

# SITE SPECIFIC ANALYSIS PART 2



## FINAL ENVIRONMENTAL STATEMENT *Development of Coal Resources in Central Utah*

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

DEVELOPMENT OF COAL RESOURCES  
IN  
CENTRAL UTAH

Prepared by the  
DEPARTMENT OF THE INTERIOR



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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

B Canyon Mine

On all or parts of lease Nos. U-039706, U-068754, U-01215,  
and U-010140

Proponent: United States Steel Corporation

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## B CANYON MINE

(PROPONENT: UNITED STATES STEEL CORPORATION)

### CHAPTER I

#### DESCRIPTION OF THE PROPOSED ACTION

##### A. INTRODUCTION

United States Steel Corporation submitted a plan for approval to mine one million tons per year (mty) of high volatile coking coal, mainly from land under Federal lease (all or parts of Federal lease Nos. U-039706, U-068754, U-01215, and U-010140). The complete mining and reclamation plan (MRP) is on file and available for public review at the office of the Area Mining Supervisor, U.S. Geological Survey (USGS), Salt Lake City, Utah. Plans and land-use applications for all of the proposed primary surface facilities to support the underground operation have been submitted for approval in accordance with Title 5 of the Federal Land Policy and Management Act of October 21, 1976 (90 Stat. 2776; 43 USC 1761). Applications have not yet been made for a few minor surface facilities. This statement analyzes the anticipated environmental impacts that could result from approval and carrying out the action or alternative action of the mining plan and other filed applications. Proposed rights-of-way not yet submitted for approval may require additional environmental analysis prior to approval and construction.

The proposed B Canyon mine would replace the company's Geneva mine, which is expected to be depleted within 10 years. Coal from the Geneva mine is rail-shipped to a preparation plant near Wellington, washed and mixed there with coal from the company's Somerset mine in Colorado, and shipped to Geneva Steel Works near Provo, Utah, for making coke.

The proposed minesite is in the Book Cliffs coal field in Carbon County, Utah, 12 miles north-northwest of the Geneva mine and about 25 miles east of Price (fig. 1). A highway and rail spur from East Carbon is proposed for access to the mine (fig. 2). The proposed highway route is near an existing unimproved road from East Carbon to the mine area and the rail spur would join an existing Denver and Rio Grande Western Railroad (D&RGW) spur line near East Carbon.

##### B. PROPOSED MINING AND SURFACE OPERATIONS

The B Canyon mine will extract coal from the Lower Sunnyside seam and where safely and economically possible, from the Upper Sunnyside seam (table 1). These two coal beds are in the Blackhawk Formation of Cretaceous age and have been explored by prospect openings along the outcrop, drilling, and an exploration tunnel driven from the adjacent Sunnyside No. 1 mine of Kaiser Steel Corporation. The coal-bearing rocks in the B Canyon area dip 7° to 10° to the northeast. Access to the Lower Sunnyside seam from the plantsite would be through a rock tunnel starting well below the seam

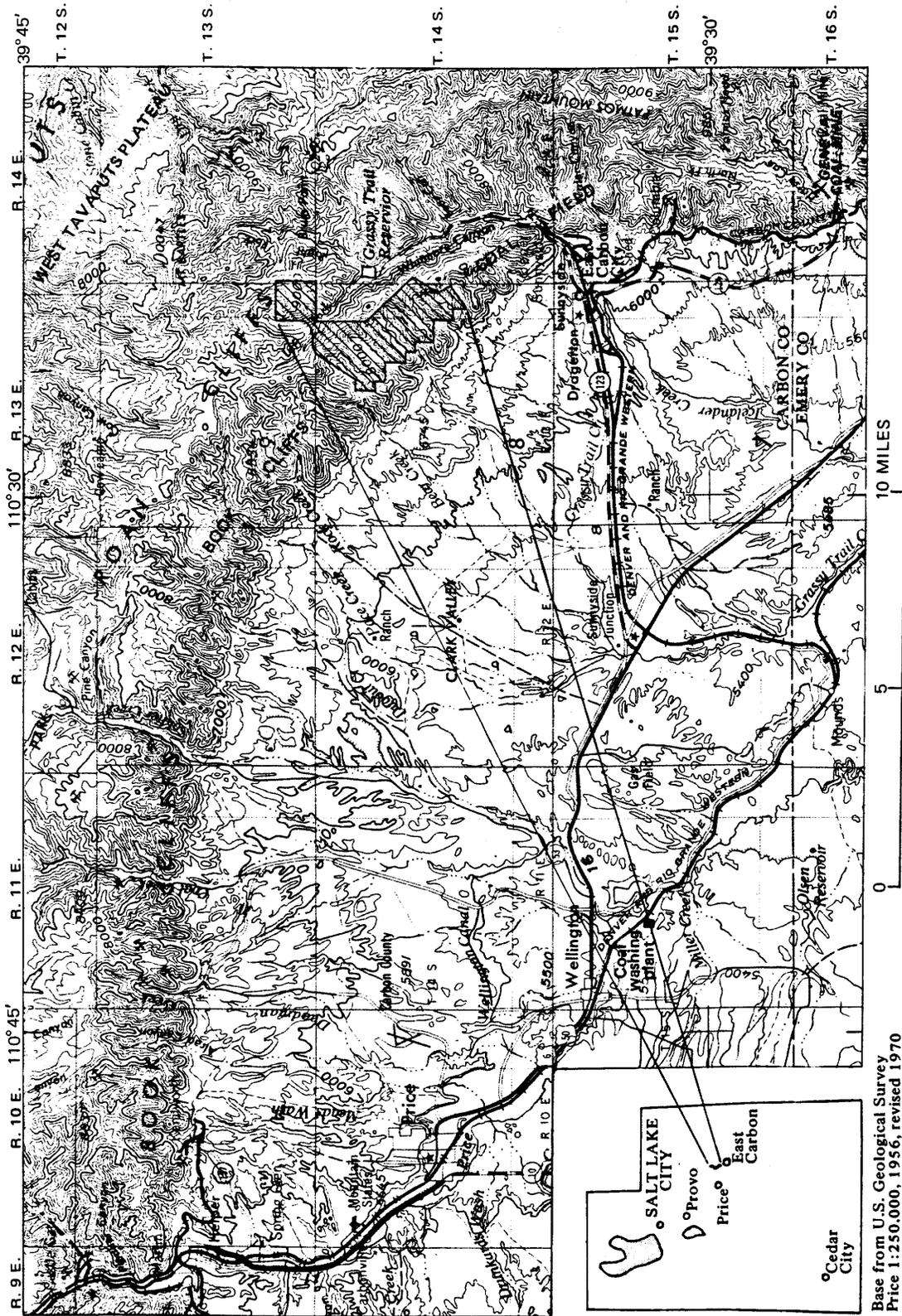


FIGURE 1.--United States Steel Corporation's B Canyon property, Carbon County, Utah.

