a potential interruption or reduction in discharge from any significant spring(s) would probably not be a long-term impact, but a short-term effect, if at all.

A surface subsidence study was performed near Duncan Mountain (southern Wasatch Plateau) on the Fishlake National Forest, Richfield, Utah, over a 20-acre area affected by an underground coal mine (DeGraff, Jerome V., 1981). This report involves, "Subsidence Tension Cracks: Initial Assessment of 'Self-Healing' Rates and Magnitude". Between 800 and 1,000 feet of interbedded sandstone and shale (Blackhawk Formation and Castlegate Sandstone) separate the mine workings from the surface. Numerous cracks of varying length and width (6-300 feet long, 1/8-6 inches width) are widely distributed within the area. Cracks occur in both exposed bedrock and regolith. Maximum subsidence is about nine feet. Several monitoring stations were established over 22 different cracks and monitored weekly over a fifteen-week period in 1978. Initial analysis confirmed the "self-healing" phenomenon. Healing rates for 16 cracks averaged slightly more than 1/6 inch per week (4 stations were damaged and 2 cracks showed no movement). The average amount of crack closure was 56 percent over the study period. Only cracks which closed completely or ceased to move for the latter part of the monitoring period were used to calculate closure values.

These data are considered applicable to the proposed Sunedco project site. This phenomenon would tend to reduce or inhibit the transmittal of substantial increases of recharge from surface-water sources to the ground-water system. This would again tend to support the assumption that any potential losses of flow from surface-water sources would be of short duration and of probable insignificant volume.

In ascertaining information concerning the existing ground-water regime, the Division contacted Kidd Waddell (pers. com., March, 1983), a hydrologist for the U.S. Geological Survey who has recently completed a study in the Wasatch Plateau and Book Cliffs area. During the study some information and data were collected which are specific to the proposed mine permit area. The following narrative describes his interpretation of ground-water movement in the area:

Ground water occurs as perched and unconfined aquifers in the Book Cliffs area. Perched springs occur at the contact between the Flagstaff Limestone and North Horn Formations. Water is transmitted within the Flagstaff Limestone until it comes in contact with the near impervious matrix of the North Horn Formation. The flow within the Flagstaff is generally parallel with the dip (northeastward) of the formation, except where some of the ground water moving down through the formation finds its way to openings along the escarpment of the Book Cliffs. During recharge periods (i.e., spring runoff and rainstorms) more water is contributed to the underground system, and the springs along the Flagstaff LS/North Horn FM contact flow at greater rates. As the recharge decreases, the spring rates also decrease. This scenario also depicts the flow of water through the Price River Formation, Castlegate Sandstone and Blackhawk Formation above the coal seam. However, the transmissivities (T) of these formations are very low so that water reaching the coal seam is greatly inhibited. Transmissivities were calculated from slug tests within the upper and lower zones of the Castlegate Sandstone at 0.02 ft<sup>2</sup>/day and 0.003 ft<sup>2</sup>/day, respectively. A rate of 0.07 ft<sup>2</sup>/day was calculated from a slug test in the Price River Formation.

Other factors involved are the extent and characteristics of the recharge area, the extent of faulting in the area and location of streams relative to recharge area. The Flagstaff Limestone is exposed over large portions of the area. Recharge to the Flagstaff is estimated to be less than five percent of the snowpack. Hydrographs and calculations were developed from stream parameters which indicate that the combined recharge to the Castlegate Sandstone, Price River Formation and Blackhawk Formation is less than the recharge that occurs in the Flagstaff Limestone. The available data suggest that most recharge to the Price River, Castlegate Sandstone and Blackhawk Formation occurs along the stream channels. A comparison of discharges show that the Flagstaff Limestone contributes 1.8 and 5 times more ground water to Soldier Creek and Dugout Creek than do the Castlegate Sandstone, Price River Formation and Blackhawk Formation combined. In essence, low volumes of ground water reaching the coal zones are the result of:

1. Low transmissivity rates within the Price River Formation, Castlegate Sandstone and Blackhawk Formations;
2. The limited areal exposure of the formations;
3. The fact that these formations make up the escarpment of the Book Cliffs and exhibit steep surface areas which contribute to reduced infiltration; and,
4. The North Horn Formation, an almost impermeable formation, overlies and restricts the downward flow to the Price River Formation, Castlegate Sandstone and Blackhawk Formations.

The reclamation measures discussed in other sections of the reclamation plan will have no adverse effect on the water rights of other surface- or ground-water users in the mine plan or adjacent area. As of 1980, ground water had not been developed in the mine plan or adjacent areas and it probably will not be developed in the foreseeable future because of the extremely low yield potential of the water-bearing formations. Also, the applicant completed the purchase of private land in and adjacent to the mine plan area in November, 1982, therefore there are no other adjacent water users that can be affected.

Observation wells were completed in each of the several water-bearing geologic formations that may be affected by mining (areal and perched aquifers). The same observation wells monitored during the premining and mining phases will be monitored during the reclamation phase. By monitoring the same wells during all three phases, the effects of mining will be more easily recognized than if different wells were used during each phase.

An assessment of the MRP ground-water sections dealing with past and present ground-water interception by other existing coal mines in the surrounding region was made by the Division in an attempt to ascertain what might be expected to occur upon initiation of mine development on the Sunedco properties.

There are four active mines within an 8-14 mile radius of the proposed Sunedco project area:

1. Tower Resources - Pinnacle mine (NW - @ 12 miles distant)
2. Soldier Creek - Soldier Canyon mine (NNW - @ 8 miles distant)
3. Kaiser Steel - Sunnyside mine (ESE - @ 10 miles distant)
4. U.S. Steel - Geneva mine (SE - @ 14 miles distant)

A comparison of surrounding mines to the Sage Point-Dugout Canyon mine may provide understanding of the hydrologic system and future impacts. Soldier Creek Coal Company's Soldier Canyon mine lies adjacent and to the north-northwest of Sunedco's proposed mine property, while Kaiser's Sunnyside mine lies adjacent and to the east-southeast of the property. Tower Resources' Pinnacle mine (1981) lies adjacent and to the northeast of Soldier Creek's property. The Pinnacle mine is considered a dry mine. Very little water is produced in the mine and, to maintain dust suppression and operate mine equipment, water has to be hauled in by truck. No faults occur on Tower's property. Tower Resources has attempted to drill water wells for a water supply, but those completed to date have not produced any significant flow to be of value.

Soldier Creek Coal Company (SCCC) produces water in their mine in quantities that allow them to operate their equipment and discharge an estimated 3/4 million to 1-1/4 million gallons per month from the mine. No faulting occurs on the mine property. It is the opinion of the mine engineers that water is produced from fractures in the rock matrix, and after the fractures drain (2 to 3 weeks) no more significant amounts of water are produced. Dave Spillman (SCCC mining engineer, pers. com. of March 1983) stated that most of the water is produced randomly in the mine at the working face and after a few weeks the source ceases to flow.

Kaiser Steel Corporation's Sunnyside mines (1981) lie to the east-southeast of Sunedco's property. Sage Point-Dugout Canyon mine, although adjacent to the Soldier Creek and Sunnyside mines, exhibits different characteristics. Several faults which trend in a northwest direction occur on the mine property. Vertical displacement ranges from 13 feet to 110 feet. In 1979, Kaiser discharged at an average rate of 740 gpm of mine water from their Sunnyside mines. According to studies on deep percolation from surface precipitation performed by the Utah State University (Water Resources Planning Services, October 1980, UWRL/P-80/05), ground-water discharge from the Kaiser mines should increase about 0.13 gpm for each acre of future underground development.

The relationship of ground water in the surrounding mines as compared to Sunedco's proposed mine is somewhat speculative. It is the opinion of the Division that some water will be encountered during mining. The quantities encountered at the Sage Point-Dugout Canyon mines should be less than that produced at the Sunnyside mines due to the paucity of faults on the mine-plan property. It is also anticipated that most of the water encountered will be at the working face produced from fractures in the rock matrix and that this water will reduce in flow as the fractures drain. In essence, the available data suggest that the proposed mines will encounter ground-water volumes comparable to SCCC's operating mine.

## Surface-Water Impacts

There could be interception of surface waters into the mines through subsidence fractures, which may extend as much as several hundred feet above the mine roof. It is anticipated that intercepted underground water will be consumed inside the mine through various operations, and that none of the mine water will ever reach any surface streams or bodies of water until it is properly treated and meets State and Federal effluent criteria. Drainage into the mine through subsidence fractures may reduce the flow of some springs that have their source in the areal aquifer. If there is some reduction in spring discharge, it should be small, since most of the spring discharge is from alluvium and the uppermost few feet of consolidated rock. This rock is weathered and highly fractured; consequently, it has a relatively high permeability.

No pollution of water courses from mine drainage is expected, because, if mine water is intercepted, it will be used inside the mine. The floor of the mine will slope downward from the portals at an angle of 5 to 7 degrees so there will be no gravity discharge.

The chemical analyses of water from two mines in Dugout Canyon, sites 74 and 75, afford a comparison between the quality of water from abandoned coal mines in the area and from a spring which represents the natural outflow from the areal aquifer. Spring 63 is the only spring stratigraphically below the coal mine which is monitored for both flow and quality. The spring occurs at the base of the Aberdeen Member of the Blackhawk Formation or the base of the sandy Mesa Verde Group and the top of the impermeable Mancos Shale. With the exception of pH (mine waters being about 0.1 units more acidic) the quality of the mine waters is better than spring 63. In the mines, the water has been standing since mining ceased in about 1962. No discharge has occurred from these abandoned mines.

Special precautions will be taken to protect the environment from any degraded water that is generated outside of the mine. Fluid wastes will be generated at various facilities, such as the portal areas, coal-cleaning and storage areas, and along conveyor belts, waste piles, and tailings ponds. Sewage lagoons and sedimentation ponds will be utilized to prevent contamination of streams and springs. If, for some unforeseen reason, some acidic or high-sulfur-content water from the mine or facilities should enter water sources in the area, the acid would soon be buffered and the sulfur precipitated because of the moderately high pH and bicarbonate in the natural water of the area. A comprehensive study has confirmed those conclusions; the quality of some streams in Colorado shows virtually no degradation resulting from the sulfur content in the coal mine water (Wentz, 1974).

Sediment ponds are planned at facilities where soil disturbances may result in increased suspended-sediment concentrations in streams. There will be some reduction in sediment discharge in Soldier Creek because more of its water will be cycled through Anderson Reservoir than in the past. Consequently, the net total suspended sediment leaving the project area may be less during mining than under existing conditions. According to the U.S. Geological Survey (1979), even under the worst possible conditions, mining in central Utah in general, and specifically in the Dugout Canyon drainage, will have an insignificant detrimental effect on sediment movement.

The reclamation plan describes how Sunedco will restore the disturbed areas and streams. The flows beyond the permit area will continue during and after mining ceases with at least as good a quality and volume as existed prior to mining. Much of the water that flows beyond the mine-plan area is dissipated by evapotranspiration far above any diversions. The only surface water that is now available for diversion or would be available after mining ceases is flood flows that reach the Price River. Consequently, even if there were small detrimental effects on some streams, there will be virtually no adverse effect on any downstream surface-water user.

Based upon the information and data presented in the permit application concerning the previous description of the existing environment, the plan for mine development, the monitoring plans, and protective measures to be implemented, it is the Division's opinion that the cumulative hydrologic impacts from this proposed operation should present no material damage to the hydrologic balance offsite.

LITERATURE CITED

- DeGraff, J. B., and Romesburg, H. 1981. Susidence crack closure: rate, magnitude and sequence. International Association of Engineering Geology Bulletin No. 23, pp. 123-127.
- Kaiser Steel Corporation. 1981. Mine Reclamation Plan, Sunnyside Mines, Sunnyside, Utah.
- Spillman, D. Soldier Creek Coal Company, Soldier Canyon Mine, Utah. Personal communication, January, 1983.
- Tower Resources. 1981. Mine Reclamation Plan, Centennial Project, Utah.
- U.S. Geological Survey. 1979. Development of coal resources in central Utah, Final Environmental Statement.
- Waddell, K. W. U.S. Geological Survey (Water Resources Division), Salt Lake City, Utah. Personal communication, January, 1983.
- Wentz, D. A. 1974. Effects of mine drainage on the quality of streams in Colorado, 1971-1972. Colorado Water Resources Circular No. 21.

FINDINGS DOCUMENT

SUNOCO ENERGY DEVELOPMENT COMPANY  
Sage Point-Dugout Canyon Mine  
ACT/007/009, Carbon County, Utah

Application for Mining and Reclamation Plan

February 17, 1984

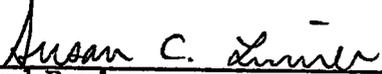
1. The plan and the permit application are accurate and complete and all requirements of the Surface Mining Control and Reclamation Act (the "Act"), and the approved Utah State Program have been complied with (786.19[a]).
2. The applicant proposes acceptable practices for the reclamation of disturbed lands. These practices have been shown to be effective in the short-term; there are no long-term reclamation records utilizing native species in the western United States. Nevertheless, the Utah Division of Oil, Gas and Mining (DOGM) staff has determined that reclamation, as required by the Act, can be feasibly accomplished under the MRP (see TA, Section UMC 817.111-.117) (UMC 786.19[b]).
3. The assessment of the probable cumulative impacts of all anticipated coal mining in the general area on the hydrologic balance has been made by the DOGM. The mining operation proposed under the application has been designed to prevent damage to the hydrologic balance in the permit area and in the associated off-site areas (UMC 786.19[c]). (See Cumulative Hydrologic Impact Section, attached to this Findings Document.)
4. The proposed permit area is:
  - A. Not included within an area designated unsuitable for underground coal mining operations.
  - B. Not within an area under study for designated lands unsuitable for underground coal mining operations.
  - C. Not on any lands subject to the prohibitions or limitations of 30 CFR 761.11(a) (national parks, etc.), 761.11(f) (public buildings, etc.) and 761.11(g) (cemeteries).
  - D. Within 100 feet of the outside right-of-way line of a public road, however, the conditions of UMC 761.12(d) have been met. A public hearing was noticed for December 3, 1981. No adverse comment was received.
  - E. Not within 300 feet of any occupied dwelling (UMC 786.19[d]).

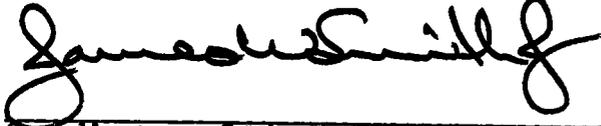
5. DOGM's issuance of a permit is in compliance with the National Historic Preservation Act and implementing regulations (36 CFR 800) (UMC 786.19[e]). See letter from SHPO dated December 6, 1982 attached to TA.
6. The applicant has the legal right to enter and begin underground activities in the permit area through four Federal leases and two fee leases (see MRP, pages I-26 through I-33) (UMC 786.19[f]).
7. The applicant has shown that prior violations of applicable law and regulations have been corrected (UMC 786.19[g]).
8. Sunedco is not delinquent in payment of fees for the Abandoned Mine Reclamation Fund for its active mining operations (UMC 786.19[h]).
9. The applicant does not control and has not controlled mining operations with a 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 (UMC 786.19[i]).
10. Underground coal mining and reclamation operations to be performed under the permit will not be inconsistent with other such operations anticipated to be performed in areas adjacent to the proposed permit area (UMC 786.19[j]). Soldier Creek Coal Company operates the Soldier Canyon Mine immediately to the northwest of the Sage Point-Dugout Canyon permit area. No other mines have been proposed for the immediate vicinity.
11. A detailed analysis of the proposed bond for the five-year permit term has been made. The DOGM has made appropriate adjustments to reflect costs which would be incurred by the State, if it was required to contract the final reclamation activities for the minesite. The bond of \$611,875.00 shall be posted (UMC 786.19[k]) with DOGM prior to final permit issuance or before any construction may begin. A copy of the bond estimate is attached to the TA (Supplement II to the Technical Analysis, February 17, 1984). Sunedco has already posted \$1,112,417 in December of 1980.
12. Soil and land-use investigations indicated that two mapping units within the proposed mine area could be prime farmlands. The Soil Conservation Service (SCS) was contacted to determine whether any of these areas met the minimum requirements for prime farmlands. The SCS found that "Field 2 - East 1/2 of Section 1, Township 14 South, Range 11 East (has) soil characteristics and qualities suitable for prime farmland" (see attached SCS letter dated January 17, 1980). This half section is located along Soldier Creek Road at the southern boundary of the permit area (see Figure IV-C.1). The only planned surface disturbance in conjunction with the proposed mine plan and permit will be an access road. This road will not be constructed during this five-year permit term.

A potential Alluvia' Valley Floor (AVF) has been identified on the central facilities area near Soldier Creek and corresponding alluvial deposits. This area will not be impacted during the initial five-year permit term.

13. The proposed postmining land-use of the permit area has been approved by DOGM (see TA, Section UMC 817.133) (UMC 786.19[n]).
14. The DOGM has made all specific approvals required by the Act, and the approved State Program (786.19[n]).
15. The proposed operation will not affect the continued existence of any threatened or endangered species or result in the destruction or adverse modification of their critical habitats (786.19[o]).
16. All procedures for public participation required by the Act, and the approved Utah State Program have been complied with (741.21[a][2][ii]).

Prior to the permit taking effect, the applicant must forward a letter stating its compliance with the special stipulations in the permit and post the performance bond for reclamation activities.

  
\_\_\_\_\_  
DOGM Lead Reviewer

  
\_\_\_\_\_  
Coordinator of Mined Land Development

192  
**SITE SPECIFIC ANALYSIS**  
**PART 2**

*August*



**FINAL**

● **ENVIRONMENTAL STATEMENT**

*Development of Coal Resources in Central Utah*

DEPARTMENT OF THE INTERIOR  
FINAL  
ENVIRONMENTAL STATEMENT  
SITE SPECIFIC ANALYSIS - PART 2

DEVELOPMENT OF COAL RESOURCES  
IN  
CENTRAL UTAH

Prepared by the  
DEPARTMENT OF THE INTERIOR



*H. William Menard*  
H. William Menard, Director  
U.S. Geological Survey

VOLUME CONTENTS

Part 2

SITE SPECIFIC ANALYSIS

Mine name and proponent

- B Canyon mine;  
United States Steel Corporation
- Belina No. 2 and O'Connor mines;  
Valley Camp of Utah, Incorporated
- Deadman Canyon mine;  
AMCA Coal Leasing, Incorporated
- Fish Creek and Dugout Canyon mines;  
Pacific Gas & Electric Company
- McKinnon Nos. 1 and 2 mines;  
Routt County Development, Limited
- Mountain States No. 1 mine;  
Mountain States Resources Company
- Skumpah Canyon mine;  
Energy Reserves Group, Incorporated

S I T E S P E C I F I C A N A L Y S I S

Fish Creek and Dugout Canyon Mines

Lease Nos. U-0144820, U-07746, U-089096, U-092147, and

U-07064-U-027821

Proponent: Pacific Gas and Electric Company

CONTENTS

	Page
Chapter I. Description of proposed action-----	FD-I-1
A. Introduction-----	FD-I-1
B. Proposed action-----	FD-I-6
C. Environmental protection and reclamation-----	FD-I-14
D. Legally enforceable mitigating measures-----	FD-I-17
 Chapter II. Description of the existing environment-----	 FD-II-1
A. Natural environment-----	FD-II-1
1. Climate-----	FD-II-1
2. Land-----	FD-II-1
a. Land surface-----	FD-II-1
b. Geology-----	FD-II-1
c. Energy and mineral resources-----	FD-II-3
d. Soils-----	FD-II-3
3. Water-----	FD-II-4
a. Water supply-----	FD-II-4
1) Surface water-----	FD-II-4
2) Ground water-----	FD-II-5
4. Air-----	FD-II-5
5. Vegetation-----	FD-II-5
6. Wildlife and fisheries-----	FD-II-6
B. Cultural environment-----	FD-II-8
1. Lands-----	FD-II-8
2. Range and timber-----	FD-II-8
3. Socioeconomics-----	FD-II-9
4. Transportation and utilities-----	FD-II-9
5. Recreation-----	FD-II-9
6. Esthetics-----	FD-II-10
7. Archeologic and historic values-----	FD-II-11
C. Future environment-----	FD-II-11
 Chapter III. Environmental impacts-----	 FD-III-1
A. Natural environment-----	FD-III-1
1. Land-----	FD-III-1
a. Land surface-----	FD-III-1
b. Geology-----	FD-III-1
c. Energy and mineral resources-----	FD-III-1
d. Soils-----	FD-III-2
2. Water-----	FD-III-2
a. Water supply-----	FD-III-2
1) Surface water-----	FD-III-2
2) Ground water-----	FD-III-3
3. Air-----	FD-III-3
4. Vegetation-----	FD-III-3
5. Wildlife and fisheries-----	FD-III-3

	Page
Chapter III. Environmental impacts--Continued	
B. Cultural environment and land use-----	FD-III-5
1. Land use-----	FD-III-5
2. Range and timber-----	FD-III-6
3. Socioeconomics-----	FD-III-6
4. Transportation and utilities-----	FD-III-6
5. Recreation-----	FD-III-6
6. Esthetics-----	FD-III-7
7. Archeologic and historic values-----	FD-III-7
Chapter IV. Mitigating measures-----	FD-IV-1
Chapter V. Adverse effects that cannot be avoided-----	FD-V-1
Chapter VI. Short-term use versus long-term productivity-----	FD-VI-1
Chapter VII. Irreversible and irretrievable commitment of resources-----	FD-VII-1
Chapter VIII. Alternatives-----	FD-VIII-1
A. No action-----	FD-VIII-1
B. Defer Federal action-----	FD-VIII-1
C. Prevent development of the lease-----	FD-VIII-2
1. Reject the mining and reclamation plan-----	FD-VIII-2
2. Seek legislation to cancel the lease-----	FD-VIII-2
3. Exchange the existing lease-----	FD-VIII-3
4. Suspend operations-----	FD-VIII-4
5. Federal requisition of leased rights-----	FD-VIII-5
D. Restrict development on the lease-----	FD-VIII-5
E. Require modification of the mining plan-----	FD-VIII-6
1. Company-proposed alternatives-----	FD-VIII-6
a. Railroad routes-----	FD-VIII-6
b. Powerlines-----	FD-VIII-7
c. Slurry ponds-----	FD-VIII-7
Chapter IX. Consultation and coordination with others-----	FD-IX-1
A. Federal agencies-----	FD-IX-1
B. Utah State agencies-----	FD-IX-1
C. County and local government-----	FD-IX-1
D. Private individuals and organizations, industry and nonindustry-----	FD-IX-1
E. General consultation and coordination-----	FD-IX-1
Chapter X: References-----	FD-X-1

## ILLUSTRATIONS

	Page
FIGURE 1. Location of Pacific Gas and Electric Company's Sage Point-Dugout Canyon properties, Carbon County, Utah-----	FD-I-2
2. Map showing Sage Point and Dugout Canyon coal properties and proposed surface facilities, Carbon County, Utah-----	FD-I-3
3. Surface ownership within boundaries of the Sage Point-Dugout Canyon properties, Pacific Gas and Electric Company, Carbon County, Utah-----	FD-I-4
4. Photograph showing proposed portal area in Fish Creek, Carbon County, Utah-----	FD-I-8
5. Proposed layout of surface facilities at the Fish Creek mine site in sec. 21, T. 12 S., R. 13 E., showing final topography after site preparation-----	FD-I-9
6. Photograph showing proposed portal area in Dugout Canyon, Carbon County, Utah-----	FD-I-10
7. Proposed layout of surface facilities at the Dugout Canyon mine site in sec. 23, T. 13 S., R. 12 E., including topography-----	FD-I-11
8. Photograph showing northward view of the Fish Creek-Dugout Canyon central yard site-----	FD-I-12
9. Map showing proposed layout of the surface facilities at the central yard site for the Fish Creek and Dugout Canyon mines, Carbon County, Utah-----	FD-I-13
10. Generalized section of Upper Cretaceous rocks in the area of the Fish Creek and Dugout Canyon minesites (adapted from Clark, 1928, pl. 4)-----	FD-II-2
11. Map showing alternative railroad and powerline routes and coal slurry pond sites for development of the Sage Point and Dugout Canyon properties, Carbon County, Utah-----	FD-VIII-8

## TABLES

	Page
TABLE 1. Summary of mining and reclamation and ancillary facilities-----	FD-I-5
2. Highway traffic counts near the Fish Creek and Dugout Canyon mine areas-----	FD-II-10
3. Summary of alternative transportation and utility routes-----	FD-VIII-6
4. Summary of alternative waste disposal sites-----	FD-VIII-7

# FISH CREEK AND DUGOUT CANYON MINES

(PROPONENT: PACIFIC GAS AND ELECTRIC COMPANY)

## CHAPTER I

### DESCRIPTION OF PROPOSED ACTION

#### A. INTRODUCTION

Pacific Gas and Electric Company (P.G. & E.) and Kennecott Copper Corporation (KCC) own coal leases in the Sage Point and Dugout Canyon areas, respectively, of the Book Cliffs coal field (part 1, chapter 2), and propose to have Natural Gas Corporation of California (NGC), a P.G. & E. subsidiary, develop and operate an underground coal mine on each property. P.G. & E. has submitted plans for approval to mine 3.2 million tons per year (mty) from about 10,000 acres of Federal, State and private land (Federal lease Nos. U-0144820, U-07746, U-089096, U-092147, and U-07064-U-027821). The purpose of this statement is to analyze environmental impacts that could result from approval and implementation of the mining plan and associated ancilliary facilities for which right-of-way applications have been applied. The coal mined would supply needs for one of two proposed 800 MW coal-fired electric generating plants to be built in P.G. & E.'s service area of northern California by 1985. The coal would also supply KCC's metallurgical and power generation needs in Nevada and Utah.

The properties are about 15 miles east-northeast of Price, Utah in Carbon County (fig. 1). A gravel-surfaced haul road extends 9 miles northeast from Soldier Creek Road (formerly U-53) to the Dugout Canyon site where coal was mined from 1957-65 (fig. 2). The Fish Creek mine-site on the Sage Point property is 2 miles west of Dugout Canyon and is accessible by jeep road.

P.G. & E.'s coal leases include 7,468 acres, 5,852 on all or part of six Federal leases, 976 on three State mineral leases, and 640 on fee land (fig. 2). KCC's leases at Dugout Canyon adjoin the Sage Point property on the east and include 2,576 acres, including 2,416 on Federal leases, and 160 on fee land. Figure 3 shows surface ownership in the two property areas.

Mining and reclamation plans were submitted to the U.S. Geological Survey (USGS) on November 3, 1976, in accordance with Title 30 (Mineral Resources) CFR part 211 (Coal Mining Operating Regulations). Natural Gas Corporation of America, the designated operator, has applied to the Bureau of Land Management (BLM) for rights-of-way and special land-use permits for several purposes under a variety of Acts since superseded by Title 5 of the Federal Land Policy and Management Act of October 21, 1976 (90 Stat. 2776; 43 USC 1961) (table 1). The complete mining and reclamation plan (MRP) is on file and available for public review in the office of the Area Mining Supervisor, USGS, Salt Lake City, Utah.

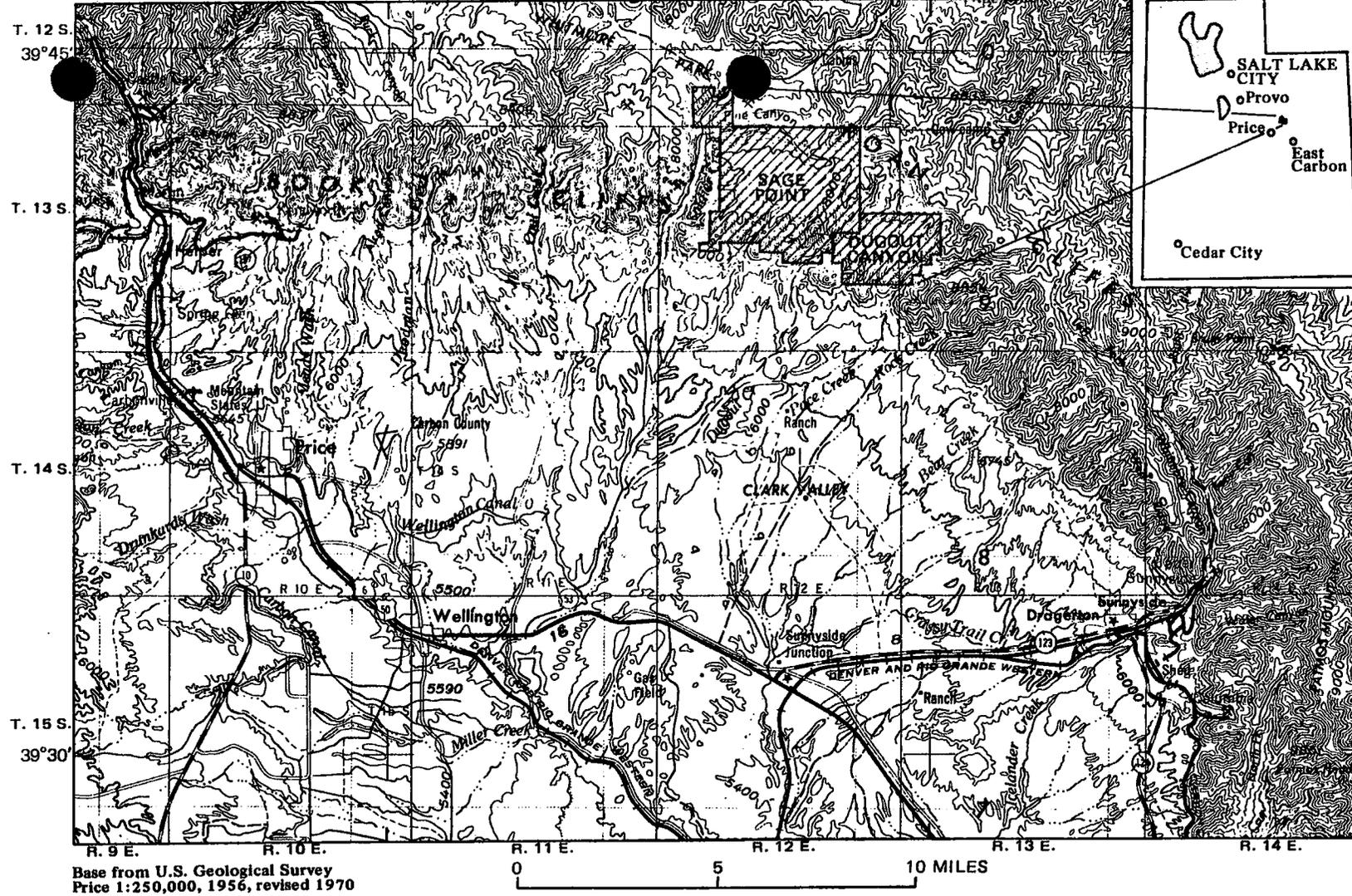


FIGURE 1.--Location of Pacific Gas and Electric's Sage Point-Dugout Canyon properties, Carbon County, Utah.

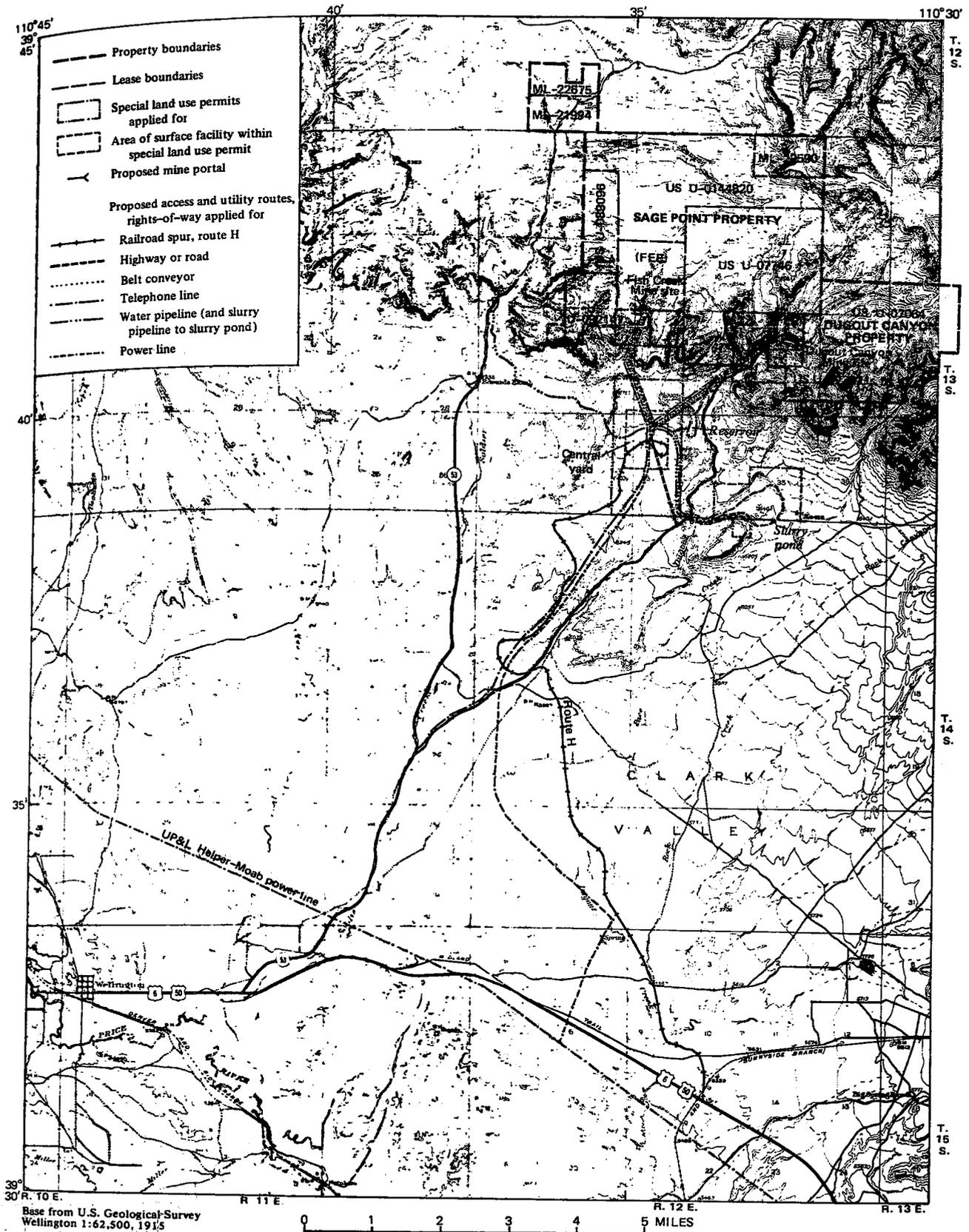


FIGURE 2.--Sage Point and Dugout Canyon coal properties and proposed surface facilities, Carbon County, Utah.

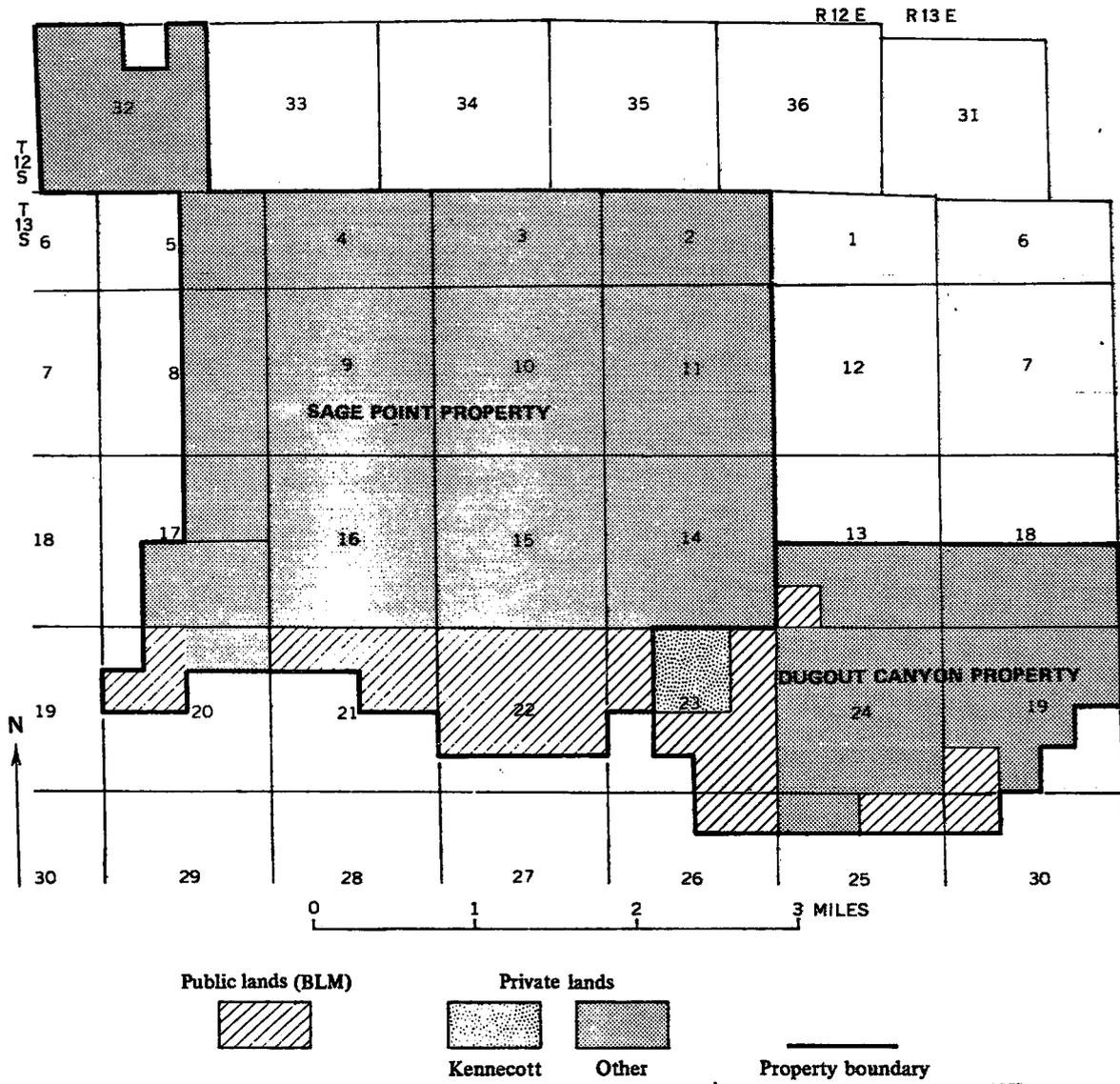


FIGURE 3.—Surface ownership within boundaries of the Sage Point-Dugout Canyon properties, Pacific Gas and Electric Company.

TABLE 1.--Summary of mining and reclamation plan and ancillary facilities

Mine plan area (acres):	Dugout Canyon	Fish Creek	Total		
	mine	mine	both mines		
Federal lease-----	2,416	5,852	8,268		
State lease-----		976	976		
Private land-----	160	640	800		
Total-----	2,576	7,468	10,044		
Product-----	Washed coal	Raw coal			
Market-----	Proposed P.G. & E. generating plant in northern California, and KCC power and metallurgical needs in Utah and Nevada.				
Estimated coal reserves (million tons):					
In place-----	80	142			
Recoverable-----	40	71			
Production rate-----	0.9 mty	2.3 mty			
Development schedule (years):					
Initiation to production-----	2	2			
Initiation to full production-----	8	8			
Estimated production life-----	40	40			
Surface requirements:					
	Federal land applications			Surface disturbance	
Facility	Number	Miles	Width	Acres	(acres)
Dugout Canyon mine plantsite--	U-35689	---	---	400	32
Fish Creek mine plantsite-----	U-35689	---	---	160	18
Central processing plantsite--	U-35689	---	---	1,280	360
Slurry pond site-----	U-35689	---	---	560	221
Overland conveyors-----	U-35687	4	50 ft	24	12
Haul roads-----	U-35688	5.4	60 ft	39	39
Railroad (route H)-----	U-35681	13.5	100 ft	163	163
Reservoir-----	U-35682	---	---	24	24
Waterlines-----	U-35683	8.4	25 ft	25	25
Tailings slurry line-----	U-35684	2.2	25 ft	7	7
Telephone line-----	U-35685	10.0	40 ft	48	13
Electric powerlines-----	U-35686	13.7	75 ft	125	18
Totals-----				2,855	932
Other requirements:					
Major resource:					
Water:					
For mining and related activity <sup>1</sup> -----				420	acre-feet per year
Community supply (offsite) <sup>2</sup> -----				1,400	acre-feet per year
Limestone <sup>3</sup> -----				16,000	tons per year
Personnel:					
Mine operation and processing plant-----		4950		5930	

<sup>1</sup>Includes about 175 acre-feet of water per year for washing coal.

<sup>2</sup>Based on projected population increases.

<sup>3</sup>Based on 10 pounds of limestone per ton of recovered coal.

<sup>4</sup>From the mining proposal "Schedule of Development".

<sup>5</sup>Based on 15 tons per man-shift including support personnel.

## B. PROPOSED ACTION

Coal production in Dugout Canyon is proposed from the previously mined Gilson and Rock Canyon beds in the Blackhawk Formation of Late Cretaceous age. A third bed, the Sunnyside, is also of minable thickness (4 feet or more) in the Sage Point property and would be mined concurrently with the Rock Canyon bed. The interval between the Gilson and Rock Canyon beds is 30 to 100 feet, and that between the Rock Canyon and Sunnyside beds 130 to 180 feet. The beds have been explored by core drilling and by measuring sections along outcrops.

Over the proposed mining area, the Sunnyside bed ranges from less than 4 to more than 12 feet in thickness, including partings and bone coal; the Rock Canyon bed from less than 4 to 10.5 feet; and the Gilson bed from less than 4 to more than 16 feet. The beds thin or thicken rather abruptly in some places. The three beds crop out in the Book Cliffs at altitudes of 7,200 to 7,800 feet and dip north-northeastward toward the Uinta basin uniformly at 6° to 7°. Overburden ranges from 0 to more than 3,000 feet, but is mostly less than 2,500 feet.

Analyses of coal (dry basis) in cores are reported by the proponent to average 13.8 percent ash, 35.9 percent volatile material, 47.8 percent fixed carbon, 0.6 percent sulfur, and 12,405 Btu's per pound. Estimated mineable coal reserves in the Sage Point property total 142 million tons. Incomplete drilling data on the Dugout Canyon property indicate 80 million tons in the Gilson and Rock Canyon beds. At expected full annual production of 3.2 million tons (lesser amounts during mine development) and estimated recovery of 50 percent, the total reserves of 222 million tons would last about 40 years (table 1). About 16,000 tons of limestone would be needed each year to allay mine dust.

The proposed Fish Creek mine would have a single-entry rock tunnel starting at or below the lowest minable bed (Gilson) and driven parallel to the dip on a 2 percent plus grade. The tunnel would intersect all three minable beds in 1,800 feet. This tunnel would provide access to the two upper beds, with track haulage for men and supplies and an overhead belt conveyor above a steel divider to carry coal out of the mine. Other entries would be driven from inside the mine to the outcrops for the ventilation system. Later mining of the Gilson bed would start from an adit on the coal outcrop about 700 feet southwest of the rock tunnel portal.

At the Dugout Canyon minesite, adits to the Gilson and Rock Canyon beds would be directly on the coal outcrops, avoiding the previously mined areas to the north and east. All portals on coal outcrops would have a minimum of four entries to provide for haulage way and ventilation. Belt conveyors would be used for moving coal and track haulage for men and supplies.

Coal from both mines would be moved by belt conveyors to a central yard (fig. 2) to be cleaned and loaded on unit trains for shipment to California, Nevada, and places in Utah.

The 6-year initial production schedule for the Fish Creek mine calls for phased development of the Sunnyside and Rock Canyon beds. Production would increase rapidly in the Sunnyside bed, with longwall mining being added in the fifth year. A total of nine continuous- and longwall-mining units would be operating by the end of the sixth year. Mining of the Rock Canyon seam would be at a relatively steady rate with two continuous mining units. At the Dugout Canyon mine, coal production from the Rock Canyon bed would increase steadily, with four continuous and longwall units in operation by the end of the fifth year. Development of the Gilson bed would not start until the fifth year.

The Fish Creek plantsite is in a narrow canyon, which would require extensive excavation along the sides to provide the required level area (figs. 4 and 5). Major excavation would be on the east side of the canyon. The course of Fish Creek would be shifted as much as 100 feet westward over a distance of about 600 feet. Much less preparation for the Dugout Canyon plantsite would be required, as the canyon is wider and the site has been used for previous mining (figs. 6 and 7). The central yard site, on essentially flat ground southwest of the Book Cliffs, would require some leveling where crossed by minor streams (figs. 8 and 9).

Present roads from US 6 east of Wellington to the mining area consist of the Soldier Creek County road (5 miles of bituminous surfaced road), 9 miles of improved graveled road to the old mines in Dugout Canyon, and 4 miles of unimproved dirt road to the Fish Creek minesite. The company plans to upgrade the 4 miles of unimproved dirt road and construct 1.4 miles of roads to service the slurry pond site and to service the conveyors to both the Dugout Canyon and Fish Creek plantsites. The proposed railroad spur, route H (fig. 2 and table 1), would extend from the Denver and Rio Grande Western Railroad line near Sunnyside Junction to the central yard. Alternate routes are discussed in chapter VIII.

Power would be obtained from Utah Power & Light Company's Helper-Moab 138 kV line. The proposed powerline would be near proposed railspur H to the central yard, with branching lines to the two mine plantsites (fig. 2). Telephone communication would be provided by a line from Soldier Creek road along the graveled access road to the central yard, with branching lines extending to the two plantsites (fig. 2).

Water requirements of 42 acre-feet per year of culinary water and 378 acre-feet per year of industrial water have been determined, but definite sources of supply have not been identified. Culinary water would be obtained from Price River Water Improvement District or from wells or springs. Possible sources of industrial water are from storage of runoff in Pine Canyon, Soldier Creek, and Dugout Creek, or from deep wells drilled to the Ferron Sandstone Member of the Mancos Shale. Proposed pipeline routes from Soldier and Dugout Creeks to the central yard are shown in figure 2. A system of water pipelines would interconnect the two plantsites and central yard to supply culinary and industry water. Water settlement and treatment plants, storage tanks,

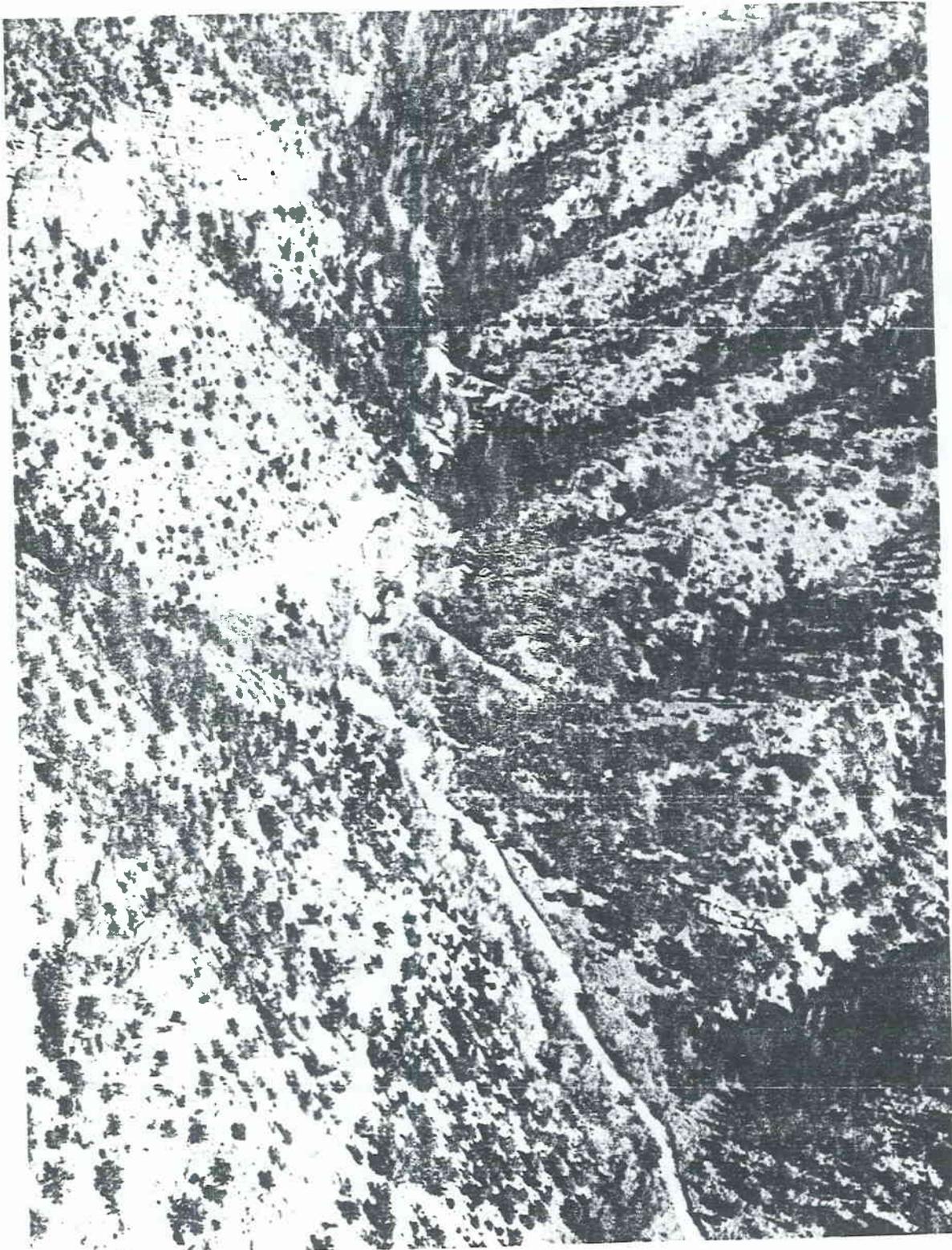


FIGURE 4.--Photograph showing proposed portal area in Fish Creek, Carbon County, Utah. The portal facilities would be in the center of the photograph and include the areas cleared of vegetation.

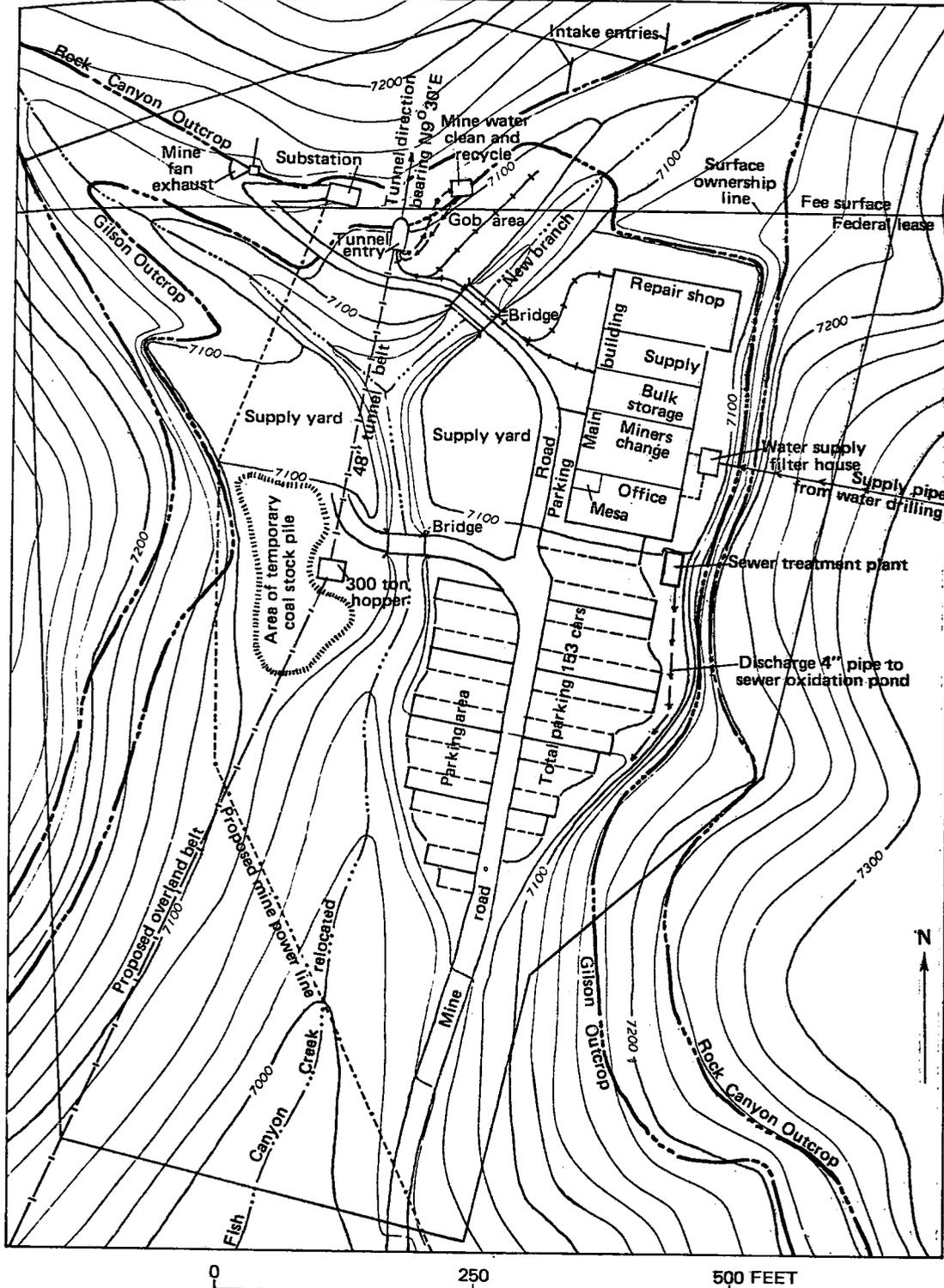


FIGURE 5.—Proposed layout of surface facilities at the Fish Creek minesite in sec. 21, T. 12 S., R. 13 E., showing final topography after site preparation.

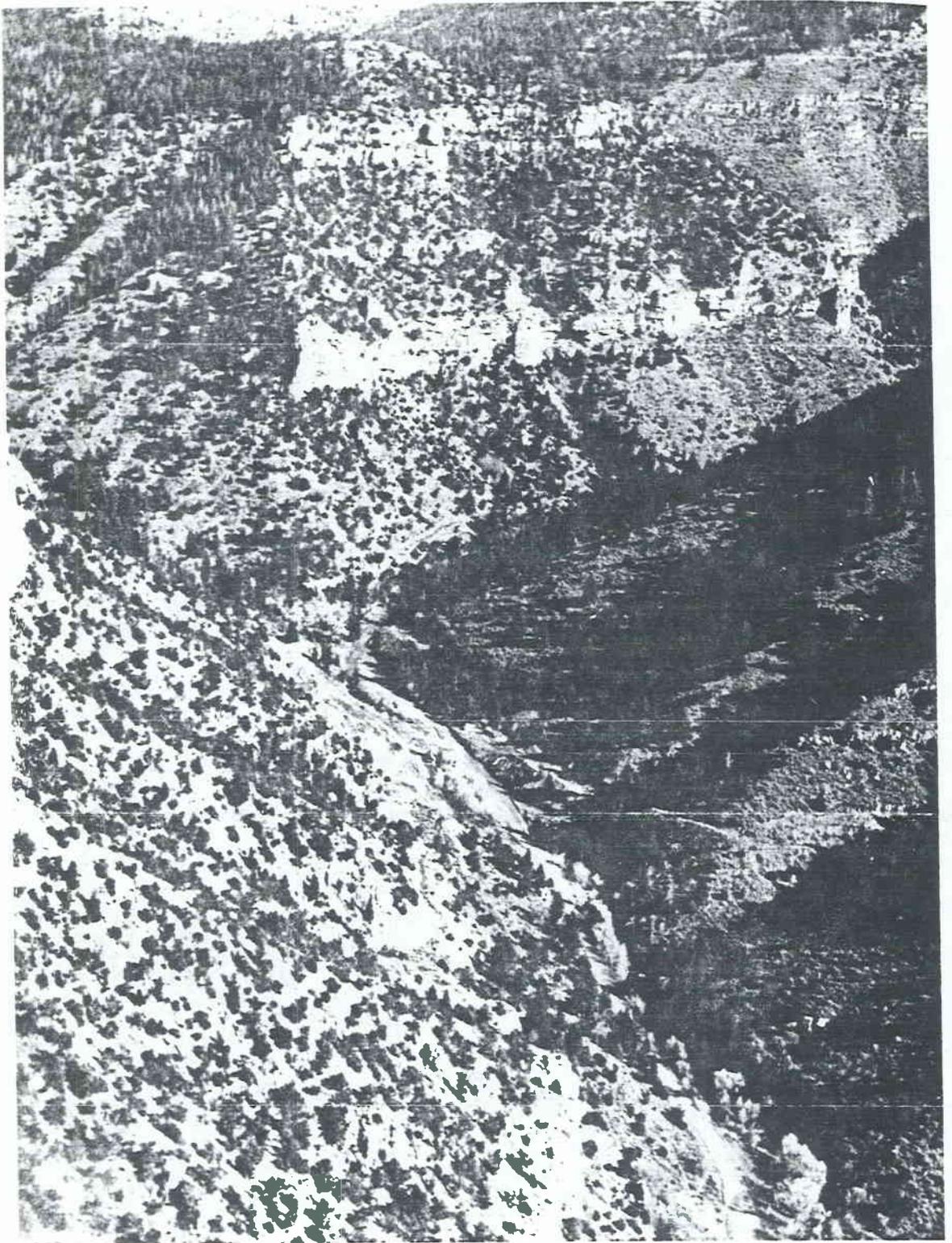


FIGURE 6.--Photograph showing proposed portal area in Dugout Canyon, Carbon County, Utah. The portal facilities would be below the drainage junction in the middle of the photograph and would extend downcanyon to include all of the old mine surface facility area. Note the two old buildings near the road.

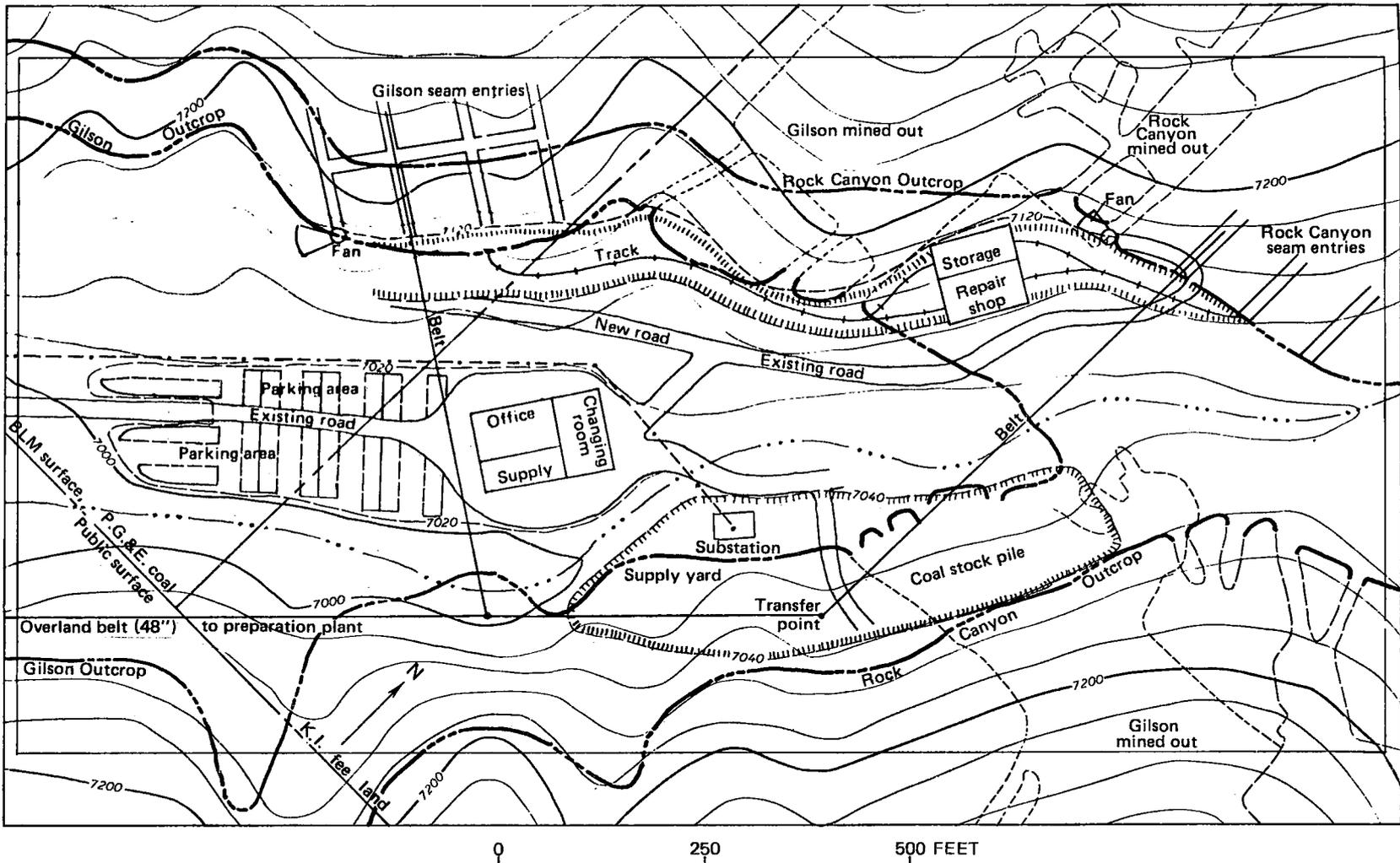


FIGURE 7.--Proposed layout of surface facilities at the Dugout Canyon minesite in sec. 23, T. 13 S., R. 12 E., including topography.