Base from U.S. Geological Survey  
Price 1:250,000, 1956, revised 1970

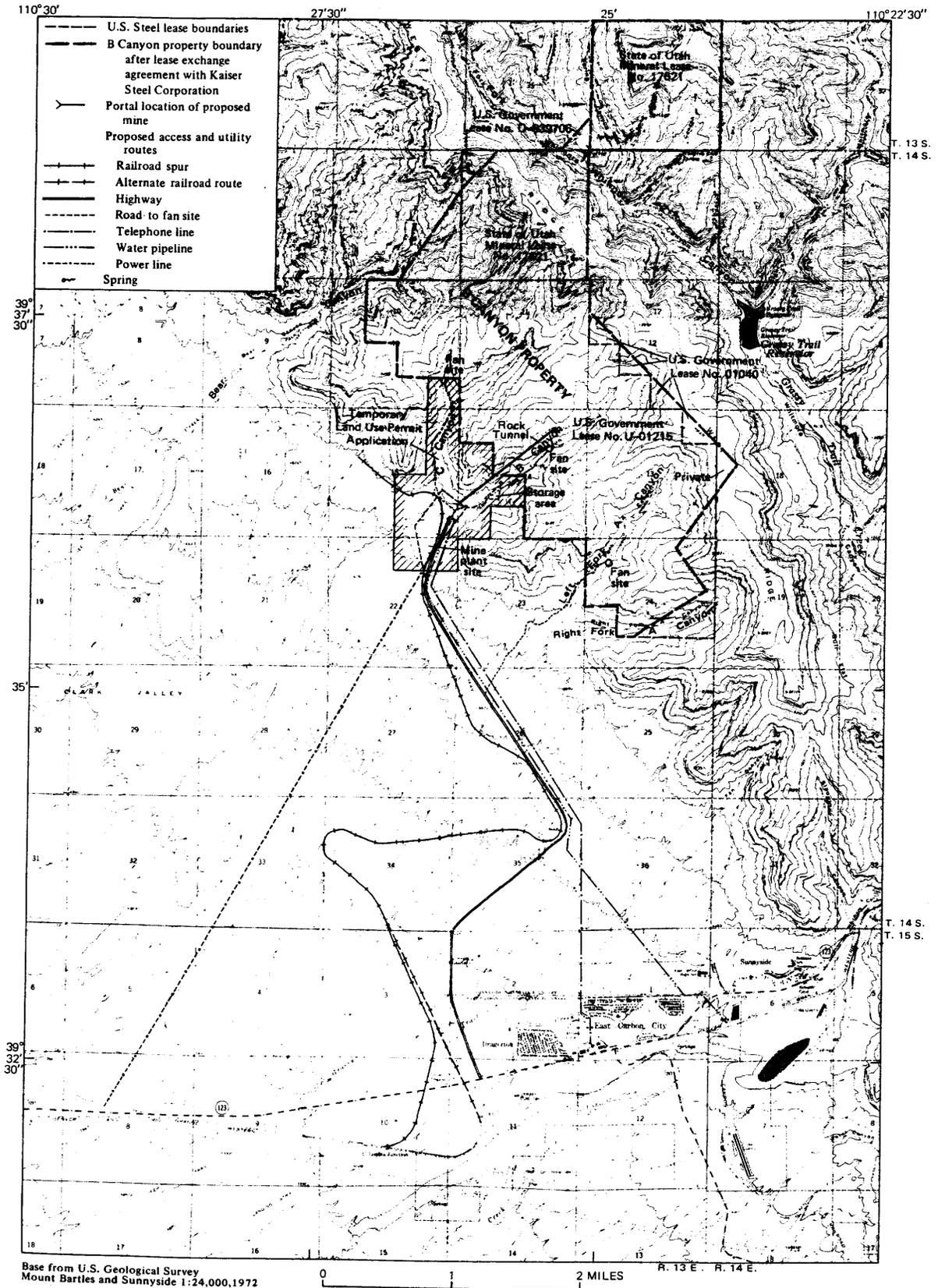


FIGURE 2.--Coal lease and proposed B Canyon mine surface facilities.

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

Full production-----	1,000,000 tons per year
Estimated production life-----	More than 25 years
Mine plan area (acres) (see fig. 3):	
Federal lease-----	2,629.0
State lease-----	1,260.8
Private land-----	31.7
Total-----	3,921.5
Product-----	Coal for making coke
Market-----	U.S. Steel, Geneva Steel Works, Geneva, Utah

Estimated coal reserves and recovery:

Upper Sunnyside seam: no detailed estimates available. Seam is 4-6 feet thick in about 160 acres in secs. 10 and 11 of T. 14 S., R. 13 E., and could be mined without endangering Lower Sunnyside seam mining. The interval between beds elsewhere is less than 28 feet.

	Federal lease (includes private)	State lease
Lower Sunnyside seam:		
Reserves (4 feet or more thick) (tons)	31,000,000	17,000,000
Recoverable (tons)-----	15,600,000	5,000,000
Unrecoverable (tons)-----	15,400,000	12,000,000
Recovery rate (percent)-----	50.3	29.4
Overburden (feet)-----	50-2,540	1,130-3,800

Gilson seam: not economically mineable.

Surface requirements:

Facility <sup>1</sup>	Federal land applications		Surface disturbance
	(acres)	(number)	(acres)
Mine plantsite and storage area-----	480	U-35675	79
Coal preparation plant, near Wellington, Utah-----	(2)		0
Highway, 5.2 miles, right-of-way 100 ft-----	63	U-35677	63
Railroad spur, 7.5 miles, right-of-way 100 ft-----	91	U-35678	91
Powerline, 7.5 miles, right-of-way 100 ft-----	91	U-35680	5
Telephone line, 4.4 miles, right-of-way 30 ft-----	16	U-35676	4
Water pipeline, 5.2 miles, right-of-way 20 ft-----	13	U-35679	13
Water pipeline, plantsite to storage, 0.4 miles-----	(1)		1
Road to A Canyon fansite, 1.8 miles-----	(1)		2
Road to B Canyon fansite, 0.9 miles-----	(1)		3
Road to C Canyon fansite, 1.1 miles-----	(1)		1
Borrow pit, location not specified-----	(1)		--
Approximate total area-----	754		262

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

Surface requirements--Continued:

Mine plant at mouth of B Canyon includes: 60-75 acres: Office building, 2,100 ft<sup>2</sup>; bathhouse and training building complex, 12,000 ft<sup>2</sup>; surface shop and warehouse, 14,000 ft<sup>2</sup>; mine-car dumping station; transfer and crusher building; bulk oil tank, 20,000 gals; roof-bolt storage shed, 3,000 ft<sup>2</sup>; rockdust bin, 100 tons; ambulance and garage building; oil house; portal; belt conveyor from transfer and crushing station to unit-train silo; coal storage silo; sewage system; electrical substation, 5,000 KVA, 60 ft x 80 ft; five fire-hose houses at strategic locations; six-inch water line; parking area, 153 cars; storage yard; topsoil storage area; mine-refuse pile; solid-waste land fill.

Storage-area in B Canyon: 3-4 acres: Powder magazine; cap magazine; cullinary water storage tank, 200,000 gals, 36 ft diameter, 26 ft high.

Other requirements:

Production schedule:

Year	Personnel	Continuous and longwall mining machines	Estimated production (tons)
1	150 construction	--	0
2	150 construction	--	0
3	not given	3	402,000
4	not given	3	600,000
5	not given	4	685,000
6	238 miners	5	980,000
7	238 miners	4	816,000

Major resource:

Industrial water----- 250,000 gpd from mined area  
 Potable water----- 20,000 gpd by pipeline from East Carbon City  
 Limestone rockdust----- 6,000 tons per year  
 Mine props (timber)----- 10,000 per year

Waste production and disposal:

Mine plantsite:

Mine waste rock----- 100 tons per year, to be disposed on mine  
 plantsite  
 Other solid waste----- amount unknown, to be disposed in landfill  
 on plantsite  
 Sanitary waste----- from 238 people per day, to be disposed in  
 septic system with drain fields

Coal preparation plant near Wellington:

Waste rock----- 150,000 tons per year, no new facilities  
 needed

<sup>1</sup>On lease, included in mining and reclamation plan.

<sup>2</sup>On private land, now operating.