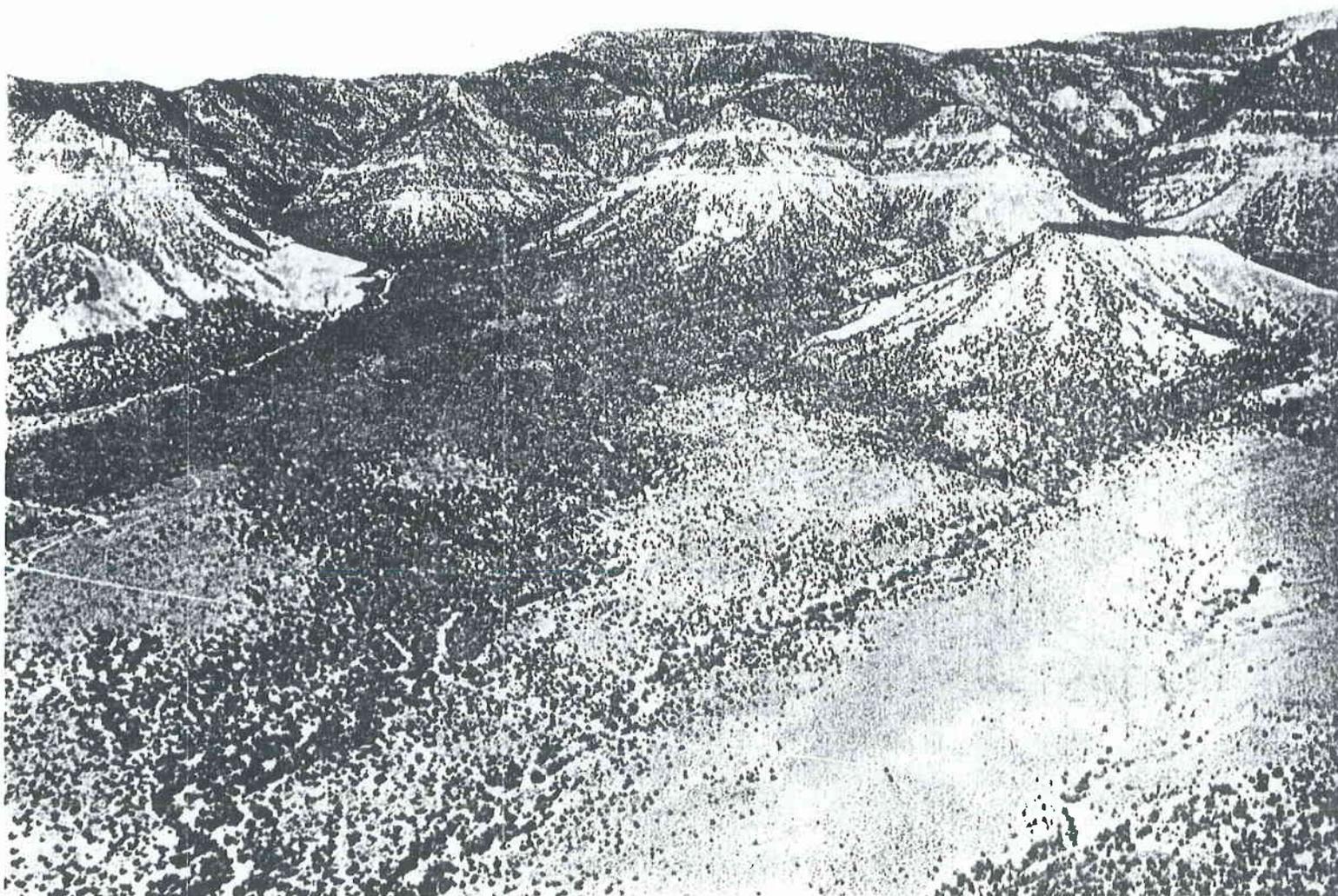


FIGURE 8.--Photograph showing northward view of the Fish Creek-Dugout Canyon central yardsite. The site would be located just left and above the center of the photograph in the dense woodland. The railroad would enter the picture above the road junction at the left edge of the photograph and loop around the yardsite.

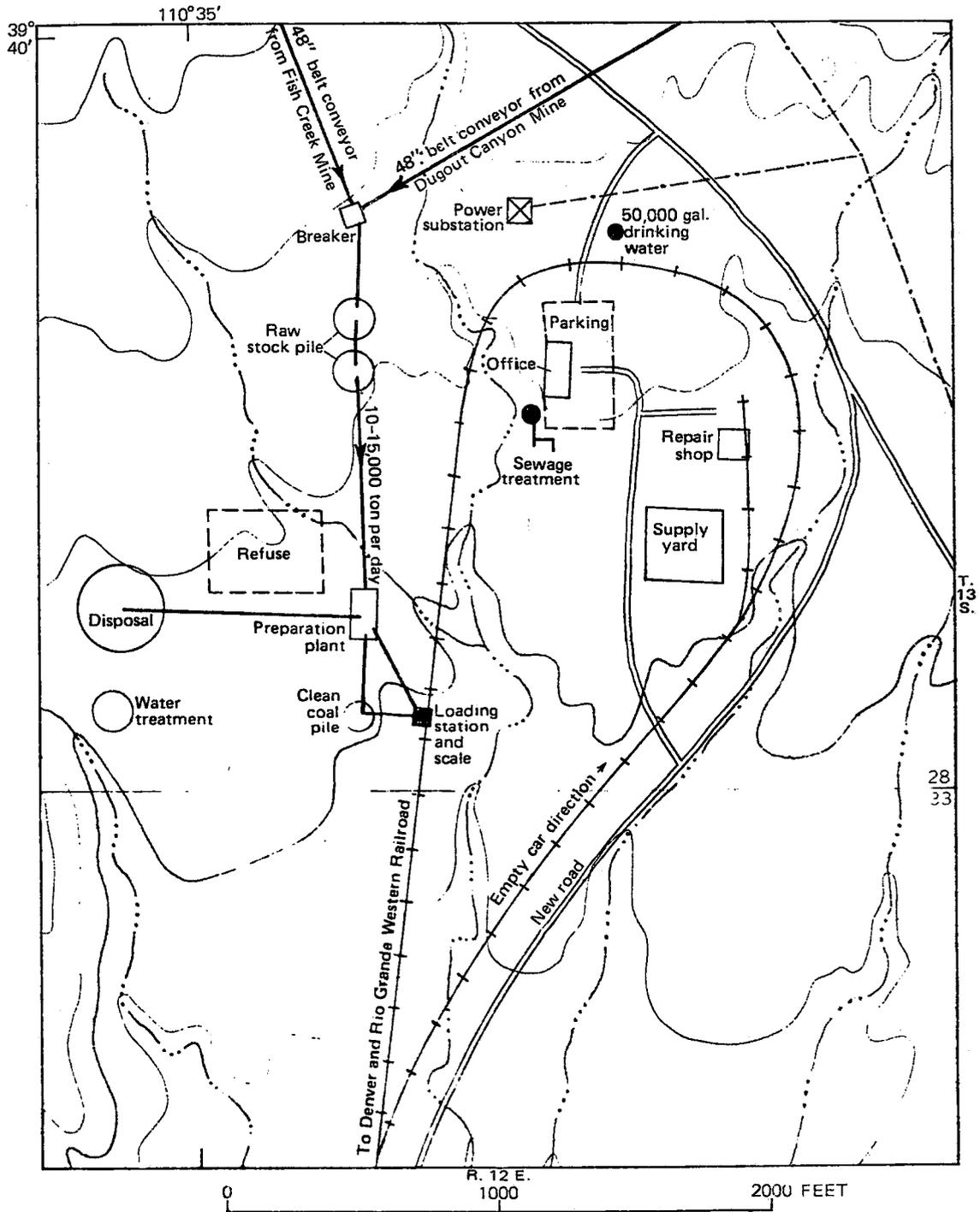


FIGURE 9.--Proposed layout of the surface facilities at the central yardsite for the Fish Creek and Dugout Canyon mines, Carbon County, Utah.

and reservoirs would also be part of the system. Water in the mines would probably not be available or in sufficient supply until mining has continued for 5 years or more. A hydrologic study is now being made. Needs for industrial water at the central yard would be low at first because coal preparation would not include washing until the fifth or sixth year of mining, when shipments of coal to California are expected to begin.

The company's proposed schedule of development shows construction and mine development starting in the third year and continuing for 6 years. Employment (at year end) during this time would increase from 203 to 950, and total coal production from 115,000 to 3.2 million tons annually (table 1). Based on current and projected Utah production rates, approximately 930 employees would be needed to produce 3.2 mty. This calculation is based on a production rate of 15 tons per manshift, including support personnel. All socioeconomic observations are based on these estimates.

### C. ENVIRONMENTAL PROTECTION AND RECLAMATION

The mine plans contain the following statements with regard to protection of the environment during construction and mining:

"There is a risk of subsidence when mining coal under the sharp and steep scarp of the Book Cliffs \* \* \*. To alleviate or avoid this happening at Sage Point-Dugout Canyon, a 50 percent extraction rate of recoverable reserves will be enforced near the cliffs.

"Sage Point-Dugout Canyon Mine plans call for the columnization of workings on the three seams so far as is possible.

"A possible hazard is that of flooding during and after a major storm. This hazard is not considered severe as the maximum recorded rainfall at Price is 1.24 inches in 24 hours. The main slurry storage pond will be designed to contain 10,000,000 cubic yards.

"In the course of underground mining, dusts are generated by continuous mining and longwall and other coal handling equipment. Most dusts are wetted and thereby allayed.

"Central yard air pollution can be expected from the coal washery. Coal dusts are generated by coal breakers. As a part of coal washing the first action is to wet the incoming raw coal. Dust collectors are used throughout the plant to capture most dust.

"The coal washing plant with its coal breakers, vibrating screens, coal transfer chutes, compressors and vacuum pumps all produce excessive noise that can be reduced. Sound attenuators and silencers will be used. Noise control in the future will conform with the rules and regulations covering noise abatement of both State and Federal agencies.

"Housing is not now available for as many as 900 employees. Once again, depending on circumstances then in effect, housing will be an important factor in project planning.

"Applicant plans to cooperate in community planning.

"NGC intends to participate, indirectly or directly, in providing sufficient and adequate housing.

"Water quality will not be affected as there will be a closed hydraulic system with no discharge to natural drainage.

"The project is designed to maximize recovery and efficiency and will be engineered and operated to maximize safety, dependability, and long-term performance.

"The overland belts will be 48 inches wide equipped with a protective cover.

"Facilities for the collection, treatment, and disposal of human wastes meeting all State, Federal, and local codes and regulations will be provided. Effluent water will not be discharged into the natural stream drainages. Portable toilets are required for each underground section and collection of wastes must be a regular routine. Water treatment ponds will be fenced, either individually or through fencing of the entire operations area, to reduce the hazard to public, livestock, and wildlife safety.

"In a similar fashion the wastes from mechanical maintenance (rags, oil, and grease) will be collected and disposed of (buried) in a way that will not pollute or contaminate either the air or the water quality.

"Eventually, when the mine makes water, pumps must be provided to move this water to treatment so that the water may be re-used.

"Water re-use and conservation will be the watchwords of mine water policy. There is not enough water to allow waste.

"Water losses will be the result of evaporation and seepage. Water, whether potable or industrial, will not be discharged to natural drainage. Refuse-slurry dams will be sited to avoid natural drainage."

The mine plan contains the following statements with regard to reclamation:

"The Sage Point-Dugout Canyon Project calls for two periods of reclamation. The first is after the completion of construction (five years), estimated to take place during 1984. The second, and by far the most important, is exhaustion of coal reserves, estimated during the decade of the 2020's.

"After completion of construction at each site, the area would be policed to remove all debris. Surfaces of lay-down areas not to be used permanently would be graded to minimize erosion and to conform to natural contours. Revegetation would be attempted by mulching, if required, and by reseeding with species suitable for the area. All construction equipment not adaptable to the coal mining operation would be dismantled and removed from the project site at the end of the construction phase.

"Within 2 years after the exhaustion of mineable coal or the cessation of coal mining, whichever occurs first, all the area will be reclaimed. Support facilities such as rail spur; buildings; structures and fences; electric, communications and hydraulic lines; and all other equipment will be modified or abandoned in accord with legislation and regulations in effect at that time. Roads and rail-spur foundations will be graded, bridges removed and construction sites graded as required. Refuse dams and reservoirs will be graded and covered with soil. Dams will have been built to maximum slopes of 2:1 and hence should be stable.

"Reclamation of the two mine surface areas will require special attention. Because of large rock excavations required to provide sufficient space (horizontal to vertical ratio of 2:1), these areas will be graded to conform to the natural topography as closely as possible. Drainages will be restored. Mine portals and all other openings to the surface will be permanently sealed. Surface drill holes and water wells, except those for which further use has been arranged, will be plugged.

"Re-vegetation will commence as soon as practical. Mulchers and fertilizer along with re-seeding of native flora will take place.

"To predict what might happen over a span of forty years is risky. In the event that circumstances might result in closing one or both of the mines and substituting other entries from the surface, say a new portal or even a shaft, reclamation of the abandoned facility will commence promptly.

"NGC intends to conform insofar as possible to Federal and State rules and regulations in effect at the time of reclamation."

The mine plan refers to monitoring in the following statements:

"Beginning in June 1976, a water quantity monitoring program was started \* \* \*. From the first month's measurements 14 locations were chosen as sites of representative flows \* \* \*. These sites will be measured monthly for at least one year. Of the 14, permanent measuring devices have been installed at 4 locations \* \* \*.

"Water quality sampling began in late August 1976 \* \* \*. Plans are to continue to sample and analyze every six months for the next two years. Depending on the results of the present sampling program, the program will be expanded or reduced. Plans have also been made to turn three of the 1976-77 proposed drill holes into water monitoring wells after the holes have been completed."

#### D. LEGALLY ENFORCEABLE MITIGATING MEASURES

Planning and environmental controls that govern and importantly relate to the proposed action are in chapter III, part 1. Total mining operations will be conducted in accordance with Federal and State laws and regulations, and State approval of the proposed actions with regard to State environmental laws will be required before approval of the mining plan.

The mining and reclamation plans included in this statement were submitted for review prior to the promulgation of initial regulations (30 CFR 700) required under Section 502 and 523 of the Surface Mining Control and Reclamation Act (SMCRA) of 1977 (P.L. 95-87) and have not been officially reviewed for compliance therewith. Therefore, the mining and reclamation plans may not reflect the requirements of the initial regulations. However, this analysis is based on the applicant adhering to applicable regulations. The operator has been requested to revise the mining and reclamation plans in accordance with the applicable initial regulations. As soon as the mining and reclamation plans are revised they are to be submitted to the Office of Surface Mining Reclamation and Enforcement (OSM) and the State regulatory authority to determine compliance with the requirements of State laws and of Federal regulations 30 CFR 211 and 30 CFR 700. The mining and reclamation plans cannot be approved until they conform to all applicable requirements.

The revised Utah State Antiquities Act (1977) provides for the preservation and (or) protection of paleontological values on State land. Discovery of such values on Federal land will be brought to the attention of the appropriate regulatory authority.

Mining as many as three coal beds increases dangers from subsidence. The mine company will monitor subsidence and where required, will fence and post areas potentially dangerous to humans and livestock. Fences will be constructed in accordance with surface regulatory agency requirements to allow proper wildlife movement. Areas disturbed during construction but not used will be revegetated as soon as possible to minimize erosion. If water is available, supplemental irrigation will assure establishment of vegetation where natural soil moisture is normally inadequate.

No wastes shall be placed where they will pollute any waters of the State. Substandard waste water shall be contained and treated to meet current water quality standards required by the State of Utah

(Title 73-14-1, et al.) or EPA, whichever is applicable, before being discharged or allowed to enter any waters of the State. If the flow or yield of any springs, streams, or wells from which water has been appropriated or which are deemed significant to the human environment, is reduced by mining, the company shall replace the water in kind or make restitution as required by the State of Utah (Title 73-3-23) or the Office of Surface Mining Reclamation and Enforcement, whichever is applicable. In order to have the information needed to determine the effect of mining on water, the company shall be responsible for inventorying said water resources before mining and for monitoring the flow of springs and streams, the water level in wells, and the chemical quality of these waters during mining.

Sawtimber, fenceposts, and firewood will be salvaged during clearing. Reclamation to restore vegetation to 90 percent of original productivity will be required. The various rights-of-way will not be fenced initially. If traffic becomes significant in livestock management, however, rights-of-way will be fenced. Any fences will allow deer passage. Consideration will be given to providing culverts for livestock to pass under heavily-traveled roads, railroads, etc. Prior to any land disturbing activities a survey will be made for threatened or endangered plant and animal species, especially the black-footed ferret. Any listed species found will be protected. (See part 1, chapter III, Endangered Species.) Consultation with the U.S. Fish and Wildlife Service may be required if a black-footed ferret is located.

No mining or rights-of-way will be approved until the surface management agency has coordinated professional cultural resource (cultural resources include archeological, architectural, and historical remains) surveys with the Utah State Historic Preservation Officer and mitigation may be necessary if surface evidence indicates further evaluation is necessary. In the event of discoveries of buried cultural resources as the result of exploration or mining activities the operator will notify the appropriate regulatory authority and suspend operations.

The Fish Creek-Dugout Canyon mine proponents and the appropriate regulatory authority will comply with the basic 1906 Federal Antiquities Act (P.L. 59-209; 34 Stat. 225), Sec. 106 of the National Historic Preservation Act of 1966 (P.L. 89-665, 80 Stat. 915, 16 USC Sec. 470f, as amended, 90 Stat. 1320), the Historical and Archeological Data Preservation Act of 1974 (P.L. 93-291), and the Advisory Counsel's "Procedures for the Protection of Historic and Cultural Properties: (36 CFR Part 800), prior to approval of any undertaking which will affect cultural properties included in or eligible for inclusion in the National Register of Historic Places.

The BLM, Utah State Director, and the Utah State Historic Preservation Officer have entered into a memorandum of understanding which sets forth measures the Bureau would undertake in regard to the protection of cultural resources on public lands. The principal point in the agreement is that

the project proponents will be required to have an intensive survey made for all areas that will be disturbed. If any sites are found to be of National Register significance, the project would either have to be altered so as to avoid the site(s) or provide for the preservation of data from the site(s). A cooperative agreement having the same effect exists between the USGS and BLM for "Protection of Cultural Resources related to Onshore Mineral Lease Options exclusive of Oil, Gas, Geothermal, and Oil Shale" leases.

An EPA review is required to determine the Best Available Control Technology (BACT) where potential fugitive dust emissions are equal to or greater than 250 tons per year. Each mine operator will have to employ the Best Management Practices for fugitive dust regardless of predicted concentrations during operation. Thus, each mining plan and the Department's approval thereof shall use an appropriate combination of fugitive dust controls, see EPA, 1978, and at a minimum the following:

1. Pavement or equivalent stabilization of all haul roads used or in place for more than one year. Major access routes and coal haulage routes are considered haul roads.
2. Treatment with semi-permanent dust suppressant of all haul roads used or in place for less than one year or for more than two months.
3. Watering of all other roads in advance of and during use whenever sufficient unstabilized material is present to cause excessive fugitive dust.
4. Reduction of fugitive dust to all coal dumps, truck to crusher locations through use of negative pressure bag house or equivalent methods. Inclusion of conveyor and transfer point covering and spraying and the use of coal loadout silos.

State law 27-12-146 requiring trucks to be constructed, loaded, or their loads so protected that material will not sift, fall, or otherwise leave the vehicle on or near public highways will be followed.

## CHAPTER II

### DESCRIPTION OF THE EXISTING ENVIRONMENT

#### A. NATURAL ENVIRONMENT

##### 1. Climate

The general climate is described in part 1, chapter II. Onsite temperatures are likely to be 6° to 10°F cooler than at Price, 15 miles southwest and 2,000 feet lower. Average monthly temperatures at Price range from 25°F in January to 70°-75°F in July and August. Extreme temperatures of record are -31° and 108°F. Mean annual precipitation at the proposed minesites is about 12 inches, 6 inches between May and September. Watersheds above the minesites may receive up to 25 inches of precipitation annually. The 100-year, 6-hour precipitation is 2 inches. Snow generally falls from January through March, and temperatures occasionally reach -30°F. The average frostfree period is about 140 days and extends from mid-May to mid-September. Potential evaporation averages 30 to 40 inches per year.

##### 2. Land

###### a. Land surface

The southwest-facing Book Cliffs are deeply dissected by box canyons of intermittent streams that also cut the pediments that slope gently away from the foot of the cliffs toward the Price River (figs. 1 and 2). Altitudes range from 7,100 to 7,200 feet at the portal sites to more than 8,800 feet in the northeast corner of the lease area, 2.5 to 3.5 miles to the northeast. Large boulders of sandstone eroded from the cliffs are strewn over the sides of the canyons and out onto the pediments beyond the canyon mouths.

Except for the plantsites near the mouths of Fish Creek and Dugout Canyon, surface facilities will be located on the boulder-strewn pediment southwest of the cliff front (fig. 2). The road and proposed railroad access routes are mostly parallel to the southwest-draining intermittent streams that have cut shallow courses into the pediment. The proposed railroad route (H) climbs from about 5,500 feet near its origin at Sunny-side Junction to 6,400 feet at the central yard site (fig. 2).

###### b. Geology

Coal-bearing rocks exposed at the minesites are of the Upper Cretaceous Mesaverde Group (fig. 10). The Castlegate Sandstone and other thick sandstone beds are cliff-forming and account for the rugged topography. The North Horn, Flagstaff, and Colton Formations are present in the northeastern part of the lease area. The Mancos Shale that underlies the Mesaverde Group is at the base of the Book Cliffs but is mostly covered by debris from the steep slopes above. The regional dip is away from the cliff face toward the Uinta basin at a uniform rate of 6° to 7°.

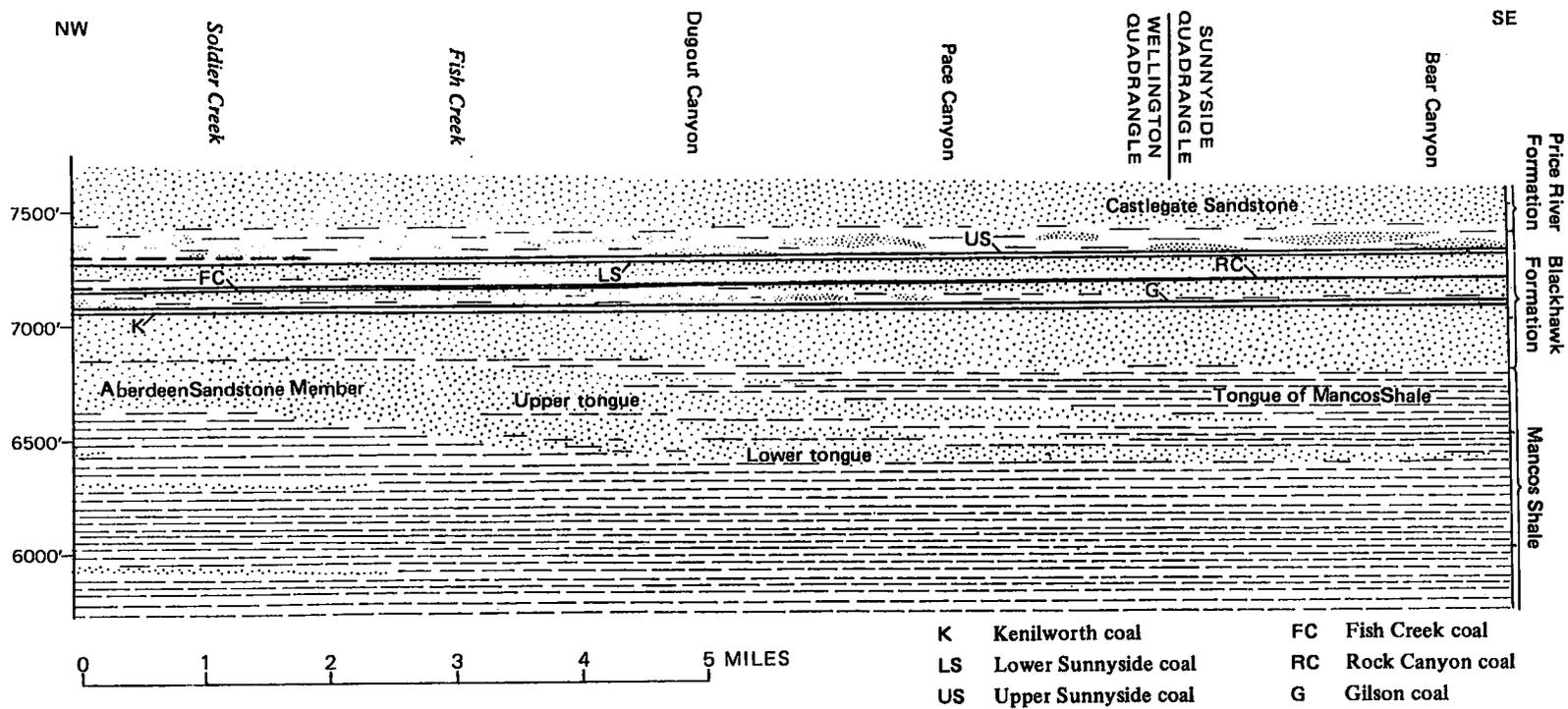


FIGURE 10.--Generalized section of Upper Cretaceous rocks in the area of the Fish Creek and Dugout Canyon minesites. (Adapted from Clark, 1928, pl.4.)

The project area has not been surveyed for paleontological resources. Vertebrate and plant fossil-bearing areas are discussed in part 1, chapter II. Because of the lack of data and accepted evaluatory criteria for determination of significance, no meaningful assessment can be made as to the importance of these paleontological resources to science, education, or other values, hence to the significance of potential impacts on the fossil record.

The mining plan states that the area of calculated reserves is not faulted. However, Doelling (1972, p. 396) shows two northwest-trending faults that extend into the extreme northeast corner of the Sage Point property (sec. 2, T. 13 S., R. 12 E.). These faults, and other fractures measured in various parts of the section in different parts of the property, are approximately parallel to the regional strike of beds. They are probably related to slumping of large blocks of rock from cliff faces as the underlying soft Mancos Shale is eroded. Cores from a drilling program in 1975 show numerous slickensides and fractures that may be caused by rock movements at depth. None of the fracturing or faulting indicates large rock displacements that would create major problems in mining.

#### c. Energy and mineral resources

Coal, the major energy resource in the lease area, is discussed in chapter I-B. While none is produced at present on the Sage Point and Dugout Canyon properties, coal was mined from the Rock Canyon and Gilson beds at the Knight-Ideal mine in Dugout Canyon from 1940-65, mostly within the fee area of Kennecott Copper (fig. 3). During that time 1.3 million tons was produced. Kennecott Copper Corporation bought the mine in 1965, but later closed the mine and bought coal elsewhere.

No oil or gas tests have been drilled on the properties, but the rocks above and below the coal beds have produced oil and gas elsewhere in eastern Utah. Unsuccessful wells have been drilled near the properties to the north and south to test sandstone tongues in the Mancos Shale.

#### d. Soils

The minesites in Dugout Canyon and Fish Creek would be located near the bottoms of narrow canyons in the Book Cliffs, where soils are formed mainly from sandstone colluvium and bedrock. These soils are very cobbly to stony, medium textured, and neutral to moderately alkaline. Soil depths vary considerably, but are commonly 1 to 6 feet. They are well drained, runoff is rapid, and expected sediment yield is 2.0 to 2.5 cubic yards per acre per year if exposed (Pacific Southwest Inter-Agency Committee, 1968). Because of climatic and soil conditions, 20 to 50 percent of annual revegetation attempts are expected to be successful (based on Hagihara and others, 1972).

Soils at the proposed central yard site and about half of the railroad route are composed of gravelly to cobbly alluvium over shale. These are soils of the pediment slopes that support a pinyon-juniper vegetation type. They are well drained, medium textured, and calcareous. Sediment yield potential would be 1.6 to 1.8 cubic yards per acre per year if exposed. Because of climates and soil conditions, 50 to 70 percent of annual revegetation attempts are expected to be successful.

Soils on steep, southerly slopes are typically thin and rocky, rock cliffs being common. On protected aspects, soils are more continuous and have moderately thick, dark colored surface layers. They are formed primarily from sandstone, have medium textures, and are cobbly. The slopes are stable to moderately stable, and the natural estimated sediment yield is 0.5 to 2.0 cubic yards per acre per year on exposed surfaces. On the plateau (the dip slope of the Book Cliffs) soils are moderately deep and are dark. Textures are loam to clay loam. These soils have formed from limestone and sandstone and are neutral to moderately alkaline. The natural sediment yield is estimated at 0.3 to 1.0 cubic yards per acre per year, which is moderately low.

3. Water

a. Water supply

Seeps, springs, and streams supply water for livestock and wildlife, and water from Soldier and Dugout Creeks is diverted below the Book Cliffs for irrigation and livestock.

1) Surface water

The lease area is in the Price River basin and is drained mainly by three perennial streams--Dugout, Pine, and Soldier Creeks--and by several intermittent streams, of which Fish Creek is the largest (fig. 2). Numerous springs contribute small amounts of flow for short distances in some of the intermittent streams. Drainage areas total 27 square miles--15 square miles of lease area and 12 square miles upstream--and average annual runoff is estimated from USGS gaging-station records and channel geometry (K. M. Waddell, Hydrologist, USGS, written communication) as follows:

	<u>Acre-feet</u>
Dugout Creek-----	1,100
Pine Creek-----	900
Soldier Creek above Pine Creek-----	3,000
Fish Creek-----	200
Other drainages-----	300
 Total-----	 5,500

## 2) Ground water

The upper water-saturated sandstone beds are discontinuous and partly void of water near cliff faces. Ground water may be perched, or impeded from deeper infiltration, by one or more layers of rock having relatively low permeability. Permeable strata in most of the formations above the Mancos Shale, including the North Horn Formation (possibly the most permeable unit in the area) and the coal-bearing Blackhawk Formation, may be expected to yield water. Several deeper formations, including the Emery and Ferron Sandstone Members of the Mancos Shale also may be expected to yield water. Little or no water is present near outcrops along the Book Cliffs. Springs may discharge along outcrops of sandstone overlying less permeable strata and from fracture zones. Ground water is derived by recharge of direct precipitation which infiltrates downward. Although the amount of water moving downward through a unit area is small (probably much less than 5 percent of annual precipitation), the total area is large and the total downward moving water is significant--as much as 35 acre-feet per year per square mile.

## 4. Air

Air quality has not been monitored near this site. An annual average background level of total suspended particulates (TSP) for rural locations in central and southern Utah of 20 micrograms per cubic meter ( $\mu\text{g}/\text{m}^3$ ) has been estimated (AeroVironment, 1977). The short-term (24 hour) TSP standard can be exceeded in many rural Utah areas as a result of wind blown dust. The background visual range is estimated to be 90 miles (145 km) and was based on the background TSP estimate.

Measurements of atmospheric visibility (visual range or discoloration) are extremely limited in the study area. Values of visual distance derived from light-scattering measurements from an integrating nephelometer averaged 67 miles for the period September 1970 to March 1971. Average visual range calculated from particle size distribution at Bear Creek and Huntington Canyons (fig. II-11) in 1974 was approximately 45 miles. Analysis of photographs taken at Clawson, Utah (fig. II-11) from January to June 1974 indicated 50 mile visibility 49 percent of the time. Visibility was reduced below 5 miles only 12 percent of the time. Visibility measurements at Cedar Mountain, east of Castle Dale (fig. II-11) averaged 94 miles in November-December 1976 and 54 miles in April 1977 (Pueschel and others, 1978).

## 5. Vegetation

The leases and surface-facility areas are covered by the Conifer-Aspen, Aspen, Pinyon-Juniper Woodland, Ponderosa Pine, Mountain Brush, Sagebrush-Grass, Streamside and Desert Shrub vegetative types. Most of the surface facility areas have either Sagebrush-Grass or Pinyon-Juniper Woodland cover; whereas, the upper areas have a mixture of types. The portal sites also have Streamside vegetation. Example species are cottonwood,

Douglas fir, Utah juniper, pinyon pine, big sagebrush, rabbitbrush, Gambel oak, maple, mahonia, elderberry, chokecherry, snowberry, serviceberry, Indian ricegrass, and wheatgrasses. These types are described in more detail, including species lists in the Task Force files. No threatened or endangered plant species have been identified in the lease area (Welsh, 1977).

## 6. Wildlife and Fisheries

A large variety of wildlife lives in the proposed mine development area. Vertebrates number nearly 360 varieties (Dalton and others, 1977). Better known species include mule deer, elk, mountain lions, (cougars) black bears, coyotes, red, gray and kit foxes, bobcats, raptors, chukar partridges, blue and ruffed grouse, mourning doves, and rabbits. Several varieties of lizards, snakes, and other reptiles are in the area, but no gamefish.

The proposed mines would be in the southern part of Utah's 1,169,000-acre deer herd Unit 27B (Range Creek) (part 1, chapter II). The Range Creek deer unit has 573,824 acres of winter range in normal winters and as little as 371,776 acres in severe winters (Utah Department of Fish and Game, 1967). Winter range is the limiting factor on this deer population. The Utah Division of Wildlife Resources has estimated that the available vegetation could winter 29,885 herd of deer on Unit 27B (written commun., Wilson, 1977). The mine portals and all the other facilities would be constructed in winter habitat. Winter deer habitat in the mines vicinity of unit 27B is pinyon-juniper-mountain brush-grass and pinyon-juniper-grass. Pinyon-juniper-grass habitat has a low potential for supporting deer; unit 27B has 11,392 acres available in severe winters, which could support 146 head of deer. Pinyon-juniper-mountain brush-grass furnishes major deer winter range and unit 27B has 195,584 acres in normal winters, but only 157,760 acres in severe winters. The potential deer numbers each vegetative association could support if populated at the optimum levels is: pinyon-juniper-grass, 146, and pinyon-juniper-mountain brush-grass, 10,893 (written commun., Wilson, UDWR, 1977).

Elk were transplanted to the Book Cliffs by the Utah Division of Wildlife Resources. One hundred and nine elk from the Horn Mountains were released February 12, 1976 in the Book Cliffs and early reports state that the transplants have dispersed and are reproducing. The proposed mine portals and plantsites are within the general range of these elk.

Mountain lions are in the vicinity. These extremely sensitive and usually solitary animals have home areas closely associated with the seasonal distribution of deer, which serve as their primary food source. Seidensticker and others (1973) found that yearly home areas of individual animals ranged from 67 to 175 square miles. Winter-spring home areas ranged from 12 to 38 square miles in 1971-72 and from 24 to 94 square miles in 1970-71. Summer-fall home areas ranged from 41 to 113 square miles in 1970-71. No population estimates are available for mountain lions;

however, unit 27B ranked first in the number of mountain lions harvested during the 6 years from July 1, 1971, through June 1977. Thirty-seven mountain lions, making up 5.1 percent of the entire State harvest, were taken in that time (Fair, 1977).

Black bears are in the Book Cliffs area, including the Dugout Canyon and Fish Creek vicinity. Based on Utah harvest figures, unit 27B, which includes these sites, ranked second highest in the numbers of bears taken in the State during 1967-76. Black bears essentially are solitary animals, regardless of population (Seton, 1909) and avoid human beings in their natural habitat. Seasonal movements generally are dictated by food availability (Skinner, 1925). Studies reported by Bray and Barnes (1967) indicate black bear males may have home ranges up to 700 square miles. Others found home areas as small as 32 square miles for females.

Cottontail rabbits, black-tailed and white-tailed jackrabbits, white-tailed prairie dogs, and several squirrels, chipmunks, and mice species are in the area. Most of these, except the white-tailed prairie dog, range throughout the area. A predatory-prey association exists between most of these species and predatory badgers, skunks, bobcats, coyotes, foxes, raptors, and possibly black-footed ferrets. Most predatory animals will readily scavenge given the opportunity.

The southern part of the area has been listed as potential black-footed ferret range (Scott and others, 1977). The potential range lies southward from the southernmost tier of sections (31 through 36) in both T. 13 S., R. 11 E. and T. 13 S., R. 13 E. This determination aside from the fact that the area is within the ferret's historical range, was based on (1) seven ferret sightings reported by reliable observers at various locations from north of Price through Woodside to near Green River, Utah, within the past 11 years (Hinckley, 1970); (2) suspected black-footed ferret trenches and plugged holes in the general area of reported sightings (Hinckley, 1970); and (3) the presence of white-tailed prairie dogs, their principal food source. To date none have been identified in the immediate area. The black-footed ferret is listed as endangered under P.L. 93-205, Endangered Species Act of 1973.

Raptors use the entire vicinity year-round, nesting on the cliffs and ledges or in the trees. The pediment sloping away from the Book Cliffs provides the raptors with hunting fields for small mammals, birds, and reptiles. The endangered peregrine falcon range includes the area. They have been reported occasionally in the Castle Valley area (part 1, chapter II); however, there have been no known sightings on the lease. Chukar partridge range along the base of the Book Cliffs around Fish Creek and Dugout Canyon. Blue and ruffed grouse may be in the vicinity, and mourning doves are common spring-summer nesting residents. A wide variety of perching birds inhabit the area year-round.

## B. CULTURAL ENVIRONMENT

## 1. Lands

The Carbon County zoning ordinances permit coal mining in the area. A zoning ordinance was adopted May 19, 1959, by the Board of County Commissioners of Carbon County. Subsequent amendments have been adopted. The current printing of the ordinance is dated February 15, 1977, with a revised zone map dated 1974. The proposed P.G. & E. Fish Creek and Dugout Canyon mines, including Federal and State lands, lie within a mining and grazing zone. The mining and grazing zone is "characterized by large tracts of desert and open-range land with an occasional mine cabin dwelling, and (or) corral incidental to livestock operations...and has been established...as a district in which the primary use of the land is for mining and for livestock grazing purposes." Use requirements provide for "open-pit mines and mine waste dumps and underground mines and buildings and structures associated with mines and mine dumps.... Mine reduction and processing plants...reservoirs, dams, pumping plants, and water facilities...and caretaker dwellings, when incidental to and located on the same lot or parcel of land as a principle use permitted in the zone."

All mining operations are subject to the stipulation of the Price District Management Framework Plan published by BLM. All facility authorization must meet BLM standards detailed in the BLM Manual 2800 for minimal impact. Based on the BLM April 1977 Management Framework Plan, a corridor in the location of P.G. & E. railroad alternate route E (chapter VIII) would have the least impact. All leases and ancillary facilities related to the leases must meet BLM's visual resource management objectives.

## 2. Range and Timber

Cattle and sheep graze the project area as follows:

Allotment	Class	Number	Season	AUM's
Clark Valley-----	Cattle	141	4/16-5/31 10/16-12/31	567
Pine Canyon-----	Cattle	200	6/1-10/31	1,000
N. Clark Valley---	Sheep	--	--	496
Dugout Canyon-----	Cattle	200	6/16-11/15	1,000 (?)
Pace Canyon-----	Cattle	40	6/1-6/30 10/1-10/31	80
Total-----	Cattle	581		2,647
	Sheep	--		496

A few junipers are cut for fenceposts and firewood, and pinyon nuts are picked occasionally.

### 3. Socioeconomics

In this area, which has a present population of 16,000 to 18,000, "Coal is King." The socioeconomic structure tends to be significantly related to incomes and a tax base that derive primarily from mining. Residents, particularly those from Price, are of many ethnic and racial backgrounds. The general population is cosmopolitan yet separated from other cosmopolitan populations in Utah. Farming and other agricultural activities are essentially part-time occupations. Published reports indicate established residents express a high sense of community pride and happiness with their homes and friends (Geertsen and others, 1977). The regional socioeconomic environment and expected impacts are discussed in part 1.

### 4. Transportation and Utilities

Major highways near the proposed mine are US 6 and 50 and U 23 (table 2). The nearest railroad (Denver and Rio Grande Western) is about 13 miles southwest of the proposed minesite (fig. 2). Mine access would be via US 6 and 50, Soldier Creek road, and the proposed haul road. The proposed Dugout Canyon haul road intersects the Soldier Creek road about 4.5 miles north of US-6 and 50. A jeep road intersects the haul road about 4 miles northeast of the Soldiers Creek road and extends to the Fish Creek minesite. Both power and telephone lines are available near US 6 and 50 (fig. 2).

### 5. Recreation

The area lacks significant recreation attractions and is seldom used. Activities depend on low-standard roads and the natural character of the surrounding area. Deer hunting in late October and early November is the predominate use. Other recreation uses and activities include: (a) four-wheel driving on low-standard roads and viewing the environment; (b) target shooting; (c) gathering pine nuts and firewood, rock-hounding, etc.; and (d) hunting small game and nongame species. Dugout Canyon is also used minimally for overnight camping at undeveloped sites, and for horseback riding. Some ORV may have been used in Clark Valley (fig. 1) but there is little evidence of it at present. Clark Valley and the heads of Dugout Canyon and Fish Creek offer some opportunity for hiking, camping, nature studies, and solitude. Potable, perennial water is lacking in Fish Creek and Clark Valley. A small perennial stream flows in Dugout Canyon and does provide some user appeal and interest. No records on recreation uses or activities are available for the proposed impact area. A description of the regional recreation area that would be impacted by this proposal is included in part 1, chapter II.

TABLE 2.--Highway traffic counts near the Fish Creek and Dugout Canyon mine areas

[Source: Utah Department of Transportation, 1975, except for Soldier Creek Road which is calculated]

Highway	Highway section	Average daily traffic		
		Cars and light trucks	Trucks, 6 wheels or more	Total traffic
Soldier Creek	Between access road junction and US 6 and 50-----	30	5	35
US 6 & 50--	Between Soldier Creek junction and Sunnyside Junction-----	2,690	325	3,015
U-23-----	Between US-6 and 50 and Dragerton-----	895	135	1,030
U-23-----	Between Soldier Creek junction and Wellington-----	2,690	325	3,015
US 6 & 50--	Between Wellington and Price---	3,968	335	4,303
US 6 & 50--	Between Price and Helper-----	3,555	745	4,300

The percentage of local, long distance, and commercial traffic is not known.

## 6. Esthetics

That part of Clark Valley where the access road, railroad system, and power and telephone lines would be located is classified as having low (Class C) scenic quality. The valley is dominated by big sagebrush and stands of pinyon-juniper having little or no understory. The landform has little variation, and rock formations are of minimal interest. There are no outstanding or dominant features, and the landscape is similar to that of the pediment south of the Book Cliffs.

Dugout Canyon and Fish Creek and the area to the south, where the mine portal entries, coal conveyor belt system, and plant facilities would be located, have a common (Class B) scenic quality. Slopes are moderately to deeply dissected; rock formations are not outstanding; and vegetation patterns have some diversity but are common to the general surrounding area and are restricted in species composition. The straight cliffs above

the proposed minesite attract notice because of their prominence, but lack uniqueness or variety in color or form. They create a prominent, but common, panoramic scene in the background viewing zone from US-6 for a length of 65 miles. The combination of these features tends to be common throughout the character type, as viewed onsite and from US-6.

The BLM's Visual Resource Management Class for the entire area falls within the IVb and IVc classifications (Roy Mann Associates, Inc., 1977). Both classifications are directed toward the maintenance, simulation, or enhancement of the natural landscape in all management or project activities. Visual Resource Management Classes IVb and IVc permit modification and maximum modification, respectively, during the life of a project or management activity. However, subsequent rehabilitation or reclamation must be adequate to, and directed toward, the reestablishment in appearance of a natural or near natural landscape.

Man-made intrusions include: the low-standard roads in Clark Valley and Dugout Canyon and along Fish Creek, a small voltage powerline, excavations at the proposed minesite at Fish Creek, and remnants and debris from the old mine in Dugout Canyon. Clark Valley has a natural character, where intrusions or uses, other than grazing, are few. However, much of Clark Valley was irrigated and farmed during the 1900's and the community of Kiz was in the area. Some remnants of the community, including building foundations and a cemetery remain. Remnants of the community would not be affected by the proposal, and previously-irrigated lands have reverted to big sagebrush and pinyon-juniper vegetative types.

#### 7. Archeologic and Historic Values

Little archeological data are available of the lease area and immediate vicinity although some work has been done in neighboring areas. A reconnaissance survey of the lease area was done in September of 1977 by K. K. Pelli (Pierson, 1977). This survey located a previously-recorded pictograph panel in Dugout Canyon. No other sites were recorded. The National Register of Historic Places lists no cultural sites for the area.

#### C. FUTURE ENVIRONMENT

The BLM land use plan orients management of these lands to livestock, wildlife, and watershed, with some incidental recreation use. Little, if any, development would occur in the area and the environment would remain about the same without mining.

## CHAPTER III

### ENVIRONMENTAL IMPACTS

#### A. NATURAL ENVIRONMENT

##### 1. Land

###### a. Land surface

About 932 acres of land surface would be disturbed to some extent in constructing the proposed facilities (table 1, fig. 2). The slurry pond dam would require 1,650,000 cubic yards of fill. Subsidence could affect nearly all of the 2,576 acres of Dugout Canyon property, and from 5,000 to 6,000 acres of the 7,468 acres of the Sage Point property. Subsidence could be as much as 70 percent of the thickness of the mined coal (Dunrud, 1976, fig. 20); about 5.6 feet for a single 8-foot bed.

###### b. Geology

Impacts to paleontological resources would consist of losses of plant, invertebrate, and vertebrate fossil materials for scientific research, public education (interpretative programs), and to other values. Losses would result from destruction, disturbance or removal of fossil materials as a result of coal mining activities, unauthorized collection, and vandalism. A beneficial impact of development would be the exposure of fossil materials for scientific examination and collection which otherwise may never occur except as a result of overburden clearance, exposure of rock strata, and mineral excavation. All exposed fossiliferous formations within the region could also be affected by increased unauthorized fossil collecting and vandalism as a result of increased regional population. The extent of this impact cannot be assessed because of a general lack of specific data on such activities. Because of the lack of data and accepted evaluatory criteria for determination of significance, no meaningful assessment can be made as to the extent and nature of the loss of these paleontological values to science or education, or hence to the significance of potential impacts on the fossil record.

Faults mapped at the surface in the northeast corner of the Sage Point property (See chapter II, Geology.) are in the area where overburden above the coal beds is 3,000 feet or more. If the faults extend to the coal beds, mining in or near them may trigger movement on these faults and cause landslides and rockfalls in the cliff areas above. Large scale excavation in preparation of the Fish Creek mine plantsite would result in a greatly steepened slope for about 700 feet along the east side of the canyon (fig. 5), and potential for landslides would be increased.

###### c. Energy and mineral resources

Proposed plans and mining methods would leave about 111 million of the 222 million tons (estimated) of minable reserves in the Sunnyside,

Sunnyside, Rock Canyon, and Gilson beds under a maximum 3,000 feet of overburden. Additional unknown amounts of coal would be left where these beds thin to less than 4 feet and in other thin coal beds. During the 40-year life (estimated) of the mine, improved technology and economic changes may increase possible recovery.

#### d. Soils

Soils would be disturbed on about 932 acres (table 1). About 50 acres would be disturbed for construction of facilities at the Fish Creek and Dugout Canyon mines. Erosion of exposed soil materials, primarily during construction, could exceed 7 cubic yards per acre per year on steep slopes. Sediment would be collected on the site in sediment control ponds. At the central yard and slurry pond sites, impact to soils would relate primarily to taking the lands out of vegetative production for 40 years. Soil productivity would be returned to near its present status after reclamation.

Road and railroad construction would disturb soil on about 202 acres, which would increase erosion and reduce soil productivity. Construction and maintenance problems would accrue from soils formed on the Mancos Shale. Montmorillonitic clay in the Mancos Shale has a high shrink-swell potential, which could result in road surface heaving. About 87 additional acres would be subject to varying types of soil disturbance.

## 2. Water

### a. Water supply

The proposed mines would require 420 acre-feet of water per year for consumptive use. Increased population would require an additional 1,400 acre-feet of water per year for domestic use, of which 50 percent would be used consumptively; the other 50 percent would be discharged as treated effluent.

#### 1) Surface water

The impact of subsidence and subsequent earth cracks on the flow of springs and streams cannot be predicted. Above the proposed mines, some surface flow, potentially as much as 5,500 acre-feet of water per year, could be diverted into the ground. However, it is unlikely that more than one-fourth of that would be diverted, perhaps none. Such diversion, if it occurs, would reduce available water on the lease, which would restrict use by wildlife and livestock. The flow of Soldier and Dugout Creeks below the Book Cliffs also might be reduced. Diverted water probably would be discharged eventually, but potential points of discharge cannot be predicted.

## 2) Ground Water

Any water use and mining below sandstone beds saturated with ground water would alter regional ground-water resources. Mining would cause a local decline in ground-water levels. The first effect of declining water levels necessarily would be in the strata mined in the Blackhawk Formation. Downward drainage into the mine could result in dewatering upper strata which might decrease spring flow. Subsidence and associated cracking might drain saturated beds, such as the permeable North Horn Formation above the Blackhawk Formation, and increase recharge to saturated beds in and below the Blackhawk.

## 3. Air

Particulates would be the only significant contributors to air pollution at the mines. Most coal particles would settle within one mile or less downwind of the mine. Increases in other pollutants such as sulfur dioxide, nitrogen oxides, carbon monoxide, and photochemical oxidants would be negligible. Using AeroVironment 1977 analysis, estimated TSP concentrations as great as  $240 \mu\text{g}/\text{m}^3$  above background levels could occur within 110 yards (100 meters) of the unpaved but watered road from daily one way passes of 950 cars and 130 trucks. The secondary NAAQS is  $150 \mu\text{g}/\text{m}^3$ . Total annual potential emissions from the mine (coal storage and transfer) and fugitive dust from auto and supply truck travel on an unpaved road would be an estimated 6,720 tons (120 tons from mining activities and 6,600 tons from auto and supply truck travel and would require EPA review (chapter I-D).

Pavement or equivalent stabilization as required in chapter I-D would reduce air quality and visibility impacts to insignificant levels. The maximum 24-hour incremental increase in TSP would be about  $70 \mu\text{g}/\text{m}^3$ .

## 4. Vegetation

About 932 acres of vegetation would be impacted (table 1), mainly Sagebrush-Grass, Pinyon-Juniper Woodland, Streamside and Conifer-Aspen vegetative types. Impacts in the portal areas would be more significant because of the Streamside type. Little or no impact is foreseen on the vegetation overlying the underground workings. No threatened or endangered plant species would be impacted.

## 5. Wildlife and Fisheries

Wildlife habitat would be degraded by soil disturbance and (or) vegetation removal where mine facilities are constructed. Because of noise, lights, activities, and traffic, some wildlife would avoid adjacent areas. Effects of habitat degradation or destruction can be measured and quantified for some species but avoidance effects are more difficult to determine. Improved access would bring more visitors to this

relatively unvisited area. Their presence would affect the more sensitive species, such as black bears, mountain lions, and deer. The magnitude of these impacts is not predictable.

Wildlife habitat would be directly destroyed on 932 acres (table 1). Winter deer range totaling 837 acres would be lost. Construction of ancillary facilities outside the limits of winter deer range would destroy summer range. Small and nongame mammals, birds, and reptile habitat would be reduced by 1,020 acres, lowering their populations. Lowered numbers of these small animals would, in turn, reduce the food source of predatory birds and mammals. Data necessary to predict the impact to small and nongame mammals and birds or predatory birds and mammals are not available. The habitat loss would be expected to alter animal species and density composition. Because of mine-caused disturbances and the blocking effect of conveyors, deer would be expected to avoid 3,148 acres of available winter range surrounding the mines. The disturbance impact area would extend outward one-tenth mile from the periphery of disturbance centers at plantsites, central yard, and from the highway and conveyor. In this zone, deer feeding would be expected to be about 50 percent less than in wintering habitat not subject to the same amount of disturbance. Avoidance would be expected to be total at the disturbance source, gradually decreasing outward. It is anticipated that the proposed 4.0 mile conveyor would block all migrating deer from crossing. The block caused by the conveyor and avoidance routes around the plantsites would form a shadowlike area downslope, where deer use would be lower.

Construction would destroy 77 acres of pinyon-juniper-mountain brush-grass winter deer habitat and deer would be expected to partly relinquish use on 433 acres more. The loss of 77 acres would reduce the deer population potential in this habitat by five head, whereas partial relinquishment would reduce the potential deer population by another 15 head. About 760 acres of pinyon-juniper-grass winter deer habitat destroyed and occupied by mine facilities, and partial relinquishment would be expected on 2,715 acres more. The loss of 760 acres would reduce the deer population potential by eight deer whereas partial relinquishment would reduce the deer potential by 14 deer. The proposed action would reduce potential to support deer by 42 head annually (about 0.14 percent of total potential population for deer herd Unit 27B). Potential elk habitat loss would include the area within at least half a mile radius of the plantsites and the entire area upslope from the conveyor between the two mine portals (about 2,000 acres).

Reduced winter deer use, intrusions of the mine into Fish Creek and Dugout Canyon and the sensitive nature of mountain lions would probably reduce the mountain lion population potential in unit 27B by four. This projection is based on mountain lion behavior, in which male and female home areas overlap completely. Each drainage appears to have a favorable vegetation-topography/prey-vulnerability complex to support a resident male and female.

Destruction of canyon bottom vegetation for plantsites, roads, and conveyors would remove black bear and ruffed grouse food such as serviceberries, snowberries, elderberries, and dogwood. Fear of mining activities also would cause black bears to avoid using the mine vicinity. Probable impacts could affect two black bears. If the probable home areas in Fish Creek and Dugout Canyon are not occupied, they would not be expected to be reoccupied if the mine is opened. Several blue grouse broods would be expected to be displaced if food were destroyed in Fish Creek and Dugout Canyon.

Available water is probably the most important habitat component for nesting doves. Loss of springs or seeps would reduce or eliminate the dove population. Chukars require water nearby after the chicks hatch. Loss of springs and seeps would adversely affect their population, but lack of data prevents predicting the number of birds affected.

Collison hazard with vehicles would increase for all wildlife. Powerlines would present a strike hazard for birds. Deer would risk collison crossing roads in daily feeding migrations. Chipmunks, prairie dogs, and ground squirrels would risk collison during the day. Deer, jackrabbits, cottontails, mice, and snakes would experience the risk at night. Scavenging birds and mammals could then be struck by subsequent vehicles. Raptors on roosting perches greatly increase their susceptibility to illegal shooting if near a road. The incidence of illegal shooting in Utah is high where power poles are near roads and nearly nonexistent where they are distant (Ellis and others, 1969).

The proposed railroad spur, central yard facilities, slurry pond, water and slurry line, telephone line, and powerline (fig. 2) are within potential black-footed ferret range (Scott and others, 1977). If 300 acres of community development occurs within the Castle Valley pheasant range, the habitat loss might cause the loss of 50 to 60 adult Ring-neck pheasants per year (BLM, 1977; UDWR, 1977). Demand for game and fish and illegal acts toward all wildlife would increase because of the increased population. Fisheries in the surrounding area may be reduced by withdrawing water to support the proposed action.

## B. CULTURAL ENVIRONMENT AND LAND USE

### 1. Land Use

As much as 300 acres would be converted to community use because of the influx of about 5,500 new residents. Inventories, analyses, and decision as to whether parts of the area would qualify as a roadless area or a wilderness study area have not been completed. Approval of the proposed action would preclude delineation of occupied areas as roadless or wilderness study areas.

## 2. Range and Timber

The 932 acres of vegetation impacted (table 1) would reduce grazing capacity by about 63 AUM's (2 percent of the total). Subsidence may cause some livestock watering springs to dry up. The project could further impact livestock by changing normal grazing and watering patterns. A moderate amount of sawtimber, fenceposts, fuelwood, and pinyon nuts would be lost to the project.

## 3. Socioeconomics

The proposed mines would add about 5,500 residents to the Price City-Carbon County area. Greatest impacts would accrue from urbanization. Carbon County's population could increase about 29 percent. This would result in the need for 650-750 new residences. New schools also would be necessary. Other impacts would be costs of constructing, operating, and maintaining sewers, water systems, and streets; collecting garbage and trash; and police, fire, and health protection.

At full mine production, the total annual mine payroll would be about \$15 million. Average salary for mine employees would be about \$1,500 per month, approximately \$200 more per month than Carbon County miners received per month in 1975. It is possible that county average annual salary would be about \$7,500 to \$8,000, which is approximately \$1,000 more than comparable figures for 1975. Benefits from higher incomes and an increased tax base would expand the Carbon County-Price City area economy.

## 4. Transportation and Utilities

At least one unit train per day would be added to present rail traffic between the mines and the proposed powerplant in central California. About 1,080 vehicles per day (950 commuter, 130 mine supply) would be added to present traffic (table 2). Traffic on Soldier Creek Road and the mine access road would increase more than 30 times. Mine traffic would increase the load on US-6 which is at its efficient capacity of about 3,000 vehicles per day. Thirteen miles of unpaved roads would have to be upgraded, presumably 9 miles by the county and 4 miles by the proponent. The company would construct 1.4 miles of service roads. It is likely that the paved Soldier Creek Road between Wellington and the mines turnoff would receive more maintenance and some upgrading.

## 5. Recreation

Mining and related activities at the mouths of Dugout Canyon and Fish Creek and at the plantsite would eliminate or displace present recreation activities. The greatest impact would be eliminating 100 visits and 50 visitor days use (estimated) at undeveloped campsites in Dugout Canyon. Present recreation uses in Clark Valley, south of the plantsite, would increase as a result of improved access. Some increase in use, to observe mining and associated activities, could also be expected.

Except for hunting and ORV use, impacts to of the recreation resource would be minimal. Hunter success (particularly mule deer) could decrease 5 to 7 percent (40 to 50 deer) annually during the life of the project. Increased ORV use in Clark Valley could result in wildlife disturbance and a loss of soil, vegetation, wildlife, and watershed production. Noise, TSP and littering and vandalism would increase with increased use. The projected increase of 5,000 new residents in Carbon and Emery Counties could create significant impacts to regional recreation attractions through increased visits and use.

#### 6. Esthetics

The landscape would be modified by industrial facilities and activities. The proposed railroad system near the Sunnyside Junction (fig. 2) would be in the foreground-middleground (0-3 miles) viewing area from US-6, but mining intrusions could not be seen with clarity. Facilities and activities at the mines and plantsite would not be viewed by most of the travelling public. Some of the individuals viewing the proposed development would have major concerns for changes in the visual character of the area. Facilities and activities associated with the proposal would be similar to those supporting other mining activities in the general area. The sensitivity level, relating to modification or introduction of industrial intrusions, has been designated as Class M (Medium). The modifications would remain until mining ceased and reclamation and natural processes reestablished the present natural-appearing landscape. The deserted farming community of Kiz indicates that over the long term (50+ years) the landscape would return to a near-natural character. Some evidence of past mining, such as the main access road, railroad bed, and mining residues, would remain after reclamation.

#### 7. Archeologic and Historic Values

The only site located during the reconnaissance was a pictograph panel (42cb92) recorded previously by Dale Berge of Brigham Young University and located originally by a Pacific Gas and Electric Company employee. This site may be vandalized because of its proximity to the road.

Additional archeological sites may be located during the intensive survey that will be conducted prior to development. Increased population may result in more vandalism of cultural, archeological, and historical sites. Improved access also may result in increased vandalism to sites that may be present. Required surveys will add to the cultural resource knowledge of the area.

## CHAPTER IV

### MITIGATING MEASURES

State and Federal laws, regulations, and administrative policies that require mitigation or reclamation of mine areas, and responsibility or requirements of the appropriate Federal and State regulatory authorities are listed in chapter III of part 1. These measures, and those in sections C and D of chapter I shall be required and are part of the Fish Creek-Dugout Canyon mining and reclamation plans.

The following mitigating measures could be required or implemented by the land management agency acting on behalf of the Secretary of the Interior; others could be required or implemented by the appropriate local, State or Federal agency. The effect of implementing these mitigations has not been assessed in the analyses presented in chapter V.

Safety problems and user conflicts on the improved access road could be mitigated by restricting use to mine traffic. Traffic, air quality, and visibility impacts could be reduced by bussing mine workers to the minesite.

Visual impacts could be mitigated by locating structures in seldom-seen areas and painting them to blend with the surrounding terrain and by removing residues from previous mining operations. Recreation and esthetic impacts could be reduced by constructing the railroad, mine access, and utility lines in a corridor outside Clark Valley. Powerlines separated from roadways by 300 yards could reduce shooting hazards to perching raptors.

## CHAPTER V

### ADVERSE EFFECTS THAT CANNOT BE AVOIDED

Land surface deformation caused by constructing surface facilities and waste-disposal systems would not be totally mitigated. Subsidence above mined out areas could create hazards for surface construction. Unavoidable destruction, disturbance, and removal of paleontological resources, both exposed and unexposed, would occur. The significance of this impact cannot be meaningfully assessed because of the lack of data and evaluatory criteria. As much as 50 percent of the minable coal (111 million tons) would remain unrecovered in pillars and barriers to provide roof support and fire protection during mining. Unknown amounts of coal would be left where beds are less than 4 feet thick.

Removal of vegetation and disturbance of the soil would result in increased erosion on 932 acres. Greatest potential for erosion would be during construction and the tear-down period just before reclamation, when erosion rates would be 2 to 7 cubic yards per acre per year. Sediment would be collected on the site in sediment control ponds. Soil productivity would be lost on areas occupied by mining and support facilities until the area is reclaimed after approximately 40 years. About 55 acres, out of production and subject to erosion only during construction, would be revegetated as soon after construction as possible.

Increased use and consumption of water for coal mining and associated uses cannot be avoided. About 420 acre-feet of water per year would be consumptively used in mining, and needs for domestic water supplies would increase by 1,400 acre-feet per year. Disruption of watersheds cannot be mitigated. The flow of springs and streams on about 15 square miles of the lease could be reduced; thus, less water may be readily available for onsite use by wildlife and livestock. Mining would cause a local decline in ground-water levels and alter ground-water flow patterns in the mine area. Requirement of BACT would reduce the 24-hour maximum incremental increase in TSP in the air to about  $70 \mu\text{g}/\text{m}^3$ .

About 63 AUM's annual grazing capacity would be lost and the normal grazing patterns of domestic livestock could be disrupted. A small volume of sawtimber, fenceposts, and firewood would be salvaged before construction and would not be replaced (regrown) until some years after mining ceases. Deterioration of wildlife habitat and vehicle-wildlife and bird-powerline collisions would reduce wildlife numbers. Most likely to be effected are about 42 deer or about 0.14 percent of the total deer herd unit population. Some Ring-neck pheasants may also be lost because of community development.

Other forms of transportation would be inconvenienced by the increase of 7 to 10 unit trains per week and the increase of about 1,080 vehicles per day to local traffic patterns. The traffic load on US-6

would be beyond the highways efficient capacity. Eliminating or displacing recreation opportunities in the mouths of Fish Creek and Dugout Canyon and at the plantsite in upper Clark Valley would be unavoidable. Indiscriminate ORV use, loss of hunter success, and vandalism and littering would occur. The landscape would be altered from one with few obvious man-made intrusions to one of intense activity and substantial man-made intrusions. To individuals with major concerns (less than one-fourth of the viewers) for maintaining the present landscape character, this would be adverse. Increased population may result in vandalism to archeological and historical sites within the region.

## CHAPTER VI

### SHORT-TERM USES VERSUS LONG-TERM PRODUCTIVITY

This area is suitable for mining. Some mining has occurred there in the past, and so, other than implying an increase in production from the region, this mine would not create a significant change. The use of 932 acres for facilities and access routes (table 1) would interrupt but probably not change the long-term use or productivity of the land for grazing and hunting. Subsidence and potential subsidence above the undermined area of 7,500 to 8,500 acres could restrict long-term use involving building surface structures. An undetermined number of uninventoried exposed and unexposed fossil localities could be impacted or destroyed. Knowledge of paleontological resources could be acquired from surveys and exposure of resources which might never have been found without excavation.

In the short term, soil productivity and vegetation, including range, forage, and woodland products, would be lost to the project. In the long term, after reclamation, these areas should be almost as productive as now. Imperfect revegetation, loss of area to roads, and semipermanent changes in wildlife feeding habits or seasonal wildlife movements may cause a small reduction in the current level of production. Some sites may increase in productivity. Decreased wildlife population potential resulting from mining activities and increased human encroachment would be short term, but use of access routes after mining may cause a long-term impact to wildlife.

The increase in traffic consequent to the mining operation would be short term. Road construction and upgrading would probably be within the present road alignments and the improved roads would remain as a long-term improvement. The railroad spur would probably be salvaged or converted to other destinations. Short-term use would eliminate or displace 100 recreation visits and 50 visitor days (estimated) use in the mouths of Dugout Canyon and Fish Creek and at the plantsite in upper Clark Valley. Improved access in lower Clark Valley would improve the opportunity for more people to visit the area in motor vehicles and would generate additional permanent recreation use. Impacts to hunter success should be short term. Once reclamation and proper wildlife management were applied, wildlife numbers and hunter success would be expected to increase.