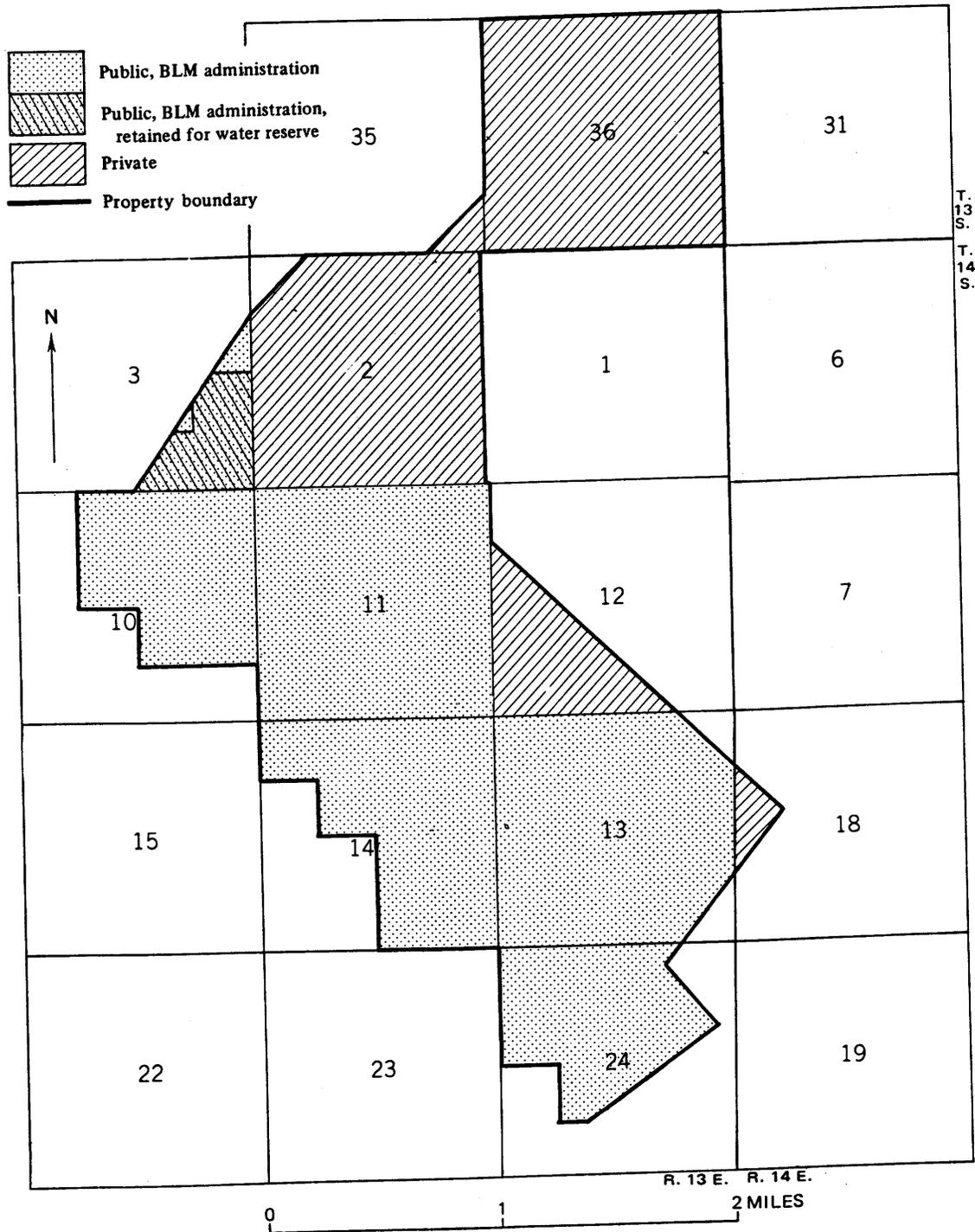


FIGURE 3.--U.S. Steel property surface ownership.

on a bearing parallel to the dip, and on a 2 percent upgrade, to intersect the seam about 5,000 feet from the portal.

A room and pillar system would be used to block out the long panels needed for longwall mining and also to recover coal in more confined areas, particularly in the vicinity of the coal outcrop in the Book Cliffs. Both continuous and longwall mining machines would be used. About 6,000 tons of limestone would be obtained each year to ally mine dust. Transportation of coal within the mine and from mining faces to the portal would be by shuttle car and conveyor belt. Mine cars on tracks would haul men and supplies. From the portal, the coal would continue by conveyor belt to a storage silo, where railroad cars would be loaded and the coal hauled to the existing preparation plant near Wellington (figs. 1, 2).

The proposed plantsite and nearby facilities require about 480 acres of public land on which the company has applied for a temporary land-use permit (figs. 2, 4, table 1). The plantsite at the mouth of B Canyon (figs. 4, 5) would cover an area of 60 to 75 acres. A storage area for explosives and a culinary water tank would cover 3 to 4 acres about 2,000 feet up B Canyon from the plantsite. Ventilation fans would be located in A, B, and C Canyons, accessed by graded dirt roads from the plantsite.

The proposed principal routes of the highway, railroad, water pipeline, and telephone line to the plantsite from present facilities in or near East Carbon City and Dragerton are shown on figure 2. (Alternate routes are discussed in chapter VIII.) The proposed powerline would originate farther west. The lengths of access routes, the areas included in individual rights-of-way of standard width, and estimated areas of surface disturbance from construction are given in table 1. Rights-of-way wider than indicated would be required in some places, where cut and fill is needed for construction of highway, roads, and railroad. Where possible, access and utility routes would occupy a single corridor, which would reduce the total right-of-way area of about 274 acres.

Culinary water would be treated and supplied by the East Carbon City municipal plant from a 0.5 cfs water right held by U.S. Steel on Grassy Trail Creek. About 20,000 gpd would be required, including water for sanitary facilities and a sewage-disposal plant. During the early stages of mining, water for underground dust abatement and fire control would be taken from the culinary water supply. Mining experience in the area indicates that water would become available within the mine as mining progresses; mine water then would be used for industrial needs, 250,000 gpd, and would be stored in a tank on the plantsite.

Coal mined during mine development would be transported by truck using the existing access road. The road would have to be improved and temporary loading and dumping facilities would have to be installed. The mining plan does not include details or specifications for these facilities.

For purposes of analysis in this report, the task force has assumed that 290 employees including support personnel would be required to mine



FIGURE 5.--View to the northeast into B Canyon. The rock tunnel would be about center of the photo. The railroad would enter near the lower right photo corner, curve upward to near the junction of the road and cleared survey line, and then curve down to the lower left corner of the photo. The clear area at the bottom of the photo is the result of juniper tree eradication.