The present landscape would be modified from near-natural to one with significant industrial modifications and activities during the life of the mine. After mining and reclamation, the railroad bed, paved access road, and minor mining residuals would remain and would constitute a permanent, but minor, modification of the present landscape. As indicated by the natural succession process related to the deserted farming community of Kiz, the landscape would return to a near-natural character in the long term (50+ years). Any archeological sites disturbed during development of the site would result in a long-term impact to the in-place value of that site. Collection of sites that might be found will insure recording of information that could otherwise be lost to natural forces or vandalism.

## CHAPTER VII

### IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

An undetermined number of uninventoried exposed and unexposed fossil localities would be impacted or lost. Mining as many as three beds beneath 7,500 to 8,500 acres would irreversibly commit the surface to subsidence of as much as 70 percent of the thickness of coal removed. About 111 million tons would be left in place as barrier pillars, and other roof support. This and an unknown amount of coal in beds less than 4 feet thick would be unrecoverable with present day technology.

The 420 acre-feet of water used each year for mining would be irretrievable. Additional domestic water required, 1,400 acre-feet per year, would also be irretrievable except for treated effluent (about 700 acre-feet) which could be reclaimed. Changes in ground-water flow patterns resulting from mining and subsequent subsidence would be irreversible.

Emissions from secondary growth and related activity such as traffic, urban fuel consumption, etc., induced by the proposed action would be permanent and result in a long-term commitment of the air to some deterioration.

Soil productivity and vegetation, including range, forage, and woodland products, would be irretrievably lost to the project. Forage losses of 63 AUM's per year for 40 years would total 2,520 AUM's. Woodland products lost would be relatively minor. Proper reclamation of the disturbed areas would prevent irreversible commitment of the vegetative resources. Wildlife habitat destruction and disturbance resulting from permanent improved access would be irreversible.

Commitment of fuel, supplies, vehicles, and commuting time cannot be calculated. Improved permanent access would irreversibly commit the area to additional recreation use. Loss of hunter success during the life of the mine would be irretrievable. It would, however, be reversible, through applied management (limited or controlled hunts) after mining ceases. The area would revert back to near the present landscape character after mining and reclamation, except for some incidental residuals and the main access road. The cultural resources in the immediate project area could not be preserved in place.

## CHAPTER VIII

### ALTERNATIVES

Approval of the applicant's mining and reclamation plan, as submitted, has been analyzed as the proposed Federal action in this statement. Alternatives to that course of action are discussed below.

#### A. NO ACTION

Pursuant to implied covenants of both the Federal mineral leasing laws and the existing lease agreements, the Secretary of the Interior must respond to a legitimate application to conduct operations on a valid Federal lease, provided all terms and conditions of the lease have been met. The Secretary's response may be approval as proposed, rejection on various legitimate grounds, or to defer decision based on proper grounds. "No action" on the applicant's proposed mining and reclamation plan would mean maintaining the status quo on the leasehold. The impacts of taking action would be the same as described subsequently under the alternative "Reject the Mining and Reclamation Plan."

The coal that would be mined on the Sage Point property would be used by a generating plant to be built by P.G. & E. in northern California. The coal from the Dugout Canyon property would be used by KCC for fuel and metallurgical needs in Utah and Nevada. If the application to develop the properties were denied, the companies would seek and develop coal sources elsewhere or buy coal in the open market. The anticipated environmental impacts thus would be shifted to new supply area, possibly to areas less favorable, economically and environmentally, than the Price, Utah area, where coal mining is a long-established industry.

#### B. DEFER FEDERAL ACTION

In the event of noncompliance of the applicant's proposed mining and reclamation plan to provisions of the Surface Mining Control and Reclamation Act of 1977, the Secretary must defer action on the proposed plan. For other proper causes, he may also defer the decision. Such causes could include, but are not limited to, the time required and the need for the following:

- (1) Modification of the proposal to correct deficiencies unrelated to SMCRA or to reduce or avoid environmental impact.
- (2) Acquisition of additional data to provide an improved basis for technical or environmental evaluation.
- (3) Further evaluation of the proposal and (or) alternatives.
- (4) Development of an adequate system to monitor impacts for management and regulation.

The principal effect of deferring action would be a short-term delay in the imposition of all related impacts, both adverse and beneficial, of the applicant's proposal discussed in this statement.

Action could also be deferred until the plan is modified to include one or more of the alternatives discussed below in subsection E. These alternatives if implemented would reduce or avoid some environmental impacts of the proposed action.

#### C. PREVENT DEVELOPMENT OF THE LEASE

##### 1. Reject the Mining and Reclamation Plan

The Secretary may reject a proposed plan that does not meet the prescriptions of applicable law and regulations under his authority, including the potential for environmental impact that could be reduced or avoided by adoption of a significantly different course of action by the applicant. Except when a mine plan does not comply with existing regulations, the Secretary cannot under present circumstances reject the proposed plans to the extent that a de facto cancellation of a lease results unless he seeks and obtains additional authority from the Congress. Viability of this option is dependent upon timely legislative action; the option of rejecting the proposed plans pending legislation remains available.

If the Secretary were to reject the mining and reclamation plan, the lease would not be mined, and impacts previously discussed would be deferred until an acceptable plan was approved. The lease would continue in its present condition, subject to modification by natural processes and by the continuation of other existing activities and uses--and to further modification by the surface owner to meet other uses. However, the development of alternative sources of energy, such as other coal mines in the county, or a reduction of national energy consumption, could result. The applicant could correct the deficiencies in the plan and resubmit a modified mining and reclamation plan for approval. The result would be similar to that described in the alternative "Defer Federal Action.

##### 2. Seek Legislation to Cancel the Lease

The Secretary has very limited authority with respect to cancellation of an existing Federal coal lease. One such authority is prescribed in the lease terms entitled "Proceedings in Case of Default."

A second authority was mandated by provisions of sec. 6 of the Federal Coal Leasing Amendments Act of 1975 (P.L. 94-377) which was subsequently written into regulations as 43 CFR 3520.2. The authority relates to failure of the lessee to meet the requirements for diligent development of the lease as defined by the Act.

The authority to cancel on other grounds would require congressional authorization for such action as well as for the requisite funds for compensation to the lessees. The Administration has not requested such legislation, and the Congress has not initiated such legislation related

to the matters considered in this statement. The possibility of such actions is a matter for further consideration by the Administration and the Congress in the light of this environmental statement and other relevant nonenvironmental concerns.

To the extent that future coal production from this lease was curtailed or halted, alternative sources of energy would be required to meet anticipated needs and demands. The time required to replace the coal production potential could range from a few to several years. If this lease were cancelled through congressional authorization, all physical, biologic, and socioeconomic impacts stemming from the proposed mine would be avoided. Conversely, if development eventually were authorized, environmental impacts as discussed previously in this statement would occur, although impacts would be deferred in time and perhaps reduced because of changes in technology or requirements imposed at that time.

### 3. Exchange the Existing Lease

If the Secretary determines it to be in the public interest, he may initiate a proposal to the lessee for exchange of the existing Federal lease involved in this proposal for lease of other tracts of Federal coal or tracts of Federal sodium, phosphate, potash, or sulfur of comparable value, or for a grant of various future rights.

The Department of the Interior considers that the public interest would be so served if the Secretary finds that the benefits of production from the lease would not outweigh the adverse effects, or threat of damage of destruction to agricultural production potential, or scenic, biological, geologic, historic or other public interest values from lease operations. In exercising his discretion to exchange mineral leasing values in the public interest, the Secretary shall consider, but is not limited to, consideration of these elements of the public interest: recreational use; archeological or historic values; threatened or endangered species; proximity or residential or urban areas; study for potential inclusion in the wilderness or wild and scenic rivers systems; and value for public highways, airports, and rights-of-way.

Should the Secretary initiate such a proposal, the lessee is under no obligation to enter into such negotiations and may refuse to consider it.

If such a proposal is made and is rejected by the lessee, or if negotiations are entered and not agreeably concluded by the parties, and if the operations described in this statement are not otherwise prevented, such operations would eventually proceed and result in the impacts identified therein.

If an exchange proposal is made, accepted, and agreeably concluded for coal that is contiguous or very near to the existing lease, the proposed plan would have to be revised, resubmitted, and assessed. If

the new plan encompasses the same methodology to be used in coal development, many of the impacts described herein would likely be very similar to those resulting from the new proposal, with a relatively short-term delay (several years) in their initiation. If a wholly different methodology is proposed for development of the replacement lease (e.g., underground versus surface mining), it could be substantially different from those described in this statement, and cannot be forecast at this time.

Presumably the unacceptable impacts or effects prompting the exchange would be avoided or substantially reduced in development of the replacement lease and found to be in the public interest. The existing lease would be relinquished, would not be mined, and would continue in its present condition as discussed below.

If an agreeable exchange were made for coal located elsewhere, or for a different mineral commodity located elsewhere, the relinquished lease would continue in its present condition, subject to modification by natural processes, by the continuation of other existing uses and activity, and to further modification by the surface owner to meet other uses. Potentially, the coal reserves relinquished would be withdrawn from development and this source of energy foregone. Direct financial benefits to the public may change in an exchange of leases.

The impact of exploration and development of the replacement lease under these circumstances will be translocated in space and time. They will relate to time and location, physical environment at the new site, mineral commodity involved, development technology proposed and approved, and other factors, none of which can be quantified or evaluated until the replacement lease is identified. The environmental impact of potential development of the replacement lease rights to be granted would be evaluated and considered in the exchange process, and while they may be greater or less than those described in this statement, they must be ultimately judged by the Secretary to be more environmentally acceptable than development of the relinquished lease, and to be in the public interest. Costs to the Department in identifying and evaluating one or more replacement tracts to be offered in the exchange could be substantial, and very likely be significantly more than the lessee's cost in establishing the fair market value of the tract to be relinquished.

#### 4. Suspend Operations

The full development of existing leases could be delayed by suspension of operations. If such action were taken, there would be no additional incremental environmental impact on the area, and it would continue in its present condition, subject to further modification by natural processes, the continuation of existing mining activity, and such future uses of the surface as the owners may decide.

The authority of the Secretary of the Interior to suspend operations on existing leases has already been utilized on other Federal leases.

Suspension of operations of this existing lease, for reasonable periods, with proper grounds, could be imposed. The Secretary cannot, under present circumstances, suspend operations to the extent that a de facto cancellation of a lease results unless he seeks and obtains additional authority from Congress. Viability of this option is dependent upon timely legislative action; the option of suspending operations pending legislation remains available. Impacts of the alternative would be similar to those described under "Cancel the Lease."

#### 5. Federal Reacquisition of Leased Rights

The outstanding leasehold interests could be acquired by the Secretary. The ability to acquire the leasehold interests is not granted by the existing relevant statutes and would require Congressional authorization for such action as well as for the requisite funds for compensation of the lessees. To date, the Administration has not requested such action, and the Congress has not initiated or considered such legislation; the possibility thereof is thus conjectural at best. The major effects of such Congressional authorization would be similar to those of cancellation of the leases as previously discussed.

#### D. RESTRICT DEVELOPMENT ON THE LEASE

The subject leases convey the right to develop, produce, and market the Federal coal resource thereon if all other terms and conditions have been met by the lessee. In general, the Secretary does not possess the authority to arbitrarily restrict development either as to location or rate. Various measures that may tend to restrict development may be taken by the Secretary at any time in the interest of conservation of the resources or in the protection of various specific environmental values in accordance with existing laws and regulations; for example, the National Historic Preservation Act of 1966, the Endangered Species Act of 1973, etc.

Thus, under present conditions, a general effort to restrict or regulate development of the existing lease for reasons other than failure to comply with existing laws and regulations would constitute a selective application of the "prevent development" alternative already discussed; that decision, as it related to impacts, possible litigation, and the need for authorizing legislation, would be relevant in this instance.

In addition, application of this alternative might not permit maximum recovery of the coal resources and would thus be contrary to principles of conservation embodied in the legislation which authorizes the leasing of these lands for the purposes described. It is entirely possible that such selective mining would leave isolated blocks of coal that might never be recovered owing to the high costs of mining such remnant areas at a later date.

## E. REQUIRE MODIFICATION OF THE MINING PLAN

## 1. Company-Proposed Alternatives

## a. Railroad routes

Figure 11 shows alternative railroad routes E, F, and G. Area requirements for construction are given in table 3. Alternative route E would terminate about the same distance from the Fish Creek minesite as proposed route H (fig. 2), but would be farther from the Dugout Canyon minesite. Route F would terminate several miles farther from both minesites than route H. Steep slopes caused by dissection of the pediment would prevent extending routes E and F to the proposed central yard site. No alternatives to the proposed location of the central yard site (fig. 2) are indicated in the mining plans. Presumably, an additional conveyor belt or a trucking system would be used to move coal from the proposed central yard site to loading points on alternative rail spurs E and F.

Route E parallels Soldier Creek Road and thus would tend to concentrate road and rail traffic in a single corridor and not encroach on undisturbed areas, as compared with the other routes. Route F begins at the same point as the proposed railroad route H (fig. 2) and parallels Rock Creek for most of its length. Route G originates at the same point as route E near Wellington, but branches from E to join the northern part of route H. All the rail routes are located on similar soils, and variations in soil impacts would relate primarily to amount of area disturbed by construction (table 3).

TABLE 3.--Summary of alternative transportation and utility routes

[See figure 11]

Facility	Right-of-way or site (acres)	Surface disturbance (acres)
Railroad spur, route E-----	142	142
Railroad spur, route F-----	99	99
Railroad spur, route G-----	155	155
Powerline, near or parallel to rail spur E-----	76	8
Powerline, near or parallel to rail spur F-----	73	8

Impacts of the various routes on vegetation would be similar and directly proportional to the length. Routes E and G, which are

located on agricultural lands in some places, therefore would have somewhat greater impact.

Of the alternate rail routes, F would destroy the least amount of wildlife habitat, and G destroy the most. Route F might be a better choice for wildlife than proposed route H or the other alternate routes, E or G, because it would occupy the least amount of habitat, make the least intrusion into deer winter range, and follow an already developed corridor up Clark Valley. The advantages of this alternative might be offset, however, by the need for a longer belt conveyor or an intermediate trucking system between the central yard and the railroad loadout point.

#### b. Powerlines

Figure 11 shows two alternate powerline routes that generally parallel alternate rail routes E and F. Table 3 shows area requirements for construction. Impacts on the soils and vegetation would not be significantly different than those of the proposed line near rail route H (fig. 2 and table 1).

#### c. Slurry ponds

Figure 11 shows alternate slurry pond sites for disposal of coal wastes from the coal washing plant, and table 4 shows acreages they would cover. None of the alternate sites, A, B, or D, is as favorable as the proposed site C (fig. 2) because of the much greater length of dams and volume of dam fill needed to achieve required pond volume. Impacts on vegetation would be similar at the various sites and directly proportional to the area of the ponds.

The alternate sites would have virtually the same impact as the proposed site on the more sensitive species of wildlife, such as deer and raptors. Those mammals and birds least affected by development, such as small birds and rodents, would be affected only by the difference in area covered.

TABLE 4.--Summary of alternative waste disposal sites

[See figure 11]

Facility	Acres right-of-way				Surface disturbance (acres)
	Federal	State	Fee	Total	
Slurry ponds, sites A 1 and 2---	0	55	138	193	193
Slurry ponds, sites B 1 and 2---	92	74	0	166	166
Slurry ponds, sites D 1-5-----	0	115	262	377	377

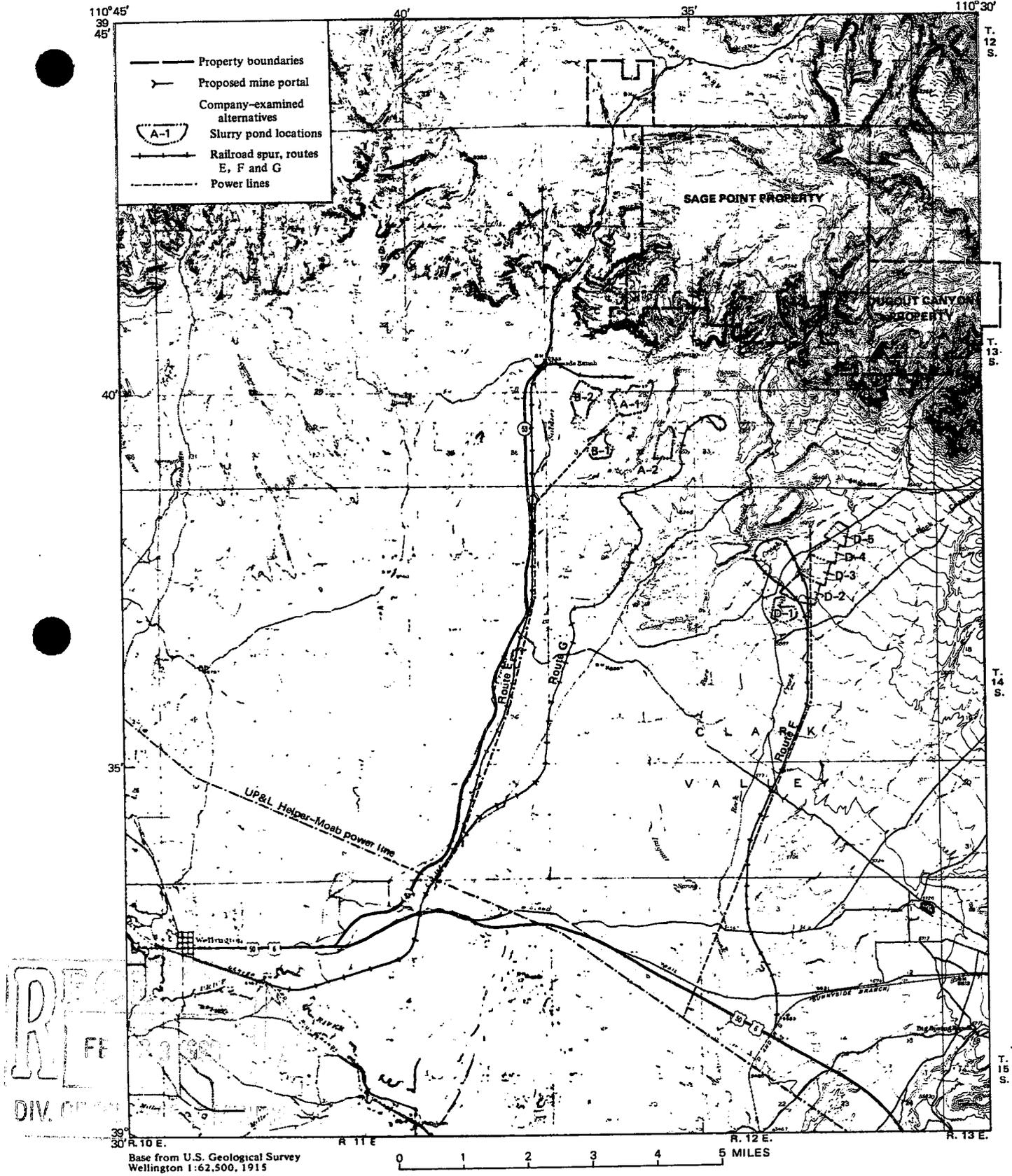


FIGURE 11.--Alternative railroad and powerline routes and coal slurry pond sites for development of the Sage Point and Dugout Canyon coal properties, Carbon County, Utah.

## CHAPTER IX

### CONSULTATION AND COORDINATION WITH OTHERS

#### A. FEDERAL AGENCIES

In addition to agencies that cooperated in preparation of this statement, local Soil Conservation Service and National Weather Service personnel were consulted.

#### B. UTAH STATE AGENCIES

Also consulted for data and analysis were: Geological and Mineralogical Survey, Division of Water Resources, Division of Water Rights, Division of Health, State Engineer, State Climatologist, Division of Wildlife Resources, Division of State Lands, Division of Parks and Recreation, Department of Transportation, Outdoor Recreation Agency, and Institute for the Study of Outdoor Recreation and Tourism, Utah State University, Logan, Utah.

#### C. COUNTY AND LOCAL GOVERNMENT

The Southeastern Association of Governments and other local government offices were consulted during preparation of the environmental statement.

#### D. PRIVATE INDIVIDUALS AND ORGANIZATIONS, INDUSTRY AND NONINDUSTRY

Pacific Gas and Electric Company, San Francisco, California  
Vaughan Hansen Associates, Salt Lake City, Utah

#### E. GENERAL CONSULTATION AND COORDINATION

The regional environmental statement, chapter IX, contains a description of the general consultation and coordination efforts involved in preparation of the total environmental statement.

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FINDING OF NO SIGNIFICANT IMPACT

Sunoco Energy Development Company  
Sage Point/Dugout Canyon Mine

The technical analysis (TA), prepared by the State of Utah, and the environmental assessment (EA), prepared by the Office of Surface Mining (OSM), identify certain environmental impacts that would result from the Federal approval of the mining plan and permit for Sunoco Energy Development Company's (Sunedco) Sage Point/Dugout Canyon mine. The 5-year permit application, submitted to the State under its approved permanent program, proposes a total permit and mining-plan area of 4,475 acres.

The regional impacts of coal mining in the Central Utah coal region are addressed in the U. S. Geological Survey's "Development of Coal Resources in Central Utah" environmental impact statement, 1979. The State determined that some impacts will occur as a result of the Sage Point/Dugout Canyon mine. However, OSM finds that these impacts would not be significant.

Impacts identified by OSM and the State would be mitigated by the environmental protection measures detailed in Sunedco's permit application package and proposed conditions attached to the permit.

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

*Richard E. Dawer*  
acts Administrator  
Western Technical Center

3/23/84  
Date

ENVIRONMENTAL ASSESSMENT

SUNEDCO COAL COMPANY

SAGE POINT - DUGOUT CANYON MINE

CARBON COUNTY, UTAH

for a

Utah Permanent Program SMCRA Permit

and a

Federal Mining Plan Approval

Prepared by

The Office of Surface Mining (OSM)

U.S. Department of the Interior

March 1984

Introduction

The proposed Sage Point-Dugout Canyon underground coal mine project is located 15 miles northeast of Price in Carbon County, Utah. Eureka Energy Company (EEC), a subsidiary of Pacific Gas and Electric of San Francisco, California, submitted a mining and reclamation plan (MRP) for the Sage Point-Dugout Canyon mines to the U.S. Geological Survey (USGS) on November 3, 1976, in accordance with Title 30 CFR Part 211. The USGS, in its final environmental statement for the Development of Coal Reserves in Central Utah (1979), individually assessed the MRP for this mine as well as six others in the area. Since the MRP was submitted prior to promulgation of OSM's regulations, EEC was requested to revise the MRP in accordance with applicable OSM and State of Utah regulations. EEC did so by submitting an application to the Utah Division of Oil, Gas, and Mining on December 12, 1980, that addressed the requirements of SMCRA, the Utah State Coal Program, the Federal Lands Program and the Mineral Leasing Act of 1970. (See TA in this Secretarial decision document.)

On February 10, 1982, EEC executed a definitive coal property sale and purchase agreement to sell the Sage Point-Dugout Canyon coal properties to Sunedco Coal Company. The purchase of the property by Sunedco was completed on May 13, 1982, with the completed reassignment of all Federal leases. Since the regulatory authority was not certain that Sunedco would adopt the entire application as it stood at the time of purchase, the permitting process was put on hold until the Sunedco staff had time to completely review the application. On December 20, 1982, Sunedco indicated that no major modifications to the application had been identified and requested that the permitting process for a life-of-mine application (40 yrs) proceed.

Several letters were sent to Sunedco by the regulatory authorities in 1983 which resulted in PAP revisions by the applicant. (See TA in this decision document.) In November 1983, OSM indicated that four outstanding problems remained with Sunedco's application. (See TA.) In December 1983 and January 1984, Sunedco responded to OSM's November letter by submitting a permit application package (PAP) revision that greatly reduced their scale of operations. The area of initial permit approval being sought by Sunedco was reduced from the proposed original life-of-mine (18,242 acres) to that needed for only the first 5 years of mining (4,475 acres). The original life-of-mine and initial SMCRA permit areas are shown on the accompanying maps entitled "Permit Boundaries," and "Life-of-Mine Permit Area."

An environmental assessment was originally written for this mining permit in September 1983 to assess the impacts of Sunedco's proposed original life-of-mine. Alternative #2 of the assessment was for OSM to approve the SMCRA permit and for the Secretary to approve the mining plan for the original life-of-mine area. However, because of Sunedco's desires to reduce their area of initial approval, a new alternative (#3), has been added to this revised EA - that of approving Sunedco's PAP (as revised through January 4, 1984) for the initial 4,475-acre SMCRA permit area and the 3,080-acre mining-plan area only.

Sunedco's proposed original life-of-mine permit area contained all or portions of five Federal coal leases (U-7746; U-089096; U-092147; U-0144820; and U-07064-027821), three state coal leases, and two areas of private coal. Sunedco's initial SMCRA permit area contains all or portions of four Federal coal leases (U-7746, U-092147, U-0144820, and U-07064-027821), and two areas of fee (private) coal. No State coal is included in Sunedco's initial SMCRA permit area. (See accompanying boundaries map.) Total surface disturbance for the original life-of-mine area would have been 476.5 acres while that for the initial SMCRA permit area is 70 acres.

#### Purpose and Need of the Proposed Action

Pursuant to 30 CFR 746.14, the Secretary of the Interior must approve, disapprove, or conditionally approve the proposed mining plan. This Environmental Assessment is being written to assist the public officials in making decisions that are based on an understanding of the environmental consequences. On February 17, 1984, UDOGM proposed to approved Sunedco's initial SMCRA permit area as revised and recommended that OSM do the same. (See Memoranda section of this decision document.) In support of this proposed decision, UDOGM has submitted an updated technical analysis (TA) of the PAP to OSM.

#### ALTERNATIVES

##### Alternative #1 - No Action

The Federal Mineral Leasing laws require that the Secretary of the Interior respond to mining plan applications and approve, disapprove, or conditionally approve mining plans for operations on Federal leases. Furthermore, under Section 523 of SMCRA the Director of OSM must approve, disapprove, or approve with conditions applications for operators to conduct surface coal mining operations on Federal lands in states without cooperative agreements pursuant to SMCRA. Therefore, the alternative to take no action is not viable and will not be discussed further.

Alternative #2 - Approve Sunedco's 40-year Life-of-Mine SMCRA Permit and Mining Plan

This alternative is for the Secretary of the Interior to approve mining in Sunedco's 40-year life-of-mine plan area as proposed in the original application. The original life-of-mine area is 18,242 acres, which includes 476.5 acres of surface disturbance.

The life-of-mine project includes four independent underground mines - two mines each in two box canyons, Fish Creek Canyon and Dugout Canyon. The four mines will be based on two portal pads, one in Fish Creek Canyon and one in Dugout Canyon. The portal pads will provide level areas for the parking, storage facilities, maintenance buildings, and change houses necessary to support the two mines in each canyon.

The 775 miners to be employed at Sunedco's operation (life-of-mine, maximum number) will extract coal from three seams, the Sunnyside, Rock Canyon, and Gilson. Both room-and-pillar and longwall mining methods will be used. The maximum annual production, nearly 5 MTY, will not be reached until the 14th year of the mine operations. The expected life of each mine is as follows: Fish Creek No. 1, 36 years; Fish Creek No. 2, 28 years; Dugout Canyon No. 1, 31 years; Dugout Canyon No. 2, 46 years. Newly mined coal will exit the mines on conveyor belts for transport down the canyons to the central facilities area for washing, preparation, and loadout. The overland conveyor, with a maximum length of 4 miles from Dugout Canyon to the central facilities, will be enclosed and will be elevated over approximately 95 percent of its length.

The central facilities, located southwest of Fish Creek Canyon on an outwash plain, will contain administrative offices, parking areas, two coal stockpile areas, a coal wash and preparation plant, a center for major equipment repair, a railroad loop, and coal-loadout structures. The railroad spur and loop will be constructed from a future Denver and Rio Grande Western Railroad line originating southeast of Wellington. This will provide access for unit trains to be used for transporting coal out of the permit area.

A mile west of the central facilities, Anderson Reservoir (an existing facility to be enlarged) will store water needed to operate the central facilities and Fish Creek portals. The water will be diverted from Soldier Creek, which flows south from the Book Cliffs through the western part of the project area. The Dugout mines will be supplied from a newly constructed reservoir near Dugout Creek.

This alternative is not viable at this time because all required land use authorizations could not be secured by the applicant. This alternative will be considered in the future when the 40-year mining plan is found to be complete and accurate.

Alternative #3 - Approve Sunedco's Initial 5-Year SMCRA Permit and Mining Plan (The Preferred Alternative)

This alternative is for the Secretary to approve mining in Sunedco's proposed mining plan and SMCRA permit area as described in the PAP as updated through January 4, 1984. Sunedco's initial SMCRA permit area is shown on the accompanying map entitled "Permit Boundaries."

During their initial SMCRA permit (approximately first 5 years of mining), Sunedco proposes to open two independent underground mines in Dugout Canyon. The two mines will be based on a portal pad placed in the canyon that would provide level areas for parking, storage, facilities, maintenance buildings, and change houses. In addition to the portal facilities, Sunedco would also build the following structures near the mouth of Dugout Canyon: sewage lagoon, waste-rock disposal site, reservoir (to provide water for the Dugout Canyon mine workings), and the associated water, power, and sewer lines necessary for mine operation. No Fish Creek area facilities would be authorized under this initial SMCRA permit. An overland conveyor will eventually be built from the Dugout Canyon portals; however, this is also not a part of Sunedco's initial SMCRA permit. When built, this conveyor would link the Dugout Canyon portals with the central facilities proposed for the life-of-mine. (See life-of-mine area map.)<sup>1/</sup>

Approximately 120 miners will be employed at the Dugout Canyon operations for the first 5 years (initial SMCRA permit). Coal will be extracted from the Dugout portal area according to the following sequence: Rock Canyon Seam (beginning in year 2), Gilson seam (beginning in year 5). (See maps D03006, D03007 and D03007 in Volume II of the PAP.) The expected life of the Dugout Canyon #1 portals is 31 years and that for the Dugout Canyon #2 portal is 46 years. Both room-and-pillar and longwall mining methods will be used. During the initial years of mining (approximately first 5 years) maximum coal production should not exceed 1.2 million annually. Newly mined coal will be transported from the mine mouth by truck and would be hauled approximately 20 miles via county road and State highway to an existing railroad siding.

The applicant has provided complete and accurate information for the 5-year mining plan. Therefore OSM's preferred alternative is to approve the initial SMCRA permit and mining plan with conditions and as recommended by the Utah Division of Oil, Gas, and Mining in their amended letter of recommendation and Findings of Compliance, dated February 17, 1984.

#### Alternative #4 - Disapproval of the SMCRA Permit and Mining Plan

If Sunedco's proposal is denied, there is a potential loss of approximately 94 million tons of coal production from five Federal leases and State and fee coal (worst case). There could also be a loss of Federal royalties from the mining of the coal, 83 percent of which is under Federal lease. This coal could be mined at some future date.

<sup>1/</sup>Note: The construction of this conveyor was included, subject to conditions, in BLM's industrial occupancy lease to Sunoco, dated January 4, 1984. Construction of this conveyor, however, may not commence until Sunedco submits a revised permit application and the revision is approved by UDOGM and OSM.

## DESCRIPTION OF THE AFFECTED ENVIRONMENT<sup>2/</sup>

The striking aspect of the project area landscape is formed by the erosional features that have been carved into the Mesa Verde group forming the steeply rising palisades of the Book Cliffs. The central facilities are to be located at the base of the Book Cliffs on the outwash plain (pediment).

Predominant vegetative types range from pinyon-juniper, greasewood-sagebrush, and shrub-grass-juniper at the base of the Book Cliffs to Douglas fir and aspen at higher altitudes. Less extensive habitats include cottonwood and other streambank species along the creeks and rush-grass and salt cedar-willow communities at Anderson Reservoir. Four parcels of cultivated lands lie in the permit area. The primary crop raised is alfalfa. No threatened or endangered species have been found in the permit area.