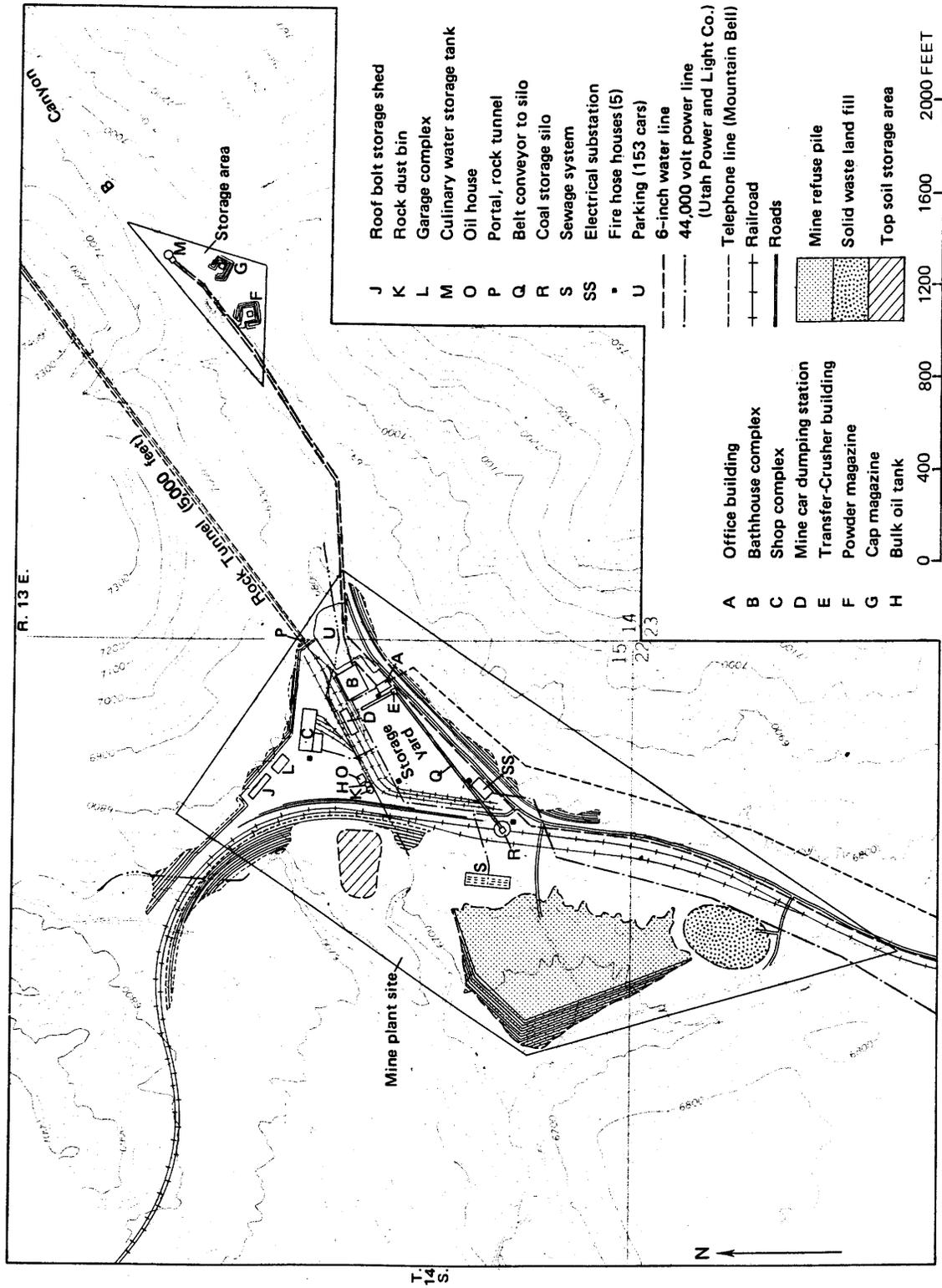


FIGURE 4.--Proposed surface facilities at mine plant and storage area.

one million tons of coal per year. This estimate is based on current and projected Utah production rates of 15 tons per manshift. An average work force of 235 is estimated in the mine plan proposal.

C. ENVIRONMENTAL PROTECTION AND RECLAMATION

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

"Disturbances to the surface lands will be limited to those areas required for construction of buildings and structures, mine portal openings, and solid rock and waste disposal."

"Mining and reclamation operation shall be controlled by formally engineered plans approved by the Mine Enforcement and Safety Administration and the U.S. Geological Survey. It is anticipated that the only roads on the coal mining lease will be graded dirt roads leading from the mine yard to the mine fans located at the outcrops in A, B and C Canyons. The only purpose and use of the roads will be to provide access for fan construction, inspection and maintenance. Natural drainage will not be impaired. Fan sites will be graded to permit proper drainage. Dams, settling ponds or other earthwork water retention facilities will not be required on the mining lease."

"The operator will take the necessary action to reduce or prevent soil erosion through limiting surface disturbance within the surface plant area and along rights-of-way to that necessary for the installation of these facilities. Areas disturbed during construction will be re-seeded in accord with recommendations of the Bureau of Land Management."

"During the construction period airborne dust will be reduced through sprinkling construction areas with water."

". . .operation of surface equipment will be limited to that required for support of the underground mining operation."

"In the event it is necessary to discharge mine water, the operator will obtain necessary EPA discharge permits and be governed by these permits. . . disposal of waste material will be in accord with State and Federal regulations in effect at that time."

"Culverts and pipe will be placed when necessary so as not to impede runoff of such (melting snow or runoff) water."

"Permanent damage to vegetative growth will be reduced by disturbing only the surface required for the operation by engineering control during construction."

"The applicant will comply with all Federal, State, and local regulations pertaining to air and water quality control. . .As mining progresses below the water table, it is anticipated that it will be necessary to pump ground water out of the mine and discharge it to the surface. Should it be necessary to discharge water from the mine, the operator will apply for the necessary permits to discharge and shall monitor the discharge as required by the permit. Sanitary water disposal will be conducted through a septic system with drainfields conforming to state codes."

The mine plan contains the following statements, with regard to reclamation after mining has ceased:

"It will be the objective of the operator, upon completion of mining operations, to restore disturbed surface lands to a condition compatible with its original use. The area will be regraded to conform to original landscaping as near as possible. Top soil will be distributed over the graded areas and the area reseeded, to the specification of the BLM to establish new vegetation."

"When mining activities are completed, the mining machinery will be removed and the portals sealed according to state and Federal regulations. The building not utilized will be removed."

"Reclamation of the surface lands would commence following the removal of, or in-place disposition of the surface facilities."

"Building and structure sites will be graded to original contours or as near as possible. Surfaces will be prepared and seeded in accordance with practices in effect at the time. Reclamation of the land surface should be accomplished within one to two years after underground work is complete."

"Roads, if no longer required, will be plowed and seeded."

"Restoration work on the mining lease will include sealing of the mine openings with permanent, non-combustible seals approved by the MESA and USGS. Mine openings will be sealed and covered with earth and rock to the original contours or as near to that as practical. Excavations at the mine openings will be covered with earth and rock to the natural angle of repose. The fills will be re-seeded as recommended by the BLM."

The mine plans refer to monitoring in the following statements:

"Roads required for access to drill site or subsidence monitoring sites will be narrow, graded dirt roads which can be easily restored to original contours and surface conditions."

"The possibility exists that in the future it may be necessary to construct graded dirt roads over the surface of the lease property for the purpose of drilling and (or) subsidence investigations."

"The operator will monitor water quality as required by the State and Federal agencies exercising control over water quality."

"Should it be necessary to discharge water from the mine, the operator will apply for the necessary permits to discharge and shall monitor the discharge as required by the permit."

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 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.

Mining practices and procedures will be designed to minimize subsidence and to make it as uniform as possible, consistent with maximum coal recovery and mine safety. The mining 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 authority requirements to allow proper wildlife movement. Sufficient coal will be left in place near coal outcrops in the Book Cliffs to avoid excessive rock slides and rock falls. All suitable topsoil will be stockpiled as required by the appropriate regulatory authority. Soil will be kept out of drainage ways during construction to avoid loss or impacts on water quality.

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.

If any springs, streams, or wells from which water has been appropriated or which are deemed significant to the human environment, are affected 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.

To determine the effect of mining on water, the company shall inventory water resources before mining and monitor the flow of springs and streams, the water level in wells, and the chemical quality of these waters during mining. With respect to the water reserve in sec. 3, T. 14 S., R. 13 E. (fig. 3), the applicant will be required to execute such stipulations and agreements as may be deemed proper and necessary by the appropriate regulatory authority to safeguard the public interests, after investigation of the facts, circumstances, and conditions in connection with each individual case. Mine water shall be contained and treated as necessary to meet the quality standards required by the State (title 73-14-1, et al.), EPA, or OSM, whichever is applicable, before being discharged or allowed to enter any waters of the State.

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 dust controls, see EPA, 1978, and at a minimum the following:

- 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.
- 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.
- Watering of all other roads in advance of and during use whenever sufficient unstabilized material is present to cause excessive fugitive dust.
- Reduction of fugitive dust at 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 materials will not sift, fall, or otherwise leave the vehicle on or near public highways will be followed.

The access road right-of-way will be fenced. The fence design will permit appropriate wildlife movement. The road will also provide large animal crossings (i.e., large culverts) at major draws. Gates will be provided on side roads to aid in stock-water hauling. Prior to any land disturbing activities a survey will be taken 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. Reclamation to restore vegetation to 90 percent of original productivity will be required.