Structurally, the permit and adjacent areas lie along the northern extent of the San Rafael Swell and the southern flank of the Uinta Basin. Faulting in the permit area is minor. Some minor subsidence may occur under permitted land used for grazing and recreation. After careful analysis, OSM and DOGM have determined that subsidence will not impact a natural gas pipeline and dirt road passing through the potential subsidence area. Streams or springs should not be affected. Six small drainage basins are contained within the life-of-mine area. Soldier, Pine, and Dugout Creeks flow year-round except during periods of unusually low precipitation. The upper reaches of Pace, Fish, and Corbula creeks are maintained by springs that flow in direct response to precipitation.

The current land use for the project area is open range for cattle on the lower elevations and wildlife habitat on the higher elevations, with limited agricultural activity occurring in the vicinity of the proposed central administration facilities. Previous coal mining has occurred on the permit area. In the Dugout Canyon area, the Knight Ideal Coal Company mined the Rock Canyon and Gilson coal seams located on both sides of the canyon. The mine opened in 1940 and closed in 1965. Total coal extracted from the two seams was approximately 1,320,000 tons by conventional room-and-pillar methods.

Updated alternative subsidence prevention plans must be provided to the regulatory authority for approval if forecasts are found to be erroneous. Although significant subsidence impacts are not expected, should any surficial damage or fractures become apparent which may constitute a hazard, subsidence prevention plans must be updated immediately.

## IMPACTS OF ALTERNATIVE ACTIONS

### Impacts of Alternative #2

#### Soils

Approximately 131 acres of soils will be disturbed during mining activities without topsoil removal, because they have been identified as being without topsoil or excessively high in salt content. The applicant has been required

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<sup>2/</sup>Note: This general description, unless otherwise noted, applies to both the life-of-mine and initial SMCRA permit areas.

to provide substitute topsoil material for these sites. Soil material that is to be salvaged will be removed in two lifts. The top layer will be 6 inches or more thick; the second will include soil that is not suitable for a seed-bed material but will be useful as a spoil cover and will increase the water-holding capacity of the reclaimed area.

### Vegetation

The vegetation on the 476-acre proposed surface disturbance area would be removed; revegetation on the majority of the area would not occur until the operation is abandoned in approximately 40 years. The retention of two permanent reservoirs (957 acres) and Fish Creek Road (26 acres) will result in small land tracts on which vegetation will not be replaced. The central facilities and preparation plant waste sites will mainly impact pinyon-juniper, greasewood-sagebrush, and shrub-grass-juniper types. Impacts to the deciduous-streambank vegetation in the Fish Creek and Dugout Canyon portal areas due to the facilities, roads, water lines, sewage lines, and overland conveyor will be more significant due to the limited extent of this vegetation type in the area. Little or no impact is anticipated on the vegetation overlying the underground workings due to subsidence.

The applicant has submitted a complete revegetation plan. This plan adequately addresses timing of revegetation, species and seeding rates, planting methods and mulching techniques for both permanent and contemporaneous reclamation. Introduced species are only used to add stabilization and species diversity to the species mix, or substituted for another species of the same growth form for which seed is not commercially available. Irrigation will be used only on steep slopes and preparation plant waste-disposal sites.

### Fish and Wildlife Resources

Aquatic habitat is limited in the life-of-mine area. None of the streams on the project area is considered to be of value as a sport fishery, but some game species do inhabit them. Physical and chemical characteristics of the streams that will be disturbed by mining activities were measured for the purpose of developing stream reclamation plans. Streams will be culverted as they pass through the two portal areas to minimize disturbance from construction and mining activities.

Construction of surface facilities will disturb approximately 335 acres of critical mule deer winter range. This is roughly 3 percent of the designated critical winter range in deer herd unit 27b. During a winter deer study on the permit area, heavy use was found in pinyon-juniper habitat and in areas adjacent to agricultural fields near proposed surface facilities. However, heavy snowfall forced the animals to move south of the proposed central facilities area into lower elevations. Because of the relatively small acreage to be impacted, and because the main facilities are clustered at the base of the Bookcliffs, it is anticipated that this habitat loss will be insignificant.

Conveyors will be constructed to carry coal from the mine portals to the preparation plant. These conveyors, if not constructed properly, could impede passage of large mammals, particularly in areas of mule deer critical winter range. Preliminary data do not indicate a definitive migration movement, but rather daily feeding movements around the proposed conveyor route.

Because proper design of the conveyor is considered a critical consideration for big game protection, a condition has been proposed by DOGM and OSM which requires final detailed designs of the conveyor throughout its length, giving exact location and height. The design must take into account data collected by DWR on big game movements through and general use of the conveyor corridors chosen. In addition, Sunedco must carry out a big game movement monitoring program post-construction and may be required to construct special big game crossings based on results of this study.

The BLM, USFWS, and DWR have documented 3 golden eagle, 1 prairie falcon, and 2 Cooper's hawk active nests within the life-of-mine area. These would be protected by proposed permit conditions provided by the BLM and USFWS. Three bald eagles have been sighted during winter on the mining-plan area, but no roost trees have been located. The Endangered Species Office of the USFWS has confirmed that no species currently listed by the USFWS as threatened or endangered will be affected by the mine. It was noted, however, that the rare plant species Hedysarum occidentale var. canon may be affected by the proposed action.

Vegetation removal on the 476 acres of surface disturbance will degrade wildlife habitat. Noise, lights, activities, and traffic may further increase the acreage which will not be utilized by some wildlife species, particularly sensitive species such as black bears, mountain lions, and mule deer. Some riparian habitat will be lost. There will be a vehicle collision hazard for all wildlife. Illegal shooting may increase. The BLM has provided permit conditions for mitigating loss of riparian habitat, and reducing vehicular collisions and disturbance to nesting raptors by conveyor lights.

#### Surface Water Hydrology

The data from periodic measurements at 12 surface water monitoring sites in the project area are presented in the PAP. The data from recorder measurements taken on Soldier Creek and Dugout Creek suggest a mean annual flow estimated at 1,000 acre-feet per year and 558 acre-feet per year, respectively. The minimum uncontrolled flow in all reaches of all streams in the project area is less than one cubic foot per second for several months of the year. Maximum flows occur during spring snowmelt and summer torrential rainstorm periods.

Water sampling in the project area was initiated in July 1976 to determine baseline chemical constituents and suspended sediment in streams. Chemical and suspended sediment analyses for samples collected at 13 stream sites during 1976-81 are reported in the PAP. The quality of the surface water in the project area is better than that of the Price River. The observed range of dissolved-solids concentration in streams in the project area was 215 to 3,375 milligrams/liter, whereas in the Price River at Woodside during water years 1976-78 the observed range was 1,150 to 6,990 milligrams/liter. The

difference is primarily a result of the concentration of sulfate which was 25 to 980 milligrams/liter in the project-area streams and 640 to 4,300 milligrams/liter in the Price River. These higher concentrations of dissolved-solids and sulfates in the Price River are caused by the tributary streams dissolving sulfate (and to a lesser extent other constituents) as they flow across Mancos Shale or soils which are largely derived from that shale.

The wide variability of discharge rate, temperature, and specific conductance of most springs suggest a local body of ground water near the surface. The magnitude and duration of large discharges from springs occurs in early spring only after appreciable winter precipitation. Recharge derived from snowmelt is rapid, suggesting both high permeability and shallow depths to the water table. In addition, the large range in discharge rate over a short period of time, with a very low minimum in the summer, suggests that the body of ground water supplying the springs is small.

Sunedco's life-of-mine application calls for two permanent diversions of Soldier Creek (Fish Creek is a tributary) and Dugout Creek. The Soldier Creek diversion will divert flow from Soldier Creek to the proposed Anderson Reservoir (1,675 acre-feet active storage capacity), and the Dugout Creek diversion will divert flow from Dugout Creek to the proposed Dugout Reservoir (525 acre-feet active storage capacity). It can be expected that there will be some loss of water presently available to downstream riparian habitats. (See also Alluvial Valley Floor section.) The BLM has imposed conditions on Sunedco relative to their use of water from Dugout Creek which will mitigate impacts to potentially affected riparian vegetation. In addition, the State Engineer's Office requires that when Sunedco converts their water rights on Dugout Creek to industrial use they must release 50 percent of available water for down-stream use. Sunedco may only take water from Dugout Creek to fill Dugout Reservoir during the irrigation season (approximately February through June).

Temporary diversions will be installed to divert flow away from disturbed areas. Undisturbed drainages above the portal areas will be routed under the portal sites through large culverts. Sixteen sedimentation ponds will contain and settle sediments associated with runoff from disturbed areas. A sewage lagoon will be constructed to process wastewater produced at the portal sites, central facilities, and coal-preparation plant. A surface (13 sites) and ground-water (5 wells, 10 springs) monitoring program will be carried out. Sediment ponds should prevent some unavoidable increase in suspended sediment in streams during construction. Water discharge from underground workings is not anticipated.

#### Ground-Water Hydrology

Ground water in the Sage Point-Dugout Canyon project area, like ground water in other parts of the Price River drainage basin, occurs under both confined and unconfined conditions. Unconfined water exists primarily in shallow alluvial or colluvial deposits along the largest perennial and intermittent streams. It also exists in the soil mantle and the upper few tens of feet of the underlying consolidated rocks where the rocks have been extensively weathered and fractured. Confined water exists at greater depths where relatively impermeable beds are confining a more permeable water-bearing bed.

In the affected area, there has been no development of ground water in either the perched aquifers or the regional (areal) aquifer. Three wells were drilled in the north adjacent area, but these wells were for monitoring purposes only. Discharge occurs from natural sources such as widely scattered springs, seepage into streams, and evapotranspiration by native vegetation. If the water supply of any owner of a vested water right is injured as a result of the mining activities, Sunedco will replace that water supply in a manner consistent with applicable State law.

As indicated by the long period of time required for ground-water levels to stabilize following well perforation (table IV-B.7), the permeability of the aquifers is low. This low permeability makes well sampling difficult and precludes the collection of good ground-water quality data from wells in the permit area. Consequently, the applicant has assessed the quality of ground water in the permit area by collecting and analyzing water samples from a wide variety of springs. Because the samples were taken immediately after the water emerged from the aquifers, the data provide a good indication of the quality of water within the aquifer.

Measurements of ground-water levels in the permit area began in November 1979. Water levels in five exploration holes and in two idle mines in Dugout Canyon are measured at monthly intervals. The fluctuations in water levels and discharge may vary somewhat from one year to another. The variations result in response to the amount of winter precipitation and to the variability, in both time and length, of the snow-melt period. In the Sage Point-Dugout Canyon project area, the peak water levels in the unconfined aquifer should occur between late April and early June, approximately coinciding with or shortly following the peak snowmelt and runoff period.

Possible subsidence may impact Pine Creek. (See Permit Boundaries Map.) There may be drainage of surface waters into mines through subsidence fractures which may extend as much as a few hundred feet above the mine roof. Drainage into the mine through subsidence fractures may reduce the flow of some springs that have their sources in the regional aquifer. No mine drainage pollution is expected during the active operation because mine water will be used in the mine. The flow of Soldier and Dugout Creeks below Anderson Reservoir and Dugout Reservoir might be reduced.

#### Alluvial Valley Floors

Four major drainages are located in the life-of-mine area: Soldier Creek, Fish Creek, Dugout Creek, and Pace Creek. Fish Creek is an intermittent stream with no available water rights. The small area of alluvium in its downstream reach contains neither irrigated nor subirrigated croplands. Dugout Creek flows through alluvium only after it has exited the canyon. This alluvium contains neither subirrigated nor irrigated cropland. All planned surface disturbances in the Dugout Creek drainage are upland of any alluvium. Pace Creek flows through the northeast portions of the property. It is perennial above the Book Cliffs escarpment where the stream channel is rocky alluvium and short reaches of bedrock; it is intermittent below the cliffs where the creek bottom is Mancos Shale or alluvium which is derived in part from Mancos Shale. The small areas of alluvium along Pace Creek are not irrigable. Soldier Creek is the only drainage with alluvium deposits which maybe affected by surface facilities. Consequently, the alluvial valley floor

(AVF) investigation focused on the central facilities area near Soldier Creek and the corresponding alluvial deposits. No other areas approximate the conditions required for an AVF.

Soldier Creek is an intermittent stream where it traverses the proposed central facilities area (southwestern portion of the permit area); it is generally dry except in spring and early summer, depending on the amount of precipitation. Small-scale agricultural activities in the area of investigation have taken place periodically since the turn of the century.

Currently, the only cultivated lands in the permit area (38 acres) are planted in alfalfa and are flood irrigated. These lands provide supplementary feed for a local rancher's cattle herd during winter months. Most land adjacent to the currently flood-irrigated acreage is used as winter and spring rangeland.

OSM has designated Soldier Creek within the proposed life-of-mine area as an alluvial valley floor. The Soldier Creek AVF contains 158 acres of historically irrigated land (within the permit area), of which 58.1 acres have been irrigated within the past 5 years. Sunedco has proposed to surficially disturb 8.6 acres of previously irrigated land for a service road and central mine facilities. This level of disturbance is estimated to result in a 5.4 percent decrease in the farm's productivity during the life-of-mine.

This decrease in production is considered insignificant for this site because the area of historically irrigable land (158 acres) is much larger than the amount of water available for irrigation at present (i.e., sufficient water to irrigate approximately 58 acres). It is concluded that the farmer could utilize management practices to compensate for the loss of production on the 8.6 acres to be affected.

OSM has concluded that the applicant has demonstrated in the application that there should not be any significant adverse impact to the hydrologic balance or the hydrologic function of the AVF during or after mining. The impact will be confined to the surface disturbance of 8.6 acres for a portion of the central facilities and a service road on the permit area. These facilities will not impact the hydrologic function of the AVF and after mining the sites will be reclaimed to the prior land use.

#### Subsidence

Grazing lands used for cattle are not expected to be affected by subsidence. Potential subsidence effects should not impede the recreational use of the land, which is mainly for deer hunting. Selective mining will be employed providing for 50 percent or less extraction within a 25° angle of draw beneath a Mountain Fuel Supply Company pipeline and no subsidence effects are anticipated. Monitoring stations will be established to monitor the possible subsidence in the vicinity of the pipeline as well as near Soldier and Pine Creeks, the only streams which may potentially experience any measureable subsidence. Uniform lowering of the surface area (less than three feet of total elevation decrease) may occur due to longwall mining, but no fracturing should occur. Possible subsidence effects which may occur to a single dirt road passing through the subsidence area will be slight and easily repaired.

Along with partial extraction methods being employed, barrier pillar columnization and harmonic extraction will be utilized to avoid surface subsidence effects while multiple seam mining practices are used.

In addition, natural features such as the 200+ foot thickness of the massive Castlegate sandstone and the extensive (generally 1,000 to 2,500 foot) depth of overburden should preclude the transference of subsidence effects to the surface.

### Backfilling and Grading

Sunedco has proposed that some of the Fish Creek and Dugout Canyon portal face cuts remain as a part of the postmining topography. A geotechnical investigation of the highwall stability in the Dugout Canyon portal area concluded that the minimum static safety factors are in excess of 1.5 and thus would be satisfactorily stable. Similar analyses have not yet been made for the two proposed Fish Creek portals.

### Coal Processing and Underground Development Waste

Total coal waste from the preparation plant facility is estimated to be 807,000 TPY (tons per year). The applicant has selected two sites for coal preparation plant waste disposal. These areas are the Saddle Valley and Boot Valley waste dumps. Four sediment ponds are proposed for containing the runoff from the Saddle Valley area and three ponds for Boot Valley. Surface runoff diversions have been designed to divert upslope surface runoff away from the preparation plant waste. Other diversions within the waste areas will route disturbed runoff to the sedimentation ponds.

The coal preparation waste will be transported by conveyor belt to the northern end of the Boot Valley coal waste disposal site and be trucked to the Saddle Valley site or placed into the Boot Valley fill. The coal waste will be spread in lifts of less than 24 inches and compacted. An underdrain consisting of durable sandstone will be constructed to conduct infiltrated water to the sedimentation ponds. No spring or seeps are present in the area. These two sites will be reclaimed and revegetated.

Underground development waste from the Fish Creek and Dugout Canyon mines will be disposed of in two durable rock fill sites located in Fish Creek and Dugout canyons, respectively. Waste rock will be hauled by end-dump trucks to the disposal sites. The fills are estimated to exceed more than 90 percent by volume rocks that will not slake in water. The slopes will be similar to tallus slopes. (See PAP, p. III-338, Vol. II.)

During mine operation, rock wastes will be deposited in horizontal lifts to create a terraced fill with terraces at 50-foot vertical intervals and 3h:1v outslopes.

Surface runoff from above the two fills will be diverted to drainage channels on either side of the fills. (See Maps D033-0036 and D03-0037 in the PAP.) No surface flow on the outslopes is expected, because the coarse nature of the durable rock will lead to rapid infiltration.

At the cessation of mining, the terraces will be modified and final rock fill placed to conform with natural contours and landforms. The final slope will not exceed 3h:1v. Sunedco has been required to provide substitute topsoil material for reclamation vegetation of these sites. Substitute material for the Dugout Canyon fill will come from the proposed Dugout Reservoir.

#### Air Quality

Modeling conducted by the applicant estimated the TSP annual average concentration to be 30 micrograms per cubic meter and the maximum 24-hour concentration to be 112 micrograms per cubic meter. This is less than the Federal standard of 60 micrograms per cubic meter and 150 micrograms per cubic meter, respectively. No significant impacts are expected to air quality.

#### Prime Farmland

The Fish Creek Ridge Road (50-foot width) will cross 1,500 feet of prime farmland (1.72 acres disturbed). The Soil Conservation Service has approved the prime farmland operation and reclamation plan which addresses special handling and reclamation of these soils.

#### Postmining Land Use

In the area of the proposed mine, cattle grazing, wildlife habitat, recreation, and hunting are the primary land uses. Farming (alfalfa cultivation) and coal mining also occur nearby.

Anderson Reservoir, Dugout Canyon Reservoir, and their associated diversion structures will remain on the life-of-mine permit area as permanent features after the completion of underground mining activities. Dugout Canyon Reservoir, a permanent structure to be built by the applicant on BLM surface, will be suitable for the postmining land uses of grazing and wildlife habitat. The county roads which were in existence prior to the development of the underground mine (Soldier Creek and Dugout Canyon roads) will also remain at the conclusion of the underground mining activities. Fish Creek Road, a new county road, Dugout Canyon Road, and Soldier Creek Road will remain as paved roads.

The waste rock fills in Fish Creek and Dugout Canyons as well as the preparation plant processing waste sites in Saddle and Boot Valleys will be constructed as permanent features to blend into the existing topography. These areas will be contoured and revegetated upon completion of operations.

The portal face cuts will remain as permanent features after mining. They will not affect the anticipated postmining land uses.

In the areas of surface disturbance, soil reclamation and revegetation will restore the areas to their premining use, rangeland and wildlife habitat. The value of present cropland will be restored or enhanced following mining, since Anderson Reservoir will be enlarged and water availability may increase.

#### Cultural and Historical Resources

The proposed Sage Point-Dugout Canyon life-of-mine permit area has been inventoried. Thirty-three cultural resource sites within the life-of-mine

permit area were located. The sites included 9 historic structures, 23 prehistoric sites, and one site with both historic and prehistoric components.

During mining operations 3 historic sites and 5 prehistoric sites will be impacted. Mitigation measures in the form of a data recovery plan will be necessary to mitigate adverse impacts. (See stipulation.) Even with a well-developed mitigation plan, however, some data will be lost. Furthermore, once the sites are destroyed, they can never be reexamined. Thus, there would be a loss of potential data, as well as the physical loss of the sites.

Known and unknown cultural resources located in the vicinity may be impacted by mining activities as a result of increased population in the area. There may be increased vandalism and unauthorized collections associated with recreational activities and other pursuits.

### Socioeconomics

The socioeconomic impacts of the Sage Point/Dugout Canyon mine would be moderately significant. Assuming that mine development were to commence in 1984, the overall construction period would last six years, with peak construction employment occurring in 1986 at 150 workers. At peak production (5 MTY), a total operations work force of 775 would be required. The mine would induce approximately 600 secondary jobs and result in a total mine-related population of 3,126 by 1995.

The primary jurisdictions to be affected by the mine are Price and Wellington in Carbon County and, to a lesser extent, the communities of Helper and East Carbon, also in Carbon County. Without the mine, the population of Carbon County is projected to increase 54 percent from its 1982 population of 24,183 to 37,218 in 1995; with the mine, to 40,344. This represents an 8 percent increase over the county's projected total population without the mine in 1995.

Over this same period, the cities of Price and Wellington without the mine are forecast to nearly double in size from 10,043 to 17,659 and 1,550 to 2,777, respectively. With the mine, the 1995 population of Price is projected at 19,347, with Wellington's population reaching 3,621. This represents an increase over the Price and Wellington projected 1995 populations without the mine of 9.6 and 30 percent, respectively. The annual growth rates without the mine from 1980-95 average 3.5 percent, with the mine 4.5 percent. The greatest change will be felt in Wellington in 1985-86 when the mine increases the town's projected growth rate from 6 percent to 11.2 percent.

The following is a summary of the important effects on public services and facilities attributable to the mine:

#### 1. Education:

The mine would add approximately 809 students to the Carbon County School District by 1995. The projected mine-related student enrollment will require an additional elementary school, expansion of the junior and senior highschools, and 35-40 additional teachers over projected baseline demands.

2. Housing:

Approximately 900 housing units are forecast to be required for the mine-related population. Although the housing trade has historically been able to meet demands, service infrastructure and the financial market may inhibit the mine-related population from finding adequate housing.

3. Water:

The Price City water treatment system is projected to exceed current capacity in 1985. If improvement funds are not secured, the mine-related population capacity demand of 0.5 MGD would place an additional burden on the system.

4. Sewer:

The projected cost of improving the existing sewage treatment system has escalated from 4 to 6 million dollars. If improvements are further delayed, the mine-related impact will exacerbate the problem.

5. Fiscal Impact:

The mine would have both positive and negative fiscal impacts on jurisdictions and service providers. The mine would generate a peak income between \$10 and \$11 million in direct sales tax and property tax to Carbon County jurisdiction over the 1984-95 timeframe. However, the lag time between revenue generation and project impact may exacerbate the county's financial problems under the baseline population forecast. Using a set of alternative assumptions, the State has projected that the mine could result in average annual County deficits of approximately \$1.5 million, reaching a cumulative deficit of \$17.5 million by 1995 (Utah Department of Community and Economic Development (DCED)). Using these assumptions, the project could have the net effect of reducing annual surpluses and increasing deficits in all of the affected jurisdictions.

The Utah Resource Development Code, Utah Code Ann. Section 63-51-1 et seq. (Supp. 1981), requires all major developers to file a socioeconomic impact and mitigation plan with the CDED 90 days prior to project construction. Sunedco has partially complied with this requirement by preparing a draft impact report. The review of this report by State and local officials has concluded that certain major issues exist which will need to be resolved during the mitigation planning phase. These issues include the report's assumptions and Sunedco's finding of no significant impacts related to the Sage Point/Dugout Canyon mine. OSM's socioeconomic permit stipulation, agreed upon by Sunedco on May 9, 1983, will help ensure the company's compliance with applicable laws as well as the development and implementation of a mitigation plan in consultation with OSM, State, and local officials.

Impacts of Alternative #3

Alternative #2 is a more complex proposal than Alternative #3 and represents disturbance to a larger area (i.e., central facilities area, 4 portals, 2 conveyors, etc.). Thus, for many disciplines the impacts under

Alternative #2 would be greater than those under Alternative #3. Rather than duplicate the impact discussion provided for Alternative #2, the following discussion focuses on where the impacts under Alternative #3 differ from those previously described for Alternative #2.

### Soils

Impacts to soils would be similar although less extensive than those described for Alternative #2 as there would be only 70 acres of surface disturbance as compared to 476 acres. Sunedco has submitted plans for the revegetation of their Dugout Canyon waste rock disposal site by utilizing excess soils salvaged from the Dugout Canyon Reservoir site. It has been determined that these soils represent a suitable growth medium. (See TA supplement No. 2, re: UMC 817.111-.117.)

### Vegetation

Vegetation impacts would be similar although less extensive than those described under alternative #2. Seventy acres of surface disturbance would occur as compared to 476 acres. Because the Fish Creek portals and pad, the central facilities, and the two conveyor systems would not be constructed under this alternative, vegetation impacts would be concentrated at the Dugout Canyon portal pad site and nearby sewage lagoon, waste rock and reservoir sites. (See Permit Boundaries Map.) Sunedco has submitted comprehensive and acceptable plans to revegetate the Dugout Canyon waste rock site; thus, long-term vegetation impacts should be minimal.

### Fish and Wildlife Resources

Fish and wildlife impacts would be similar to those described under Alternative #2. However, for the following reasons, they should be less extensive:

Less aquatic habit disturbance would occur. The Soldier Creek (central facilities) and Fish Creek portions of the life-of-mine plan area and the Dugout Canyon conveyor system would not be constructed.

Less mule deer winter range would be disturbed because the central facilities and Fish Creek portions of the life-of-mine area would not be authorized.

No conveyor systems would be constructed that could potentially impede passage of large mammals.

Vegetation removal would occur on 70 acres as opposed to 476 acres.

Potential for direct wildlife-man interaction such as vehicle collisions and poaching would be less because fewer new roads would be constructed and hence access would be more restricted.

Two Cooper's hawk nests, one active prairie falcon eyrie, one suspected prairie falcon eyrie and one golden eagle nest site (old) were documented within the proposed initial SMCRA permit area by the U.S. Fish and Wildlife Service (USFWS) and the Utah Division of Wildlife Resources (UDWR). These would be protected by proposed permit conditions provided by BLM and USFWS. (See also the conditions attached to the BLM's surface occupancy lease #U-529808.)

### Surface Water Hydrology

Impacts would be similar although less extensive than those described for alternative #2. The absence of the proposed Fish Creek portals, central facilities area, and the Soldier Creek diversion would make surface water impacts under Alternative #3 less severe.

### Ground Water Hydrology

Impacts would be similar although less extensive than those described for Alternative #2.

Possible subsidence impact to Pine Creek should be less under Alternative #3 because only the southernmost boundary of the drainage would be impacted during the initial SMCRA permit term.

### Alluvial Valley Floors

No impacts would occur to the Soldier Creek alluvial valley floor under this alternative.

### Subsidence

The potential for subsidence would be similar to that for Alternative #2 though the potential impact would be smaller. The potential for damage to the Mountain Fuel Supply pipeline under Alternative #3 would be considerably less because no extraction would occur within a mile of the pipeline.

### Backfilling and Grading

Impacts would be similar although less extensive than those described for Alternative #2. Only the Dugout Canyon portals would be constructed under Alternative #3.

### Coal Processing and Underground Development Waste

No coal processing waste would be generated under Alternative #3, and no coal development waste would be placed in the proposed Fish Creek Canyon at the durable rock fill. The durable rock fill in Dugout Canyon would be constructed as described under Alternative #2.

### Air Quality

Impacts would be similar although less extensive than those described for Alternative #2. No significant impacts are expected to air quality.

### Prime Farmland

No impacts would occur to prime farmland under Alternative #3.

### Postmining Land Use

Impacts to land use would be similar though less extensive than those described for Alternative #2.

### Cultural and Historical Resources

Clearance has been obtained from the SHPO for the entire 40-year life-of-mine area; this clearance also pertains under Alternative #3. A condition for protection of cultural resources included in Alternative #2 has been retained in Alternative #3.

### Socioeconomics

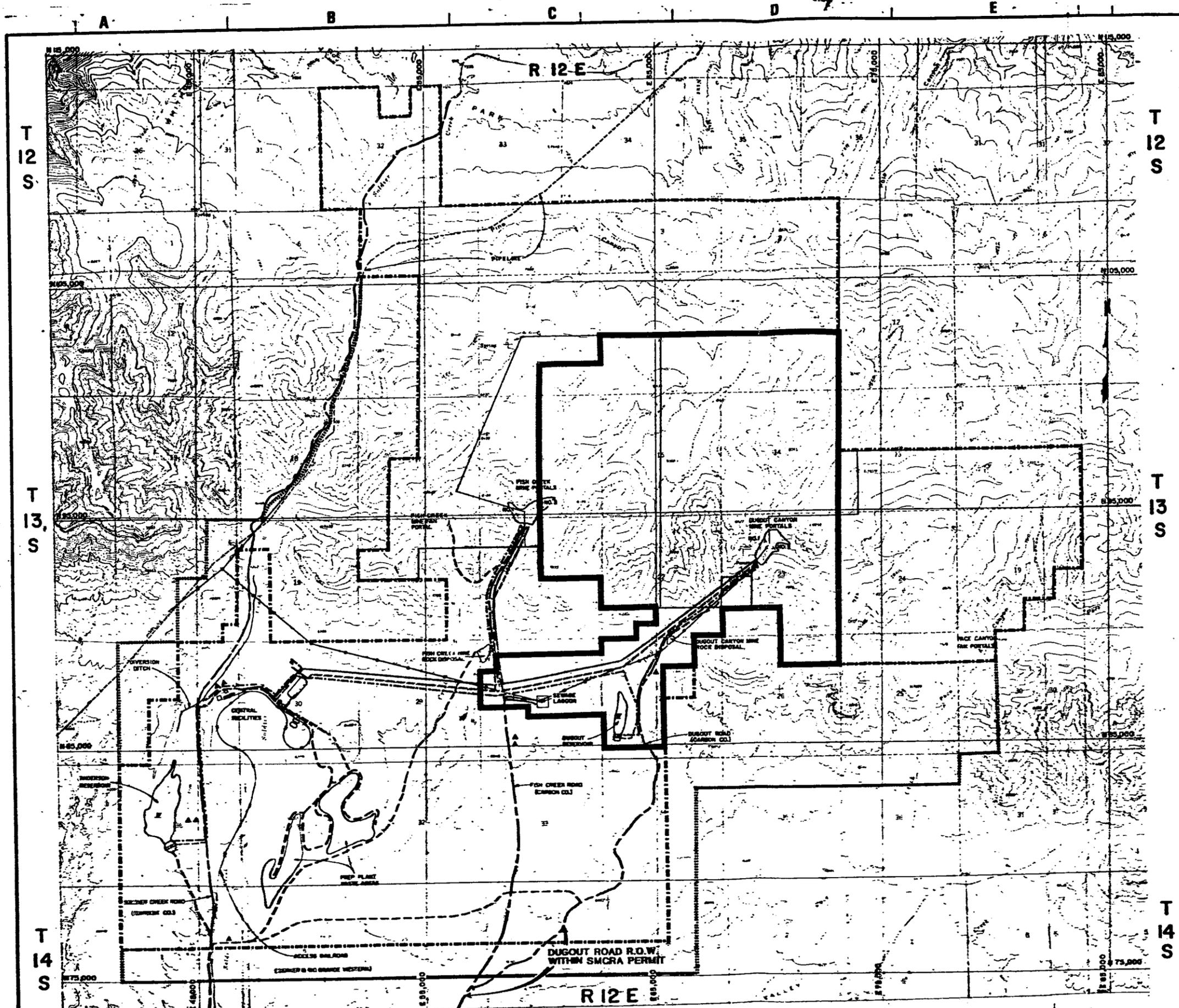
Socioeconomic impacts would be similar though less noticeable under Alternative #3. Approximately 120 people would be employed by Sunedco under Alternative #3 as compared to the potential 775 employees under Alternative #2. (See descriptions of Alternatives #2 and #3.)

### Impacts of Alternative #4 -Disapproval

If the initial mining permit (5 years) is disapproved, the 40-year life-of-mine action is not likely to take place either. Therefore, disapproval of this mining permit would mean that a potential maximum of 775 jobs directly related to the mine and about 600 secondary jobs in the area would not be made available to the local economy. There would be a potential loss of approximately 94 million tons of coal production over 40 years. This energy source would have to be substituted by coal mined elsewhere or by oil and gas.

An average annual 1.5 million dollar deficit to the local economy in the early years of mine development and mining would be avoided. Potential subsidence would be avoided, although this is not expected to be a problem in the relatively stable overburden at this mine. The other impacts cited would not occur as a result of this action.





	TOPICAL STAKEPILE		County Roads
	Life of Mine Boundary		Improved/Now South
	Section SMCRS Permit Boundary		Railroad
	Apparent Zone		
	Storage Line		
	Water Line		

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
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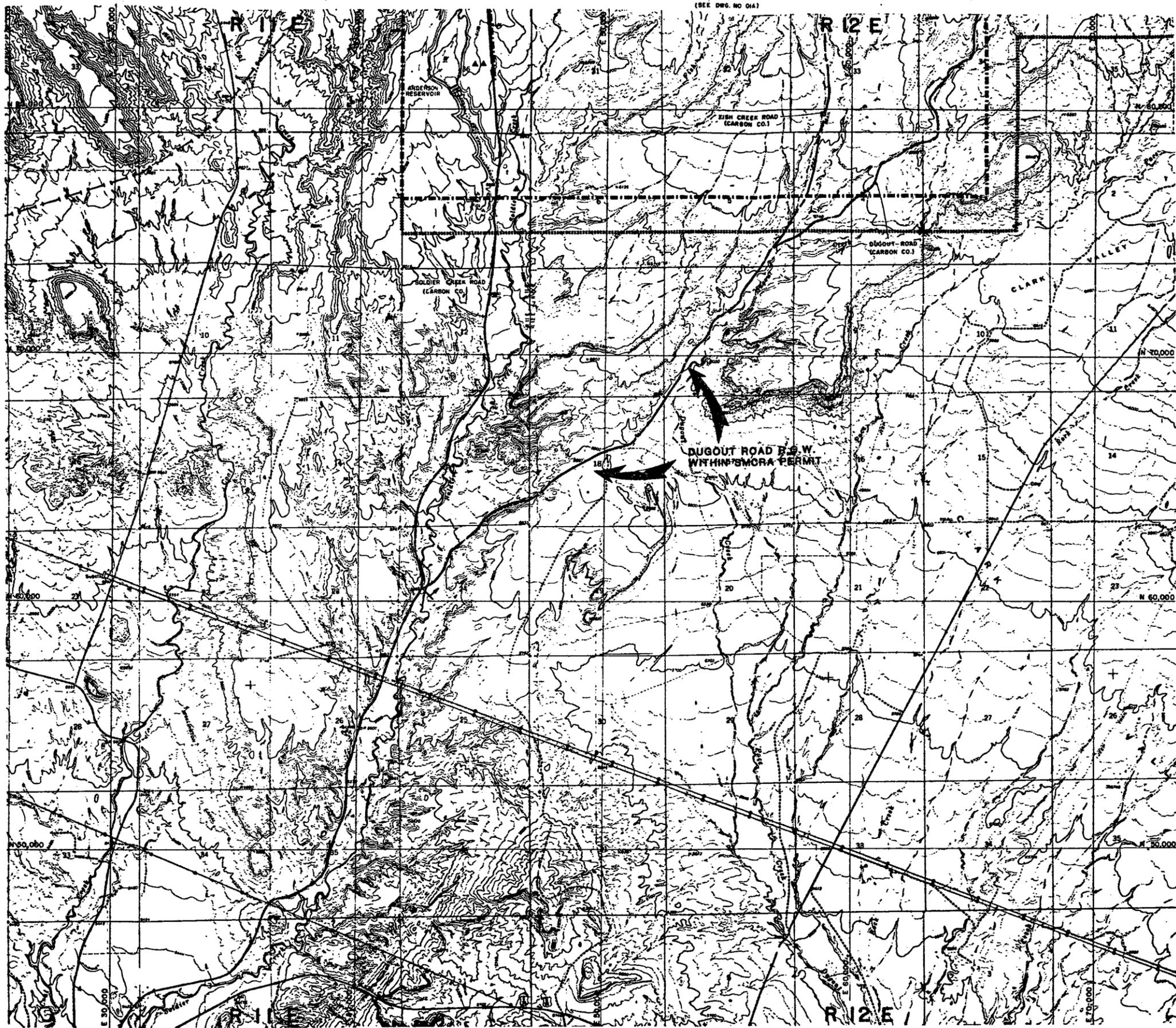
Scale	1" = 200'
Designed By	F. COHEN
Drawn By	EXTERNAL AFFAIRS
Checked By	ENGINEERING
Approved By	EXTERNAL AFFAIRS

**LIFE OF MINE PERMIT AREA**

**SUN** Soil & Water Conservation District

CARBON COUNTY, UTAH

Sheet 1 of 1 Drawing No. 87A



T 14 S

T 15 S

R 12 E

R 13 E

R 12 E

R 13 E

(SEE DWG. NO. 01A)

DUGOUT ROAD E.S.W.  
WITHIN SMCRA PERMIT

ANDERSON RESERVOIR

FISH CREEK ROAD  
(CARBON CO.)

SOLDIER CREEK ROAD  
(CARBON CO.)

DUGOUT ROAD  
(CARBON CO.)

CLARK VALLEY

	TOPOG. BENCHMARK		Life of Mine Boundary		County Roads
	Initial SMCRA Permit Boundary		Improved/New Roads		Railroad
	Adjacent Area		Sewage Line		Existing Power Lines
	Water Line				
	Overhead Gaslines				

No.	Description	Initiated	Chk.	Appr.	Date	Description	Initiated	Chk.	Appr.	Date
1	DRAWN				2-84					
2										
3										

Scale	0 2000 4000	Date	
Designed By	F. COPEN	2-84	
Drawn By	EXTERNAL AFFAIRS	2-84	
Checked By	ENGINEERING	2-84	
Approved By		2-84	

**PERMIT BOUNDARIES**

**SUN** Suncoast Coal Co.  
SAGE POINT / DUGOUT CANYON  
CARBON COUNTY, UTAH  
Drawing No. 01B



STATE OF UTAH  
NATURAL RESOURCES  
Oil, Gas & Mining

4241 State Office Building • Salt Lake City, UT 84114 • 801-533-5771

Scott M. Matheson, Governor  
Temple A. Reynolds, Executive Director  
Dr. G. A. (Jim) Shirazi, Division Director

February 17, 1984

OSM-WTC  
1984 FEB 21 AM 10:23  
WESTERN TECHNICAL CENTER

Mr. Allen D. Klein, Administrator  
Western Technical Center  
Office of Surface Mining  
Brooks Towers  
1020 Fifteenth Street  
Denver, Colorado 80202

RE: Revisions to Technical Analysis  
and Recommendations for Approval  
Sunoco Energy Development Company  
Sage Point-Dugout Canyon Mine  
ACT/007/009, Folder No. 2  
Carbon County, Utah

Dear Mr. Klein:

Since the Division transmitted the final Technical Analysis (TA) for the Sage Point-Dugout Canyon Mine in March of 1983, several changes have occurred in the Permit Application Package (PAP) that have required corresponding changes in the TA. A Technical Analysis Addendum was submitted in July of 1983 and Supplement I to the Technical Analysis analyzing the PAP's compliance with regulations that were found not to have been legally suspended by the State of Utah, was submitted in September.

This letter and its attachments serve to notify you of further changes in the TA, brought about by changes to the PAP submitted by Sunoco Energy Development Company (Sunedco) on December 21, 1983 and January 4, 1984.

A major change in the permit area has occurred with this latest submittal. Sunedco had originally requested a life-of-mine permit for a permit area covering a total of 18,242 acres. Due to Sunedco's inability to gain legal right-of-entry to the entire permit area at this time, the permit has been revised to a five-year permit with a total permit area of 4,475 acres. Approximately 70 surface acres will be disturbed during the five-year permit term. Maps D03-002A and B (attached) show the boundaries of the originally proposed life-of-mine permit area and the five-year permit area currently proposed.

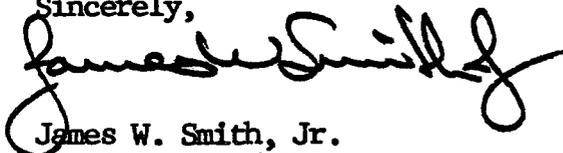
Mr. Allen D. Klein, Administrator  
ACT/007/009  
February 17, 1984  
Page 2

The December 21, 1983 submittal also addressed several technical issues that were of concern to the regulatory authority. These issues included Alternative Water Supply, Reclamation of the Dugout Canyon Waste Rock Disposal Site, the Alluvial Valley Floor issue and Stability of Highwalls. The technical adequacy of this submittal in these four areas is addressed in Supplement II to the Technical Analysis (February 17, 1984).

The recent changes to the PAP have also necessitated changes to certain of the original Findings, to the Mine Plan Information form, to the Stipulations list and to the Bond. Updated Findings and Mine Plan Information sections have been prepared accordingly. A revised Final Stipulations List and Bond Estimate are included in Supplement II to the Technical Analysis.

It is the Division's opinion that Sunedco has answered all requirements for a five-year permit, and the Division is ready to issue a five-year permit with conditions. It is recommended that the Office of Surface Mining do the same at this time. The Division will be happy to provide any additional information or clarification to make this possible.

Sincerely,



James W. Smith, Jr.  
Coordinator of Mined  
Land Development

JWS/SCL:btb

Enclosures

cc: Shirley Lindsay, OSM  
Charlie Durrett, Sunedco  
S. Linner, DOGM



STATE OF UTAH  
 NATURAL RESOURCES  
 Oil, Gas & Mining

Scott M. Matheson, Governor  
 Temple A. Reynolds, Executive Director  
 Dr. G. A. (Jim) Shirazi, Division Director

4241 State Office Building • Salt Lake City, UT 84114 • 801-533-5771

June 1, 1983



Mr. Allen D. Klein, Administrator  
 Western Technical Center  
 Office of Surface Mining  
 Brooks Towers  
 1020 Fifteenth Street  
 Denver, Colorado 80202

RE: Stipulations to Permit Approval  
 Sun Energy Development Company  
 (Sunedco)  
 Sage Point-Dugout Canyon Mine  
 ACT/007/009  
 Folder Nos. 2 and 4  
 Carbon County, Utah

Dear Mr. Klein:

Division staff have reviewed the Socioeconomics stipulation proposed by OSM for inclusion in Sunedco's Permit Approval Decision Document. We concur with the language of the proposed stipulation, and will require no further amendments to this section of the Decision Document.

Sincerely,

Dr. G. A. "Jim" Shirazi  
 Director

JS/SCL:btb

cc: Sarah Branson, OSM  
 S. Limer, DOGM



STATE OF UTAH  
NATURAL RESOURCES & ENERGY  
Oil, Gas & Mining

Scott M. Matheson, Governor  
Temple A. Reynolds, Executive Director  
Cleon B. Feight, Division Director

4241 State Office Building • Salt Lake City, UT 84114 • 801-533-5771

March 16, 1983

Mr. Allen Klein, Director  
Western Technical Center  
Office of Surface Mining  
Brooks Towers  
1020 Fifteenth Street  
Denver, Colorado 80202

RE: Recommendations for Approval of MRP  
Sunoco Energy Development Company  
Sage Point-Dugout Canyon Mine  
ACT/007/009  
Folder No. 2  
Carbon County, Utah

Dear Mr. Klein:

The Division of Oil, Gas and Mining has completed the Technical Analysis (TA) of the Sage Point-Dugout Canyon Mine, incorporating OSM's comments into the final document. We hereby recommend issuing a conditional approval to begin operations upon Sunoco Energy Development Company's written acceptance of the stipulations contained in the TA and posting of the required reclamation surety. The permit term is to be for a five-year period, with permit renewal and/or revision due at that time.

Enclosed is a copy of the final joint DOGM/OSM TA with stipulations and a brief findings document and a completed Mine Plan Information form. I trust this information will enable OSM to complete its final Environmental Assessment for the decision document to be forwarded to Washington, D. C., for Secretarial approval. We would greatly appreciate all you can do to expedite the final permitting process.

If you have any questions or need additional information, please contact myself or Susan Linner of my staff.

Sincerely,

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

JWS/SCL:btb

Enclosure

cc: Charles Durrett, Sunedco  
Susan Linner, DOGM



# United States Department of the Interior

IN REPLY REFER TO

3482.1(c)  
U-07064 et al  
(U-921)

BUREAU OF LAND MANAGEMENT  
UTAH STATE OFFICE  
136 E. SOUTH TEMPLE  
SALT LAKE CITY, UTAH 84111

1984 MAR 15 AM 11:27

WESTERN TECHNICAL CENTER

## Memorandum

To: Mr. Allen D. Klein, Administrator Western Technical Center,  
Office of Surface Mining, Denver

Attention: Ms. Shirley Lindsay

From: Chief, Mining Law and Solid Minerals, BLM, SO  
Salt Lake City, Utah

Subject: Sunedco Coal Company, Sage Point - Dugout Canyon Project,  
Carbon County, Utah, Mining and Reclamation Plan (MRP)

The subject MRP on file in this office consists of 12 volumes as amended through March 6, 1984. Our reviews have determined that the underground mining plan part of the MRP (Resource Recovery and Protection Plan (R<sub>2</sub>P<sub>2</sub>)) complies with the Mineral Leasing Act requirements and the rules and regulations 43 CFR 3482.1(c).

In our opinion the R<sub>2</sub>P<sub>2</sub> is technically correct and should safely achieve maximum economic recovery of the coal deposit within the plan area.

The R<sub>2</sub>P<sub>2</sub> reviewed is adequate for BLM administration of the associated Federal coal leases and to become an integral part of the permit application package.

*J. Gordon Whitney*  
Acting

cc: Sunedco  
DOGM

Memorandum

DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

Moab District

IN REPLY REFER TO:

3400  
(U-066)

To : Center Administrator, Office of Surface Mining, Denver  
Attention: Shirley Lindsay  
FROM : District Manager, Moab  
SUBJECT : Sage Point-Dugout Canyon Project; Sunedco Coal Company

FEB 27 1984

By your letter dated February 7, 1984, you requested a reassessment of stipulations provided by us for the original 40-year application for subject mine project in light of their revised 5-year application. By your phone conversations with our Price office, you indicated that our response to your request should be based on review of the proposed permit conditions prepared by your office for the 40-year application which we received on February 15, 1984. Therefore, reassessment of our stipulations is provided below with those checked as "Within 5 Years" being recommended as conditions to approval of the 5-year permit. Wording changes in the conditions due to changes in the coal regulations (43 CFR 3461.4-2) are also indicated.

This reassessment also included a review of the industrial occupancy lease recently issued by this office to Sunedco to ensure that those lease stipulations will not conflict with conditions on the mine permit. Construction activities on this lease would begin only after the mine permit is approved.

<u>Condition No.</u>	<u>Subject</u>	<u>Within 5 Years</u>	<u>After 5 Years</u>	<u>Change Wording</u>
8a	Roads	X		
8b	Riparian Habitat	X		
8c	Deer Habitat	X		
8d	Visual Resources	X		
8e	Traffic	X		
8f	Dugout Reservoir	X		
8g	Migratory Birds	X		1
8h	Eagle Nests		X	2
8h A-D	Fish Creek Canyon		X	
8i	Prairie Falcon	X		3
8i A-B	Prairie Falcon		X	
8i C-D	Prairie Falcon	X		
8i E	Prairie Falcon		X	
8j A-C	Cooper's Hawk	X		4
8k	Raptor Survey		X	
9	Conveyor		X	
10	Mitigation Plan	X		

Change 1 - Drop "as required by 43 CFR 3461.1(n)(1)."

Change 2 - Rewrite second sentence: "A buffer zone, shown on map 1, has been established for protection of these nest sites within which the following mitigating measures apply:"

Change 3 - Rewrite second sentence: "A buffer zone, delineated on map 2, has been established for protection of these sites within which the following mitigating measures apply:"

Change 4 - Rewrite second sentence: "A buffer zone, shown on map 3, has been established for protection of these nest sites within which the following mitigating measures apply:"

Additionally, the stipulations provided by our memorandum dated October 23, 1981, for the protection of cultural resources have not been included in your proposed permit conditions. Therefore, the following stipulations are again recommended for inclusion as permit conditions:

1. The lessee shall provide a qualified cultural resource specialist (approved by the BLM) to intensively survey areas of proposed surface disturbance for the presence of cultural resources. All known cultural sites and those located during inventory that are of significant value shall be avoided where feasible as provided for in 36 CFR, part 800, "Protection of Historical and Cultural Properties" and the Coal Programmatic Memorandum of Agreement between the President's Advisory Council on Historic Preservation, OSM, BLM, and SHPO. Impacts to all unavoidable sites shall be mitigated using data recovery techniques, such as collection and/or excavation. The lessee shall be responsible for mitigation. The cultural resource specialist and salvage techniques used shall be subject to approval by the Bureau of Land Management.
2. A predictive sample inventory of cultural resources shall be made by the lessee if subsidence is shown to have a negative impact on cultural resources.

With the above changes and additions being made to your conditions of approval anticipated, we hereby grant our final concurrence for the approval of a 5-year permit for subject project.

Gene ...



# United States Department of the Interior

BUREAU OF LAND MANAGEMENT

Moab District  
P. O. Box 97  
Moab, Utah 84532

IN REPLY  
REFER TO: 3400  
(U-066)



JUN 09 1983

## Memorandum

To: Center Administrator, Office of Surface Mining, Denver,  
Colorado Attention: Shirley Lindsay

From: <sup>ACTING</sup> District Manager, Moab

Subject: Mine Plan Review - Sunedco's Sage Point-Dugout Project

Stipulation number 8 for subject mine plan approval in our memorandum dated October 23, 1981, has been reviewed at the request of Sunedco. As a result, the last sentence of the stipulation, relating to water rights associated with Dugout Reservoir, is hereby withdrawn. The remainder of the stipulation remains in effect.



# United States Department of the Interior

BUREAU OF LAND MANAGEMENT

Moab District

P.O. Box 970

Moab, Utah 84532

IN REPLY  
REFER TO: 3400  
(U-066)

MAY 19 1983

Memorandum

To: Center Administrator, Office of Surface Mining, Denver, Colorado  
Attention: Shirley Lindsay

From: <sup>ACTING</sup> District Manager, Moab

Subject: Mine Plan Review - Sunedco's Sage Point-Dugout Canyon Project

The following letter is provided as a followup response to the letter dated May 10, 1983 and to consolidate final comments on Sunedco's Sage Point-Dugout Canyon Mine Plan.

Previous correspondence dated October 23, 1981 and February 26, 1982 contain stipulations and concerns pertinent to the approval of the subject mine plan. One additional stipulation is provided to protect the concern that an active golden eagle nest may still exist unidentified in the Fish Creek Canyon area.

The operator shall conduct raptor surveys (in close coordination with the U.S. Fish and Wildlife Service and the BLM) within .5 miles of proposed developments in Fish Creek Canyon in the nesting season prior to initiation of surface disturbing activity. Surveys must be acceptable to the Authorized Officer with respect to methods and qualified personnel.

If you have any further questions please contact the appropriate staff personnel at our Price Office.

*Daryl A. Trotter*



# United States Department of the Interior

BUREAU OF LAND MANAGEMENT  
UTAH STATE OFFICE  
136 E. SOUTH TEMPLE  
SALT LAKE CITY, UTAH 84111

IN REPLY REFER TO  
3400  
U-05067-  
08916  
et al.  
(U-942)

Certified Mail

MAY 1 2 1982

## DECISION

Sunoco Energy Development Co. : Coal  
12700 Park Central Pl., Suite 1500 : Utah 05067-08916, Utah 07064-027821,  
Dallas, Texas 75251 : Utah 07746, Utah 089096, Utah 092147,  
: and Utah 0144820

### Assignments Approved Bonds Accepted

On March 5, 1982, assignments of coal leases Utah 05067-08916, Utah 07064-027821, Utah 07746, Utah 089096, Utah 092147, and Utah 0144820, dated March 4, 1982, between Sunoco Energy Development Co., as assignee, and Eureka Energy Company, as assignor, were filed in this office.

Satisfactory evidence of the qualifications and holdings of Sunoco Energy Development Co. have been filed, and the lease account is in good standing. The assignments appear to meet the requirements of the regulations and are hereby approved effective June 1, 1982. Approval of these assignments do not constitute approval of any of the terms therein which may be in violation of the lease terms.

As required by the regulations in 43 CFR 3474.2(a) lease bonds Nos. 8090-85-81, 8090-85-83, 8090-85-84, and 8090-85-85 in the amounts of \$5,000 covering coal leases U-05067-08916, U-0144820, U-092147, and U-089096 respectively and bonds Nos. 8090-85-82 and 8090-85-86 in the amounts of \$10,000 covering coal leases U-07064-027821 and U-07746 respectively, with Sunoco Energy Development Co., as principal and Federal Insurance Company, as surety, were filed in this office on May 7, 1982. The bonds are satisfactory and are accepted effective May 7, 1982, the date of filing.

  
Chief, Minerals Section

UNITED STATES GOVERNMENT  
**Memorandum**

DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT  
Moab District

*Price*  
IN REPLY REFER TO:

3400  
(U-066)

TO : Center Administrator, Office of Surface Mining Date: *MAY 10 1983*  
Associate Denver, Colorado Attn: Shirley Lindsay  
FROM : District Manager, Moab

SUBJECT: Mine Plan Review - Sunedco's Sage Point-Dugout Canyon Project

In accordance with your request, we hereby affirm that our previous correspondence dated October 23, 1981 and February 26, 1982 remain pertinent to the approval of subject mine plan. As you will note the stipulations provided by the second memorandum replaced two stipulations in the first.

Another active golden eagle nest is believed to be located in the area of the mine project and a field study is being conducted shortly. Should another active nest be identified, you will be advised as early as possible.

If you have any further questions, please feel free to contact the appropriate staff personnel at our Price Office.



/s/ Kenneth V. Rhea

SVogelpohl:ta:4/27/83  
Kag Card II



# United States Department of the Interior

BUREAU OF LAND MANAGEMENT  
Moab District  
P. O. Box 970  
Moab, Utah 84532



FEB 26 1982

## Memorandum

To: Regional Director, Office of Surface Mining, Denver, Colorado

From: District Manager, Moab

Subject: Mine Plan Review - Eureka Energy

The following stipulations were prepared through consultation with the U. S. Fish and Wildlife Service (FWS), the Utah Division of Wildlife Resources (UDWR), and Eureka Energy Company representatives to mitigate impacts to raptor nesting activities on the project area. These stipulations are provided to replace tentative stipulations numbers 1 & 2, identified in a previous memorandum dated October 23, 1981.

1. Three golden eagle nest sites were documented by the FWS and the UDWR as active by definition given in Washington Office Instruction Memorandum 80-346. A buffer zone, shown on map 1, has been established for protection of these nest sites. The area within this buffer zone is considered unsuitable for underground mining, according to Criterion 11 in the Unsuitability Criteria. Under this designation, surface occupancy or surface disturbance would not be allowed. However, an exception can be applied based on the following mitigating measures.

A. Prohibit all surface construction activity in Fish Creek Canyon within the established buffer zone during the critical nesting period, February 1 to May 15. Surface construction may be initiated on May 1 if a nesting attempt has not been documented by the authorized officer in consultation with the FWS. Surface construction may also be initiated on May 1 if a determination by the authorized officer, in consultation with the FWS, shows the nesting attempt to be nonproductive. This determination may be ascertained by observed behaviors of the nesting pair or by presence or absence of eggs.

B. Coordinate all nest visitation through the FWS and/or the authorized officer to minimize disturbances to nesting activity.

C. Reseed and control access to the exploration road constructed in 1979, which passes below the nest sites. Prohibit use of this road, vehicular or pedestrian, during the nesting period, February 1 to May 15.

D. Construct surface facilities in Fish Creek Canyon as shown on the attached drawing (figure 1). Place topsoil and revegetate the retaining wall (shaded in on figure 1) with trees, shrubs and understory species. Where possible, use fullsize native trees and shrubs which are in areas to be disturbed. This will act as a visual block for activity in the parking area and for traffic along the portal road. Specific requirements for this revegetation will be provided to the company at the time of development.

2. One active prairie falcon eyrie, one suspected prairie falcon eyrie and one golden eagle nest site (old) was documented by the FWS and the UDWR. A buffer zone delineated on map 2 identifies the area considered unsuitable according to Criteria 11 and 13 of the Unsuitability Criteria. An exception can be applied to allow limited surface activity based on the following stipulations.

A. Allow construction of conveyor belt alignment (Alternative 6) as shown in figure 2, in Dugout Canyon.

B. Shield all lighting of the conveyor belt within the buffer zones in Dugout Canyon to minimize visibility of these lights from golden eagle and prairie falcon nest sites.

C. Prohibit all surface construction activities within the buffer zone (map 2) during the critical nesting period, March 15 to June 15. Surface construction may be initiated on June 1 if a nesting attempt has not been documented by the authorized officer in consultation with the FWS. Surface construction may also be initiated on June 1 if a determination by the authorized officer, in consultation with the FWS, shows the nesting attempt to be nonproductive. This determination may be ascertained by observed behaviors of the nesting pair or by presence or absence of eggs.

D. Coordinate all nest site visitations through the FWS and/or the authorized officer to minimize disturbance to nesting activity.

E. Use the minimum required number of sound warning devices on the conveyor belt within the buffer zone.

3. Two Cooper's hawk nests have been documented as active by the BLM and the UDWR. A buffer zone established for the protection of these nest sites is outlined on map 3 and is unsuitable under Criterion 13. An exception can be applied with the following stipulations.

A. Coordinate all nest visitations with the FWS and/or the authorized officer to minimize disturbance to nesting birds.

B. Prohibit all surface construction activities within the buffer zone during the critical nesting period, April 15 to July 15. Surface construction may be initiated on July 1 if a nesting attempt has not been documented by the authorized officer in consultation with the FWS. Surface construction may also be initiated on July 1 if a determination by the authorized officer in consultation with the FWS, shows the nesting attempt to be nonproductive. This determination may be ascertained by observed behaviors of the nesting pair or by presence or absence of eggs.

C. Protect all shrubs, trees or other vegetation along the existing road shoulder (closest to the nest site) within the buffer zone.

Mitigating measures stipulated in this memorandum for protection of nesting raptors are a compromise of mitigating measures believed necessary for 100% mitigation. The compromise involved moving mine portals and facilities closest to nest sites while at the same time allowing some facilities to remain within the proposed nesting buffer zones. Monitoring of the success of this mitigation will be conducted by the authorized officer and the FWS.

If you have any questions regarding these requirements, please feel free to contact Dave Mills of my staff.

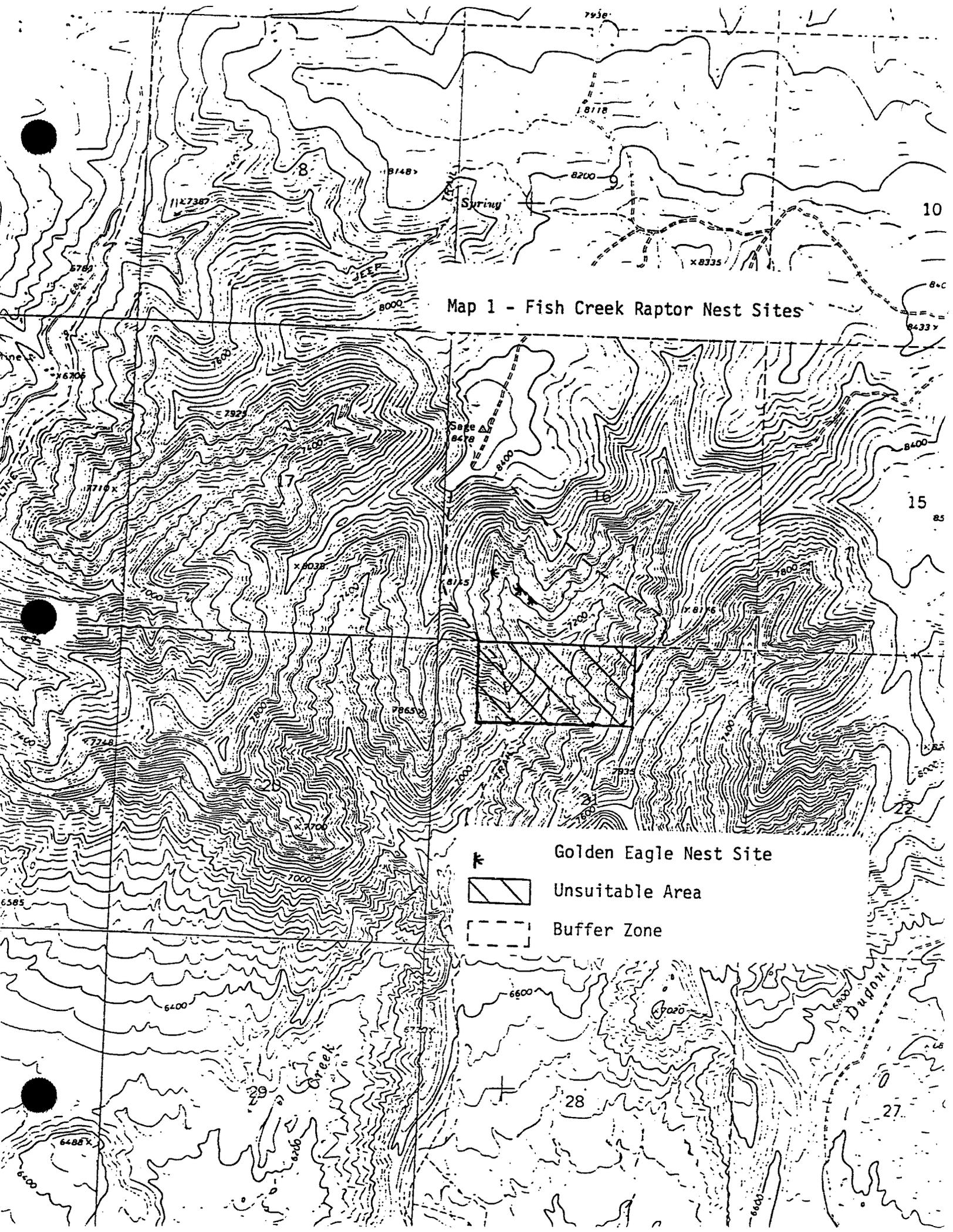


Enclosures (2)  
1-Maps (3)  
2-Figures (2)

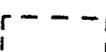
cc:  
Jim Smith  
Division of Oil, Gas, & Mining  
4241 State Office Bldg.  
Salt Lake City, Utah 84138