The B 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 the National Historic Preservation Act of 1966 (P.L. 89-665, 80 Stat. 915, 16 USC, Sec. 470f, as amended, 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 Operations exclusive of Oil, Gas, Geothermal, and Oil Shale" leases.

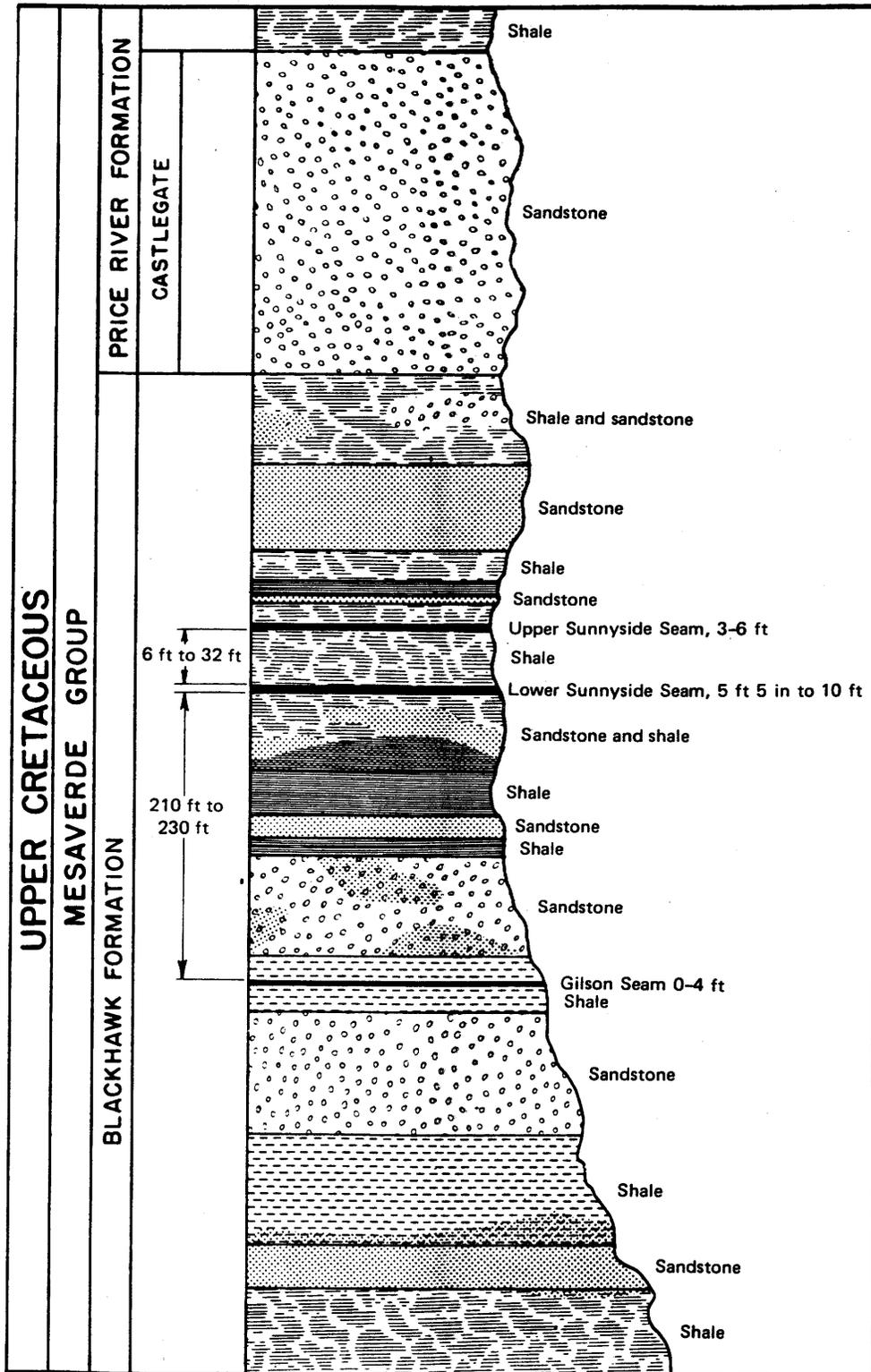


FIGURE 6.--Sketch showing age and sequence of rock units in the B Canyon property area.

of the sandstone at present, but some has been crushed and used for road paving. No oil or gas test holes have been drilled on B Canyon property, but oil and gas have been found in the rocks above the coal-bearing section northeastward on the flank of the Uinta basin and in older Cretaceous and pre-Cretaceous rocks to the west.

#### d. Soils

Two general soil areas prevail: 1) soils on clifflands and canyons, and 2) soils on pediments. Also associated with these areas are soils derived from stony colluvium at toeslopes and gravelly alluvium along drainageways.

Soils on clifflands and canyons occur on the steep terrain of the Book Cliffs and have formed primarily from parent materials of sandstone and minor amounts of shale. They are typically medium textured, shallow to moderately deep, and cobbly to stony. They are well drained to excessively drained. On southerly aspects, soils tend to be shallow and rocky with a low revegetation potential. On northerly aspects, soils are cooler, moister, better developed, and more productive. Soils on pediments are derived from alluvial materials on an erosional plain below the Book Cliffs. The area is moderately dissected by intermittent streams. The soils are generally deep, medium textured, relatively light colored, and cobbly to very cobbly. Carbonate accumulates in the subsoil because of low precipitation. Aridity limits soil development and productive potential. Topsoil is generally thin. The soils are well drained, and permeability is moderate. Slopes are commonly 5 to 10 percent, but steeper locally along drainage dissections and small ridges, particularly near the mouth of B Canyon. On the steeper slopes, soils are more cobbly and stony. Erosion hazard by water action, should vegetation be removed, is low to moderate. Wind-erosion potential is moderate. Because of climatic and soil conditions, 30 to 50 percent of annual revegetation attempts are expected to be successful (Hagihara and others, 1972).

### 3. Water

#### a. Water supply

Water on or near the B Canyon property is obtained mainly from springflow and runoff. Runoff stored in Grassy Trail Reservoir (fig. 1), capacity 1,000 acre-feet, is the principal source of water for the East Carbon city area; annual domestic usage is about 500 acre-feet. U.S. Steel Corp. has water rights on Grassy Trail Creek for 0.5 cfs (362 acre-feet per year) for use in mining. The mean annual flow of Grassy Trail Creek downstream of Grassy Trail Reservoir at the mouth of Whitmore Canyon near Sunnyside (drainage area 40 square miles) is estimated at 3.5 cfs or 2,500 acre-feet per year (written communication, K. M. Waddell, Hydrologist, USGS, 1977). Water from springs and streams is used by wildlife and livestock.

## 1) Surface water

The area proposed for mining underlies A, B, and C canyons and parts of Bear Canyon and Left Fork Whitmore Canyon, all tributary to Grassy Trail Creek (figs. 1, 2), which flows through Sunnyside and East Carbon City and generally southeastward to the Price River. All canyons except Left Fork Whitmore drain southerly from the Book Cliffs and join Grassy Trail Creek downstream from Sunnyside; they are dry most of the time and flow mainly in response to rainfall or snowmelt. Left Fork Whitmore Canyon drains 8 square miles northeast of the Book Cliffs; springs contribute to perennial flow, and annual runoff to Grassy Trail Reservoir averages 700 acre-feet. Grassy Trail Reservoir is slightly more than half a mile east of the proponent's lease area; the total drainage area upstream from the reservoir is about 20 square miles, and annual runoff averages 1,750 acre-feet. About 1.3 square miles of the B Canyon property is in the Left Fork Whitmore Canyon watershed and transects the drainage 1 1/2 miles upstream from Grassy Trail Reservoir. The part of the watershed overlying and upstream from the property contributes about 600 acre-feet of water per year to Grassy Trail Reservoir.

## 2) Ground water

The deeply incised drainage system in the area drains exposed bedrock, and the upper water-yielding sandstones 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 coal-bearing Blackhawk Formation, probably contain water. Several deeper formations, including the Emery and Ferron Sandstone Members of the Mancos Shale may also be expected to yield water. Little or no water is present near the outcrops of these formations along the Book Cliffs, however, because of drainage or movement downdip, generally northeastward. Springs fed by ground water are found along northward-facing outcrops above less permeable strata and along fracture zones. Nine springs are on or near the property and plantsite (fig. 2); two of these are one-quarter mile north of the property and the map area on sec. 25, T. 13 S., R. 13 E.

Ground-water bodies are recharged by precipitation, which infiltrates even through less permeable strata. Although the amount of water infiltrating through a unit area of less permeable strata is small (probably less than 5 percent of annual precipitation), the total infiltration area is large, and the amount of infiltration is as much as 30 acre-feet per year per square mile. Ground-water bodies are recharged to a small extent by precipitation on outcrops of some of the more permeable sandstone aquifers along the cliffs and slope faces of the Book Cliffs.

## 4. Air

Air quality has not been monitored near the 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 by AeroVironment (1977). During periods of high wind, short-term TSP standards can be exceeded in rural Utah areas as a result of wind-blown dust. The background visual range was estimated to be 37 miles (60 km) and was based on the background TSP estimate (AeroVironment, 1977). 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 Canyon (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

Pinyon-Juniper and lesser amounts of Grassland Mountain Brush and Conifer-Aspen at the highest altitudes are the vegetative types (part 1, chapter II) in the property area. Vegetative cover transitional between the major types is common. Most of the access route and surface facility areas were once covered by the Pinyon-Juniper type. Example species are Utah juniper, pinyon pine, big sagebrush, Indian ricegrass, and Mormon tea. However, much of the Pinyon-Juniper type was removed in 1966, and the area was changed to Grassland type through planting of crested wheatgrass and alderleaf mountain mahogany. Some native plants remaining are Indian ricegrass, fourwing saltbush, and galleta grass. In addition, the pinyon and juniper have reinvaded the area extensively. No threatened or endangered plant species have been identified on the lease area (Welsh, 1977).

#### 6. Wildlife and Fisheries

The variety of wildlife species in and near the proposed mine development is large. Vertebrates number nearly 360 varieties, (Dalton and others, 1977) of which the better known species are mule deer, mountain lion (cougar), black bear, coyote, red fox, gray fox, kit fox, bobcat, raptors, chukar partridge, blue and ruffed grouse, mourning doves, and rabbits. Several squirrel, chipmunk, and mice species inhabit the area and white-tailed prairie dogs are near the proposed access routes and mine plantsite. These species are prey to badgers, skunks, bobcats, coyotes, foxes and raptors. Several species of lizards, snakes, and other reptiles are throughout the area, but no gamefish are in the vicinity.

The proposed mine would be in Utah's 1,169,000-acre deer herd unit 27B winter range (fig. II-15). Winter range is the limiting factor on deer population (fig. 7). The optimum winter range population for deer herd unit 27B (Utah Department of Fish and Game, 1967; written communication, L. J. Wilson, 1977) is:

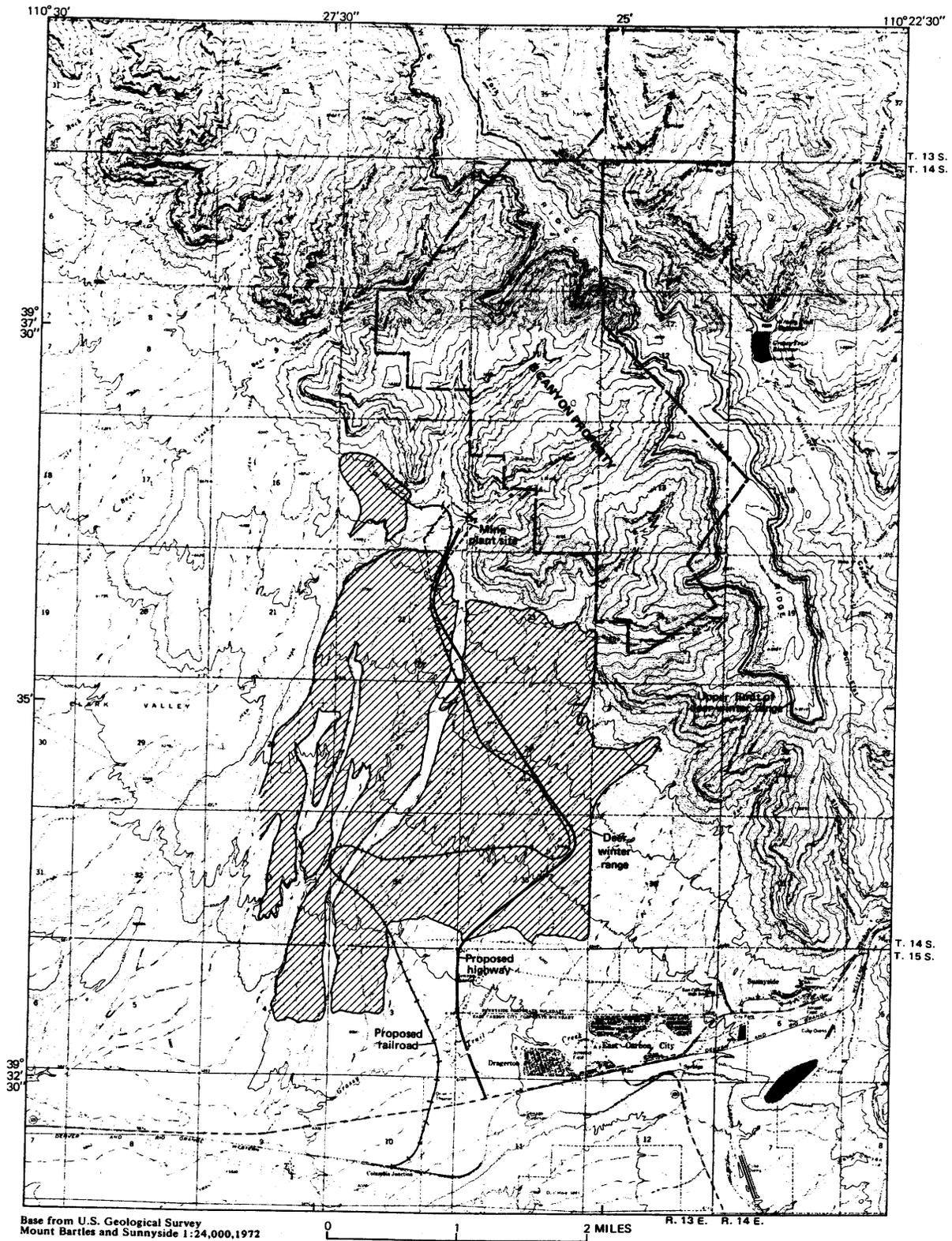


FIGURE 7.--Map of B Canyon property showing winter range of deer.

Vegetative type	Acres available		Optimum deer population
	Normal winter	Severe winter	
Total winter range-----	573,824	364,864	29,885
Pinyon-juniper-mountain brush-grass-----	195,584	157,760	10,893
Grassland-----	14,208	14,208	1,133

Mountain lions (part I, chapter II) range in the vicinity of the proposed mine. These usually solitary and sensitive animals (Seidensticker and others, 1973) establish home areas closely associated with the seasonal distribution of deer, which serve as their primary food source.

Black bears are in the area. Based on Utah harvest figures, unit 27B ranked second highest in the State, with 31 taken during 1967-76. Black bears maintain well-defined home areas that are mostly linear, oriented upslope and downslope (Jonkel and Cowan, 1971) and that are stable from year to year, and the availability and distribution of food influences movements (Amstrup and Beecham, 1976).