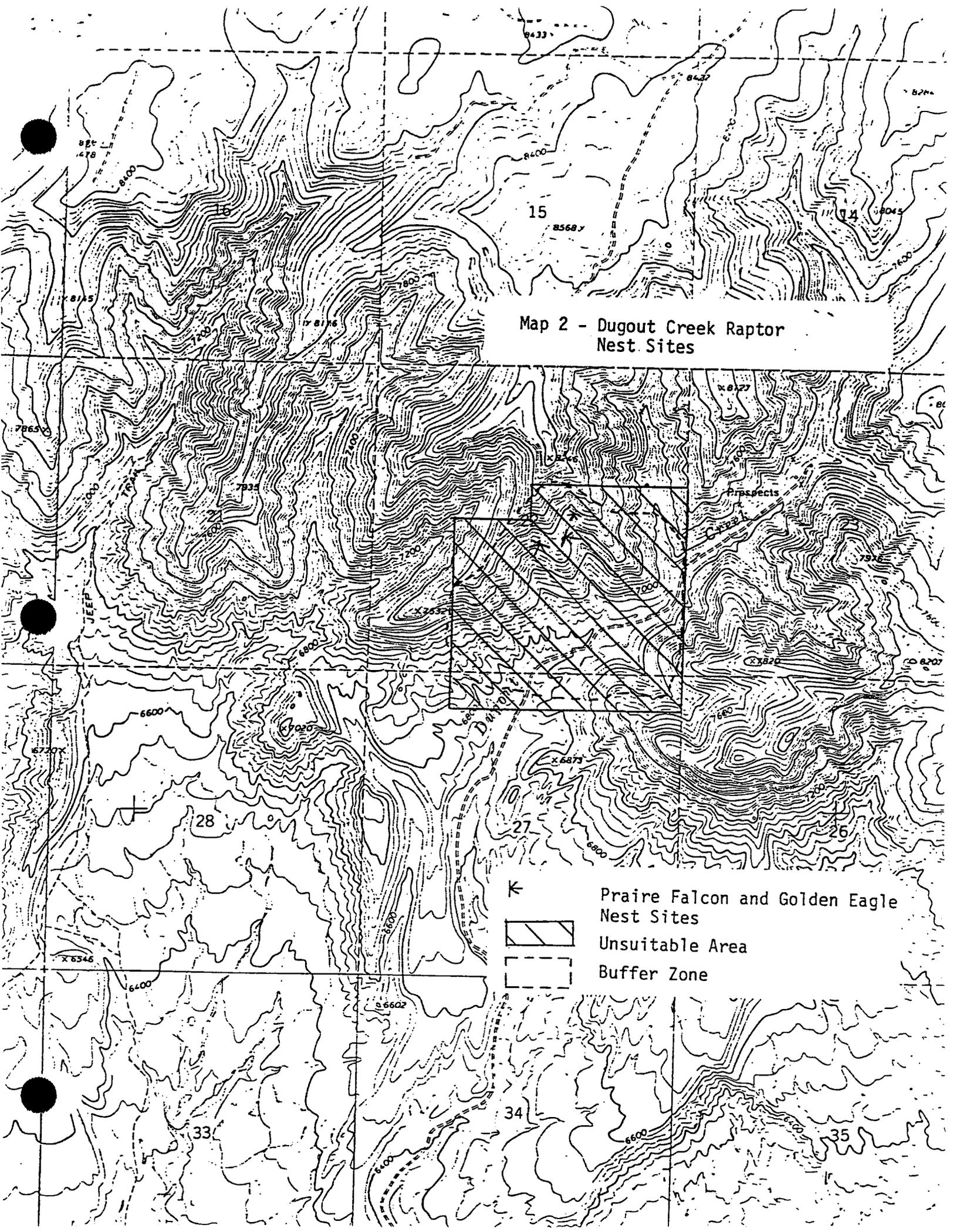
Clark Johnson  
U. S. Fish and Wildlife Service  
Area Office Colorado-Utah  
1311 Federal Bldg.  
125 South State Street  
Salt Lake City, Utah 84138

John Livesay  
Utah Division of Wildlife Resources  
455 West Railroad Avenue  
Price, Utah 84501



Map 1 - Fish Creek Raptor Nest Sites

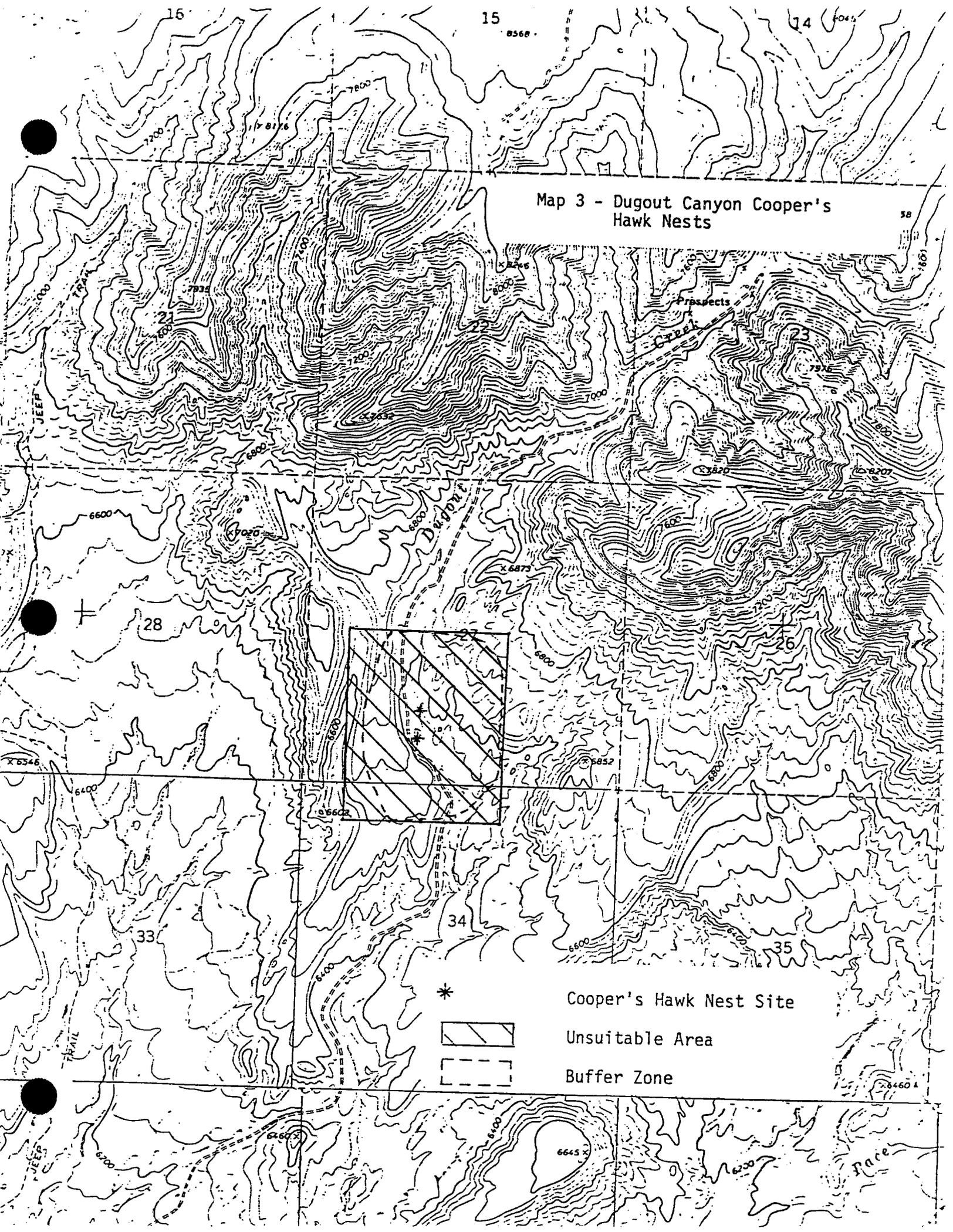
-  Golden Eagle Nest Site
-  Unsuitable Area
-  Buffer Zone



Map 2 - Dugout Creek Raptor Nest Sites

- ← Prairie Falcon and Golden Eagle Nest Sites
- ▨ Unsuitable Area
- ⋮ Buffer Zone

Map 3 - Dugout Canyon Cooper's Hawk Nests



\*

Cooper's Hawk Nest Site



Unsuitable Area



Buffer Zone

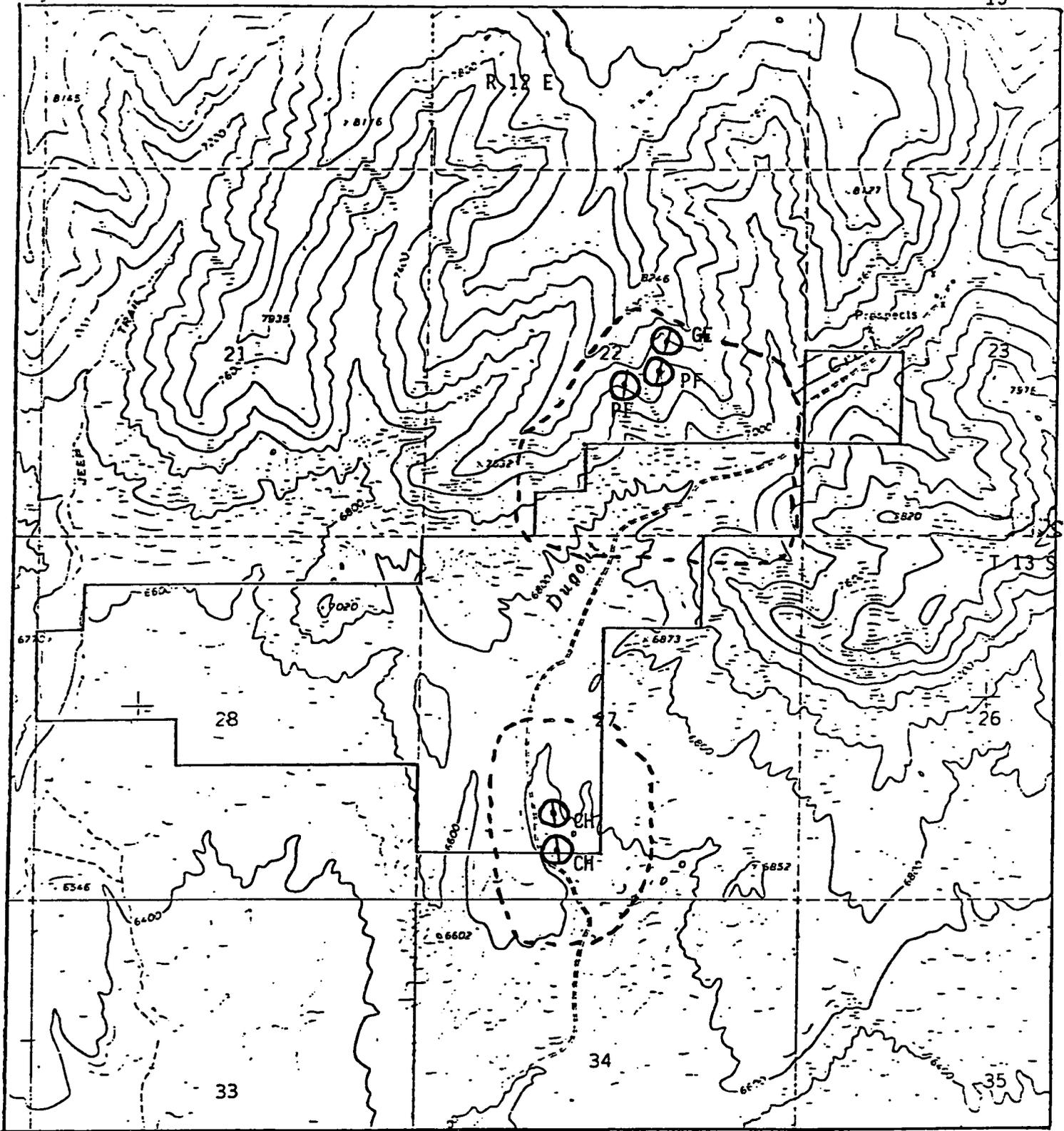


Figure 4. Raptor Nest Buffer Zones

- CH Cooper's Hawk Nest
- PF Prairie Falcon Seraps
- GE Golden Eagle Nest
- Buffer Zone



# United States Department of the Interior

BUREAU OF LAND MANAGEMENT

Moab District  
P. O. Box 970  
Moab, Utah 84532

IN REPLY REFER TO

3400  
(U-066)

OCT 23 1981

## Memorandum

To: Regional Director, Office of Surface Mining, Denver, Colorado  
From: District Manager, Moab  
Subject: Mine Plan Review - Eureka Energy

Eureka Energy's Mining and Reclamation Plan has been reviewed. The plan has been determined to be complete in regards to the protection of Federal resources not granted to the lessee and post-mining land use. The plan is recommended for approval conditioned on the following stipulations. Additional mitigating measures may be developed upon review of exploration plans or mine plan addendums.

1. Widening of the existing roads along the riparian zone of Dug-out Creek and Fish Creek shall be done opposite the side adjacent to the riparian zones to the maximum extent practicable as determined by the operator in consultation with the Authorized Officer.
2. Loss of riparian habitat on public lands through construction of facilities will be mitigated by upgrading adjacent riparian zones or establishing new riparian zones in conjunction with the Dugout Reservoir. Habitat upgrading will be accomplished by the operator prior to or during construction through coordination with the Authorized Officer.
3. Loss of critical winter habitat for deer by destruction or disturbance will be mitigated by upgrading adjacent winter range. Habitat upgrading will be accomplished prior to initiation of surface construction by the operator through coordination with the Authorized Officer.
4. Surface disturbances and facilities planned for the lease area shall be subject to Visual Resource Management considerations. Efforts shall be made to mitigate visual impacts by imitating the form, line, color and texture of the natural landscape to the greatest extent practical as determined by the Authorized Officer. This will include painting of surface structures to blend with the surrounding terrain and minimal removal of vegetation in areas of proposed surface facilities.

5. Prior to surface disturbing activities, the lessee shall have had an archaeologist, acceptable to the Authorized Officer, conduct an archaeological survey of the area to be disturbed. The Authorized Officer retains the prerogative to require the relocation of proposed facilities to protect archaeological values located on leased lands, or the lessee may be required to have sites salvaged by a qualified archaeologist prior to proceeding with operations. If sites are uncovered by his operations, the operator shall not proceed further until additional clearance is granted by the Authorized Officer.

6. A predictive sample inventory of cultural resources shall be made by the lessee if subsidence is shown to have a negative impact on cultural resources.

7. Speed of vehicular traffic associated with the mine project should be reduced to no more than 40 miles per hour throughout the mine project area (critical deer winter range) during the period November 1 through May 15 to minimize deer fatalities. The use of the Swareflex Wildlife Reflector Warning System (Strieter Corp.) is recommended to further minimize deer fatalities.

8. Dugout Reservoir will be left intact at the end of mine life if such action is determined to be in public interest. The determination will be made by the Authorized Officer at the end of mine life. If the reservoir is left intact, the associated water rights will be transferred to the Surface Management Agency.

10. An inventory of areas of proposed surface disturbances shall be performed by the operator in consultation with the Authorized Officer to determine the presence of migratory birds. Mitigating measures will be prepared by the Authorized Officer to protect the habitat of migratory birds as required by 43 CFR 3461.1 (n)(1).

The following stipulations are tentatively presented; however, may be changed following a field examination of affected raptor nests. Scheduled for the week of October 26, 1981:

1. Construction activities will not occur in T. 13 S., R. 12 E., Section 27: E $\frac{1}{2}$ W $\frac{1}{2}$ SW $\frac{1}{4}$ , E $\frac{1}{2}$ SW $\frac{1}{4}$ , W $\frac{1}{2}$ N $\frac{1}{2}$ SE $\frac{1}{4}$ ; Section 34: NE $\frac{1}{4}$ NW $\frac{1}{4}$ NW $\frac{1}{4}$ , N $\frac{1}{2}$ NE $\frac{1}{4}$ NW $\frac{1}{4}$ , NW $\frac{1}{4}$ NW $\frac{1}{4}$ NE $\frac{1}{4}$  (200 acres) during the period of April 1 through July 15 (Cooper's hawk nest).

2. Areas indentified as falcon or eagle nest areas will be closed to surface occupancy with the exception of activities related to exploration, subsidence and ventilation. Exploration activities will not be allowed during the period between February 15 and July 15.

Surface construction for ventilation shafts and related access roads will not be accomplished during the aforementioned time period. Routine maintenance of ventilation fans may be accomplished yearlong. Additional mitigating measures will be developed, as needed, upon review of exploration and mine plans. Legal descriptions listed below provide an approximate .05 mile buffer zone around nest sites.

**Prairie Falcon**

T. 13 S., R. 12 E., Sec. 22: SE $\frac{1}{4}$ , S $\frac{1}{2}$ NE $\frac{1}{4}$ , E $\frac{1}{2}$ SW $\frac{1}{4}$ , SE $\frac{1}{4}$ NW $\frac{1}{4}$   
 Sec. 27: NW $\frac{1}{4}$ NE $\frac{1}{4}$ , NE $\frac{1}{4}$ NW $\frac{1}{4}$

**Golden Eagle**

T. 13 S., R. 12 E., Sec. 27: E $\frac{1}{2}$ NE $\frac{1}{4}$ , NE $\frac{1}{4}$ SE $\frac{1}{4}$   
 Sec. 26: N $\frac{1}{2}$ , SW $\frac{1}{4}$ , N $\frac{1}{2}$ SE $\frac{1}{4}$   
 Sec. 23: S $\frac{1}{2}$ SW $\frac{1}{4}$ , SW $\frac{1}{4}$ SE $\frac{1}{4}$   
 Sec. 25: W $\frac{1}{2}$ , NE $\frac{1}{4}$ , N $\frac{1}{2}$ SE $\frac{1}{4}$ , SW $\frac{1}{4}$ SE $\frac{1}{4}$   
 Sec. 24: S $\frac{1}{2}$ SE $\frac{1}{4}$ , S $\frac{1}{2}$ SW $\frac{1}{4}$   
 Sec. 21: S $\frac{1}{2}$ , S $\frac{1}{2}$ NE $\frac{1}{4}$ , N $\frac{1}{2}$ NW $\frac{1}{4}$ , SE $\frac{1}{4}$ NW $\frac{1}{4}$   
 Sec. 28: N $\frac{1}{2}$ NE $\frac{1}{4}$ , NE $\frac{1}{4}$ NW $\frac{1}{4}$   
 Sec. 20: NE $\frac{1}{4}$ NE $\frac{1}{4}$   
 Sec. 17: SE $\frac{1}{4}$ , W $\frac{1}{2}$ NE $\frac{1}{4}$ , SE $\frac{1}{4}$ NE $\frac{1}{4}$ , E $\frac{1}{2}$ SW $\frac{1}{4}$

The Federal coal leases have been found acceptable for mining under all the unsuitability criteria except #14 which will be resolved by compliance of stipulation 10 as presented above.



cc: State Director, Utah (U-931)

SURNAME	
SE:	1/17/82
Bolwahn	
ES:	1/21/82
EOS:	
CRFP:	
AE:	
AW:	

23 December 1982

MEMORANDUM

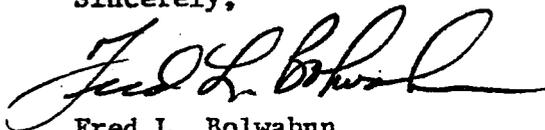
TO: Chief, Technical Support Branch  
Office of Surface Mining, Denver, Colorado

FROM: Field Supervisor, Endangered Species Office  
U. S. Fish and Wildlife Service

SUBJECT: Threatened and Endangered speices, Sage Point/Dugout Canyon Mine

We have reviewed your memorandum of 29 November 1982 concerning the Sage Point/ Dugout Mine in Carbon County, Utah. No species currently listed by the U. S. Fish and Wildlife Service (FWS) as threatened or endangered will be affected by the Sage Point/ Dugout Canyon Mine as described in your memorandum. We wish to bring to your attention the rare plant species Hedysarum occidentale var. canon which may be affected by your preposed action. This species is currently under review by the FWS for possible listing as an endangered species (see Federal Register Vol. 45, No. 242 pp 82480-82569 15 December 1980). This species is not at present protected by the Endangerd Species Act, however we encourage you to consider it in your environmental planing.

Sincerely,



Fred L. Bolwahn  
Field Supervisor

cc: AFA/SE: W. Wathen  
EOS/UT  
Official file  
Reading file

JLE/jg:12-23-82



Other issues we would like to highlight are:

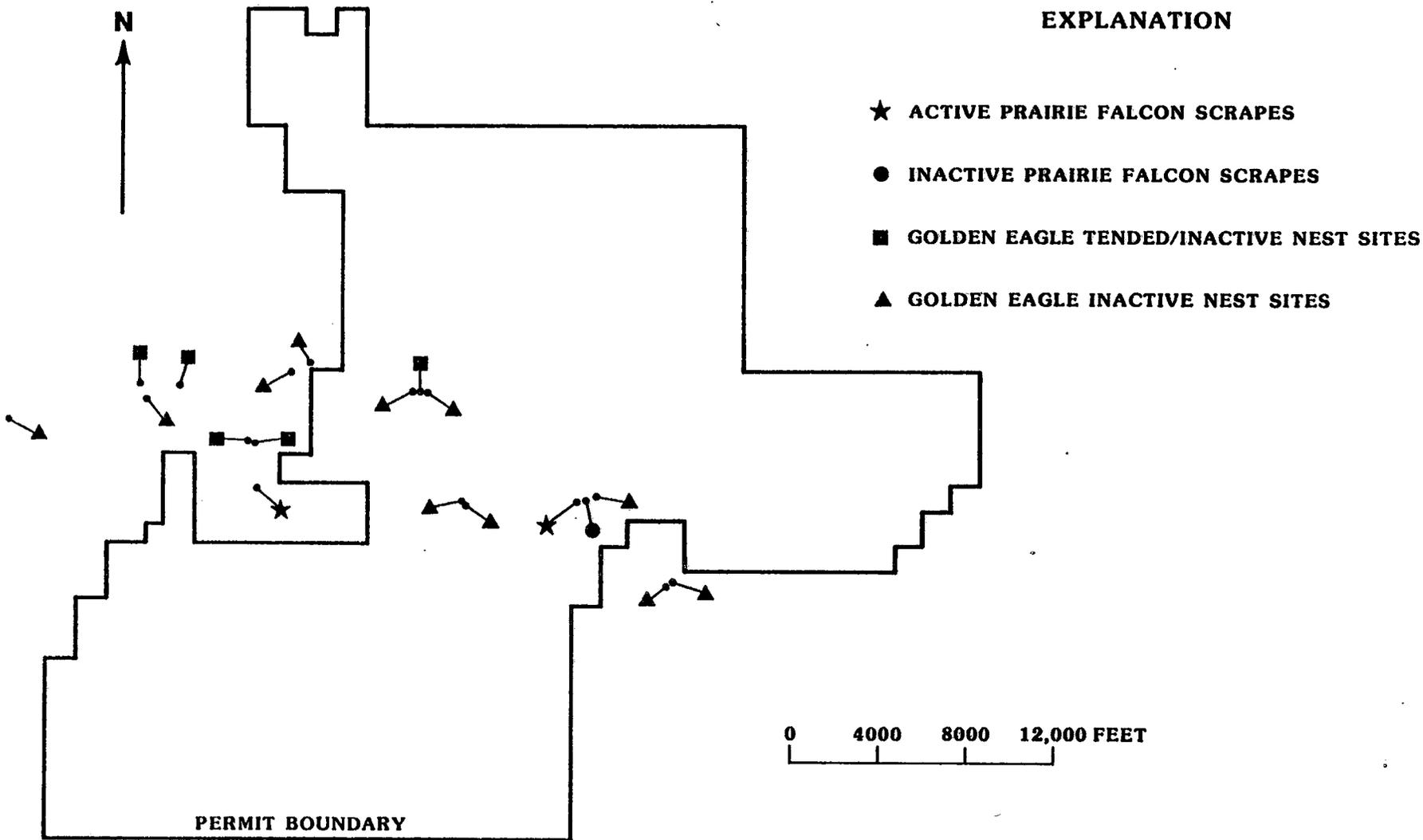
- a) Consideration by the Company to locate the conveyor system in Dugout Canyon in a manner that will minimize impacts to riparian vegetation, and the identified prairie falcon eyrie. Our preference for alignment would be for a location out of the riparian zone onto the adjacent benches. We would ask that the FWS be involved in discussion of design and alignment for the conveyor system.
- b) Stipulate seasonal avoidance of construction, surveys and maintenance operations, within raptor nest buffer zones if these nest sites are currently active.
- c) Require power pole designs that are not hazardous to raptors.
- d) Carry forward stipulations required by the BLM in their February 26, 1982 memorandum.
- e) Stipulate that reference plots (or other suitable methods) be maintained in riparian habitats of Dugout Creek downstream from the planned diversion to monitor impacts from diversion of Dugout Creek flows. Require the Company to maintain flows adequate to maintain these riparian habitats.
- f) Require the Company to replace all lost sources of wildlife water, lost due to mining activity.
- g) Require the Company to mitigate by replacement and maintenance of lost cavity nest sites at a rate of two nest boxes/cavity lost or impacted (within 50 yards of roads or developments).
- h) Provide stipulations adequate to prevent escarpment failure due to underground mining.
- i) Identify areas that are vegetated by Hedysarum occidentale var. canone and minimize disturbances if possible.
- j) Active mitigation (as opposed to passive or avoidance) should be proposed by the Company and required by your agency to offset impacts to raptors, other migratory birds, resident wildlife and riparian vegetation.

We assume these suggested stipulations can be implemented without delaying the permit process. Please don't hesitate to contact us if further clarification is required.

Attachment

cc: OGM, SLC  
BLM, Price  
BLM, SLC  
DWR, Price





1982 FWS NEST SURVEY

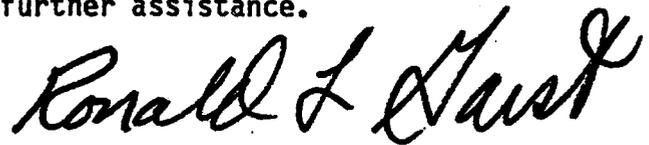


You are aware that the disturbance or destruction of nests of migratory birds being used for nesting activities would constitute a violation of the Migratory Bird Acts and involved persons are subject to prosecution under the law. Therefore, we propose to work with OSM and mine permittees in the design or early planning stages to eliminate detrimental impacts of mine development to migratory birds.

One specific comment we direct your attention to relates to page II-410. We are recommending use of:

Olendorff, R.R., A.D. Miller, and R.N. Lehman. 1981. Suggested Practices for Raptor Protection on Powerlines - The State of the Art in 1981. Raptor Research Report No. 4, Raptor Research Foundation, Inc. 111p.

Please contact us if we can be of further assistance.



cc: DOGM, SLC  
DWR, SLC  
RO/HR, DEN



United States  
Department of  
Agriculture

Soil  
Conservation  
Service

4012 Federal Building  
125 South State Street  
Salt Lake City, UT 84138

January 17, 1980

To Whom It May Concern:

Soil survey data in the files of the Soil Conservation Service at Salt Lake City, Utah show that the parcels of land in Field 1 - East 1/2 of Section 12, T. 14 S., R. 11 E. and Field 2 - East 1/2 of Section 1, T. 14 S., R. 11 E., have soil characteristics and qualities suitable for prime land. If the parcels have an irrigation water right and have been cultivated within the past five years they are classed as prime agricultural land.

These soils have been mapped by Soil Conservation Service, soil scientist and tentatively named in the Haverson soil series.

Field 3 in the NE 1/4 of Section 36, and SE 1/4 of Section 25, T. 13 S., R. 11 E. has very strongly alkali affected layers within 40 inches and does not qualify as prime farmland.

Signed:

State Soil Scientist  
Soil Conservation Service  
Salt Lake City, Utah

January 17, 1980





United States  
Department of  
Agriculture

Soil  
Conservation Service P. O. Box 11350  
Salt Lake City, UT 84147

June 16, 1981

RECEIVED

JUN 22 '81

EUREKA ENERGY CO.  
Salt Lake City

C. A. Slaboszewicz, Permit Analyst  
Eureka Energy Company  
1010 Kearns Building  
136 South Main Street  
Salt Lake City, Utah 84101

Dear Mr. Slaboszewicz:

I have reviewed the material submitted with your letter of June 9. There are two items I am suggesting for your consideration.

1. Page II-200; "When irrigated it is capability subclass IIe".
2. Page II-202; I could not interpret the statement 800 lbs. per acre, oven-dried weight.

I assumed this refers to native forage. I suggest you put "(range)" following the statement.

The alfalfa yields under irrigation ought to be 4,000-8,000 lbs. air dry weight. Normally, we record such yields as 2 to 4 tons.

With these additions, the proposal seems acceptable from our point of view.

Sincerely,

T. B. HUTCHINGS  
State Soil Scientist





D 967

J. -

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

June 18, 1982

Melvin T. Smith, Director and  
State Historic Preservation Officer  
Division of State History  
Utah State Historical Society  
300 Rio Grande  
Salt Lake City, Utah 84101

Re: Sage Point-Dugout Canyon Mine Plan

Dear Mr. Smith:

The Office of Surface Mining (OSM) has determined through review of the Sage Point-Dugout Canyon Mine Plan that of the 33 sites located, 13 sites appear to be eligible for listing in the National Register of Historic Places. However, there are only eight which will be directly or indirectly impacted by mining activities. These included three historic sites (42cb172, 173 and 196) and five prehistoric sites (42cb135, 185, 188, 202 and 186). Should you concur with this recommendation, OSM will forward documentation to the Keeper of the National Register and seek a 10-day consensus determination of eligibility pursuant to 36CFR 63.3.

OSM believes that with an adequately developed and implemented data recovery program, there should be "No Adverse Effect" to these sites. We, therefore, ask your review and concurrence with the approval of the mine plan based on the company's acceptance of the following stipulations:

1. If during the course of mining operations, previously unidentified cultural resources are discovered, the applicant shall ensure that the site(s) is not disturbed and shall notify the regulatory authority. The operator shall ensure that the resource(s) is properly evaluated in terms of National Register Eligibility (36 CFR 60.6). Should a resource be found eligible for listing after consultation with the regulatory authority, the land-managing agency (if the site is located on Federal lands), and the State Historical Preservation Officer, the operator shall confer with and obtain the approval of these agencies concerning the development and implementation of mitigation measures.
2. The operator shall submit to the regulatory authority and the SHPO, for review and approval, a mitigation plan for sites 42cb172, 173, 196, 135, 185, 188, 186 & 202. When approved, the operator shall implement the mitigation procedures in strict adherence with the objectives, methods and techniques specified in the mitigation proposal. A

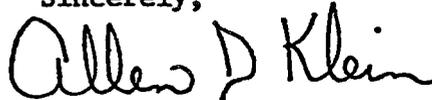
Letter to Melvin T. Smith  
June 17, 1982  
Page Two

draft report of the data recovery shall be submitted for review and approval to the regulatory authority and the SHPO no later than 4 months after completion of the data recovery. A final report shall be submitted within 4 months after receiving the comments and recommendations of the regulatory authority and the SHPO which incorporates those comments and recommendations.

Based on the company's acceptance of the above stipulations, we believe that approval of the Sage Point-Dugout Canyon Mine Plan should have "No Adverse Effect" to any site eligible for or listed in the National Register of Historic Places. Should you concur with our determination, we shall notify the Advisory Council on Historic Preservation of our joint concurrence as specified in the PMOA.

If you have any questions, please call Judy Shafer or Foster Kirby at (303) 837-5656. Thank you for your continuing cooperation.

Sincerely,



Allen D. Klein  
Administrator  
Western Technical Center

Enclosures



SCOTT M. MATHESON  
GOVERNOR



STATE OF UTAH  
DEPARTMENT OF COMMUNITY AND  
ECONOMIC DEVELOPMENT

December 6, 1982

Division of  
State History  
(UTAH STATE HISTORICAL SOCIETY)

MELVIN T. SMITH, DIRECTOR  
300 RIO GRANDE  
SALT LAKE CITY, UTAH 84101  
TELEPHONE 801/533-5755

Division of Oil, Gas and Mining  
Attn: Sue Lanier  
1588 West North Temple  
Salt Lake City, Utah 84116

RE: Sage Point-Dugout Canyon Mine Plan

Dear Ms. Lanier:

The Utah Preservation Office has received for consideration letters dated November 19, 1982, and June 18, 1982, outlining eligibility and effect questions for the Sage Point-Dugout Mine located in Carbon County, Utah.

After review of the material and consultation with the Division of Oil, Gas & Mining, the Utah Preservation Office concurs with the determination of eligibility and effect made by the Office of Surface Mining in their June 18, 1982 letter. During development of a mitigation plan to reach a determination of no adverse effect, our office would be willing to assist the applicant or the agency involved with any questions or help with development of a research design by the mining contractor.

The above is provided on request as information or assistance. We make no regulatory requirement, since that responsibility rests with the federal agency official. However, if you have questions or need additional assistance, please let us know. Contact Jim Dykman at 533-7039.

Sincerely,

Melvin T. Smith  
Director and  
State Historic Preservation Officer

JLD: jr:D969/5246c

cc: Allen D. Klein, Administrator, Attn: Judy Shafer, Office of  
Surface Mining, Brooks Tower, 1020 15th Street, Denver,  
Colorado 80202