The black-footed ferret is an endangered species and much of the pediment slope southwest of the B Canyon property is listed as potential black-footed ferret range (Hinckley, 1970, Scott and others, 1977). However, as of 1978, no black-footed ferrets have been identified in or near the B Canyon property.

A wide variety of perching birds inhabit the area year-round. Raptors use the entire area year-round. They nest on cliffs and ledges or in trees, depending on the species preference. The pediment slope southwest of the Book Cliffs provides hunting fields. Small animals, birds, and reptiles are the food source.

Chukar partridge were introduced in 1951 and live along the base of the Book Cliffs around the mouth of B Canyon. Blue and ruffed grouse may be in the vicinity of the proposed mine, and mourning doves are common spring-summer nesting residents. Probably the most important habitat component for nesting doves is available water and second in importance is nest trees (Caldwell, 1964).

## B. CULTURAL ENVIRONMENT AND LAND USE

### 1. Lands

The proposed mine development, including Federal and State lands, lies within a mining and grazing zone. The zoning ordinance was first

adopted May 19, 1959, and subsequently amended by the Board of County Commissioners of Carbon County. The current ordinance is dated February 15, 1977, with a revised zone map dated 1974. 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, mine-waste dumps, underground mines, buildings, and structures associated with mines and mine dumps . . .mineral 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."

Secs. 1, 3, and 9 of T. 14 S., R. 13 E. contain public water-reserve lands (43 CFR 2311.0-.8) under BLM administration. Water reserve lands were withdrawn under Executive Order 107 of April 17, 1926, which ". . .was designed to preserve for general public use and benefit all unreserved public lands containing water holes or other bodies of water needed or used by the public for watering purposes" (U.S. Department of Interior, 1977, p. 390).

## 2. Range and Timber

Cattle from the Mud Springs Allotment graze on the gentler southwest slopes of the Book Cliffs and on the pediment slopes beyond. The browse is native Pinyon-Juniper type on the Cliff slopes and Grassland on the pediment. About 340 cattle use the allotment from October 20-December 20 and April 10-June 10, for a total of 2,320 AUM's. However, water for the cattle must be hauled to the northeast portions of the allotment. A large part of the carrying capacity of the allotment comes from several square miles surrounding the various access routes to the proposed mine plantsite. This surrounding area provides 1,385 AUM's and is considered good grazing country. A few junipers are harvested for posts, pinyon nuts are picked when the crop is good, pinyon Christmas trees are cut, and dead trees are used for firewood.

## 3. Energy and Minerals

No energy or mineral resources have been or are being produced at present on the B Canyon property or any area proposed for associated surface facilities.

## 4. Socioeconomics

Most of the work force and their families reside in the Sunnyside--East Carbon City vicinity where the current population is about 6,000. The current work force employed to produce 600,000 tons per year at the Geneva mine is about 238. Small communities near Geneva and other nearby mines are economically related to coal mining, and their population is directly proportional to local mine employment (part 1, chapter II).

Price, about 25 miles to the west (fig. 1), is the nearest major shopping center to the communities. The regional socioeconomic environment and expected impacts are discussed in part 1.

#### 5. Transportation and Utilities

A narrow dirt road now connects East Carbon City and the proposed mine plantsite. A spur of Denver and Rio Grande Western Railroad passes through East Carbon City and connects with the main line about 10 miles southeast of Wellington (fig. 1). Power is available from a Utah Power & Light Company line west of East Carbon (fig. 2). Telephone service is available from East Carbon City.

#### 6. Archeologic and Historic Values

Little archeological information is available for the B Canyon property area and close vicinity. A reconnaissance survey by K. K. Pelli in September 1977 (Pierson, 1977), did not locate any archeological sites. One small historic building, much in ruin, is located near the mouth of B Canyon. Wire nails indicate that the cabin is of recent origin. The National Register of Historic Places lists no cultural values for the area. Some work has been done in neighboring areas (Nine Mile Canyon, Castle Valley, San Rafael Swell, etc., 10 to 100 miles from the proposed mine). These investigations have resulted in the recording of many archeological sites.

#### 7. Recreation

Recreation use is low (less than 500 visitor days annually) and potential is limited. Users are primarily from Carbon and Emery Counties and activities are oriented toward daytime use and travel. No services or facilities have been developed for recreation, and none are planned. The proposed mine area lacks perennial potable water, significant user attractions, or outstanding and unique qualities.

#### 8. Esthetics

Visual amenities are extensive, but not outstanding or unique (fig. 5). The toeslopes of the Book Cliffs, including the proposed plantsite, and the straight cliffs above the plantsite have a common (class B) scenic quality. Line form, color, and texture have some variety, but tend to be common throughout the Book Cliffs. The southwest toeslopes of the Book Cliffs where the ancillary facilities would be located have minimal (Class C) scenery quality. Landforms, line, color, and texture have little variation and the area demands little notice. The visual resource management classification (Roy Mann Assoc. Inc., 1977) of the area allows for changes or modifications which may subordinate the existing character (classes IVb and IVc) during the life of the project. Reclamation should restore a natural landscape character to the area.

C. FUTURE ENVIRONMENT

The B Canyon mine is located near operating mines and would replace an existing mine that is exhausting its available reserves. The future environment would change only if this mine were not put into production. If the mine were not approved, presumably other nearby mines might replace the production that would otherwise come from the proposed B Canyon mine.

## CHAPTER III

### ENVIRONMENTAL IMPACTS

This section describes the anticipated impact of development of the B Canyon property as proposed in the mining plan and as mitigated through methods described in chapter I, "Environmental protection and reclamation," and "Legally enforceable mitigating measures."

#### A. NATURAL ENVIRONMENT

##### 1. Land

###### a. Land surface

Construction of the proposed surface facilities, not including a borrow pit, will disturb as much as 262 acres of land (table 1). The surface above the mined area of 3,922 acres would be subject to subsidence (part 1, chapter IV). A maximum potential subsidence of 70 percent of the mined height may be expected or as much as 7 feet where mined panels are 10 feet high. In places where pillars of coal are left for roof support, differential subsidence could result in ridges, depressions, and open fractures, some of which possibly could reach a hazardous size. However, no recorded subsidence related hazardous conditions have resulted from 75 years of mining in areas adjacent to the leasehold. Construction above mined areas would need to allow for subsidence because neither the time nor amount of subsidence can be predicted in advance of mining. Construction and mining along or near the steep cliff fronts could accelerate naturally occurring landslides and rock falls.

###### 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.

###### c. Energy and minerals

Lower Sunnyside unrecoverable coal is 27 million of the 48 million tons of total estimated reserves. An unknown amount of coal in the Upper

Sunnyside and Gilson seams is also unrecoverable (table 1). During the life of the mine, improved mining methods, unforeseeable economic conditions and (or) changes in Federal government regulations may reduce the amount now considered unrecoverable in the Upper and Lower Sunnyside and the deeper Gilson seams.

#### d. Soils

As many as 262 acres of soil would be disturbed by proposed construction at the plantsite and along road, railroad, and utility line routes (table 1). On about 13 acres, only part of the vegetation would be removed and soil impacts may be minor. Increased erosion at construction sites would be inevitable during the period of soil exposure, particularly during an intense rainstorm. About 1.5 to 4.0 cubic yards of soil per acre per year would be eroded during the period of soil exposure, 1.0 to 3.0 cubic yards per acre per year above the natural rate (Pacific Southwest Inter-Agency Committee System, 1968). Sediment would be collected on the site in sediment control ponds. The increased erosion applies only to disturbed soils and is a short-term impact. After construction is completed, erosion rates probably would be about the same as now. Productivity of occupied soils would be lost only for the life of the mine and transportation systems. Rehabilitation after mining would restore productivity (chapter VI).

### 2. Water

#### a. Water supply

##### 1) Surface water

The impact of subsidence and subsequent fracturing on streamflow cannot be accurately predicted. Nonetheless, subsidence and subsequent fracturing in Left Fork Whitmore Canyon watershed may divert some surface flow into the ground. It is unlikely, however, that much if any, water would be diverted. Potentially, as much as 600 acre-feet of water per year could be so diverted. The amount of such diversion would decrease flow to Grassy Trail Reservoir and could be detrimental to wildlife and livestock in the area of depletion (possibly the 1.3 square miles of Left Fork Whitmore Canyon watershed that overlies the proposed mine). Diverted water eventually would be discharged, but potential points of discharge cannot be predicted from available data. The flow of Grassy Trail Creek downstream from Sunnyside may be increased by as much as 0.15 cfs after several years of mining, owing to discharge of mine water.

##### 2) Ground water

Water use and mining below waterbearing beds would decrease or alter regional ground-water resources (part 1, chapter IV). Subsidence and associated fracturing possibly could drain waterbearing rocks above the mined coal beds (fig. 6) and increase recharge to saturated beds below the Lower Sunnyside seam. Water levels would be lowered locally and

some of the nine springs on or near the property may receive reduced flow or dry completely.

### 3. Air

Particulates would be the only significant contributors to air pollution at the B Canyon mine. Most coal particles would settle out within about 1 mile (1.6 KM) downwind of the mine. Increases in concentration of other pollutants such as sulfur dioxide, nitrogen oxides, carbon monoxide, and photochemical oxidants would be insignificant. During the first 2-3 years, coal would be transported from the portal to rail by truck. Thereafter transport to the railroad would be by conveyor. Using AeroVironment 1977 analysis, the maximum 24-hour TSP increment is estimated to be  $150 \mu\text{g}/\text{m}^3$  within 110 yards of the unpaved but watered road carrying B Canyon mine traffic. The Federal 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 truck haul on an unpaved road would be an estimated 310 tons (40 tons from mining activities and 270 tons from truck haul) and would require EPA review (chapter I, "Legally enforceable mitigating measures").

Pavement or equivalent stabilization as required in chapter I, "Legally enforceable mitigating measures," would reduce air quality and visibility impacts to insignificant levels. The maximum 24-hour incremental increase in TSP would be about  $45 \mu\text{g}/\text{m}^3$ .

### 4. Vegetation

Approximately 100 acres of Pinyon-Juniper type and 162 acres of replanted Grassland type would be lost for the life of the mine. Little or no impact is foreseen on vegetation overlying the mine. No threatened or endangered plant species would be impacted by implementing the proposal.

### 5. Wildlife and Fisheries

Wildlife habitat would be degraded by soil disturbance and (or) vegetation removal in constructing facilities, noise, lights, activity, and traffic associated with mine construction and operation. Habitat loss can be measured and quantified for some species, but avoidance caused by mine construction and operation cannot be precisely quantified. More visitors would disturb more sensitive species, such as black bears, mountain lions, and deer to an unknown extent. Wildlife habitat would be destroyed on 262 acres plus the amount yet to be identified for borrow-pits (table 1). There would be 228 acres of winter deer range destroyed, not including the habitat destroyed outside the limits of winter deer range. Small game and nongame mammals, bird, and reptile habitat affected would equal the 262 acres and would reduce the animal numbers somewhat. This, in turn, would affect predatory birds and mammals by reducing their food source. No base data are available to predict the impact to small game and nongame mammals and birds or predatory birds and mammals. Because of disturbance deer would be expected to avoid using 690 acres of available winter range surrounding the proposed B Canyon mine. The

zone would extend outward one-tenth of a mile from the periphery of the disturbance centers at the mine plantsite, mine fans, and from the highway. Deer feeding could be expected to be 50 percent less than elsewhere in this wintering range.

The proposed action would destroy 75 acres of winter deer range in the pinyon-juniper-mountain brush-grass complex, and disturbance would reduce use of 158 acres more (about 0.1 percent of the pinyon-juniper-mountain brush-grass complex deer winter range). Destruction of pinyon-juniper-mountain brush-grass vegetation would reduce the deer population potential in this habitat by six. Reduced use on 158 acres would reduce potential population by another five head. Additionally, 153 acres of replanted Grassland deer winter range would be destroyed, and deer would be expected to reduce use on 532 acres more (about 5 percent of the Grassland deer winter range). In summary, habitat destruction would reduce the winter range potential by 12 head, and reduced use would reduce the potential by another 21 deer. A total potential loss of 44 deer.

The loss of habitat to support potential deer and intrusion into B Canyon would probably reduce the mountain lion population potential in unit 27B by two animals, one male and one female, based on Seidensticker's findings (1973) that mountain lion home areas are relatively large and that male and female home areas overlap completely. Their sensitivity toward disturbance would probably contribute most to abandoning a home area.

Black bears would avoid the mine vicinity because of the disturbance and destruction of 75 acres of pinyon-juniper-mountain brush-grass vegetation, which includes food such as serviceberries, snowberries, elderberries, and dogwood. If the area of mining is not occupied by bear, opening of the mine definitely would preclude their use of the vicinity and the probable impacts would affect one bear.

Because chukar partridge habitat must include available water during the summer and fall, loss of springs would cause abandonment of summer-brood rearing habitat, adversely affecting chukar population. Mine dewatering could make water available for chukars in new areas and increase populations. Base data are insufficient to predict how many chukars would be affected or whether beneficial effects would offset adverse effects.

The impacts on mourning doves may prove adverse in some parts of the activity area and beneficial in others. Available water is probably the major limiting factor in dove-nesting density in the area of the B Canyon property, where doves may use the nine known springs (fig. 2). If the springs were dried, doves would abandon spring-dependent nesting habitat. As there are no known water sources near the proposed plantsite, removing trees from 75 acres would not be expected to affect nesting doves. The expected mine-water discharge could provide a key requirement for additional dove nesting. Whether the expected beneficial effects will equal the adverse effects on mourning doves is unknown.

Collisions between wildlife and vehicles along the access highway would be certain. Deer would risk crossing the highway in their daily feeding. Diurnal wildlife, such as chipmunks, prairie dogs, and ground squirrels, would chance collision with vehicles during the day, whereas nocturnal wildlife, such as jackrabbits, cottontails, mice, and snakes, would run the risk at night. Scavenging birds and mammals could then be struck by subsequent vehicles while feeding on previous road kill. Raptors and slow-moving mammals are more susceptible to vehicle strikes than more fleet species (part 1, chapter II). The loss of bald and golden eagles, accidental or otherwise, would be of serious concern. The proposed railroad, mine access highway, and power- and waterlines would cross over several miles of potential black-footed ferret range. Because no ferrets have been identified near the B Canyon developments, the impact to the animal is not known. The powerline would be a strike hazard for all birds and would increase the risk of perching raptors being shot if the powerline is within 300 yards of the road (part 1, chapter II). The presence of 150 workers and their families during the construction period would increase demand for game and fish and illegal activities related to all wildlife would be expected to increase.

## B. CULTURAL ENVIRONMENT AND LAND USE

### 1. Land Use

About three acres would be converted to community use to accommodate the population increase of 50 new residents.

### 2. Range and Timber

The vegetation destroyed by the project would reduce grazing capacity by approximately 25 AUM's per year, about 1 percent of the total use on the allotment. Of greater concern is the potential impact upon cattle access across the rights-of-way and hazards from vehicles. This could reduce livestock's ability to use what forage is available. However, the access road would aid in hauling water for cattle. A small volume of woodland products, such as fenceposts, firewood, pinyon Christmas trees, and pinyon nuts, would be lost to the project.

### 3. Socioeconomics

Population increase and new urbanization as a result of the estimated 50 new mine workers would require additional permanent or mobile housing (and related community services), and would increase the total regional income. Opening the mine would help maintain business economies and city and county tax bases in the East Carbon-Sunnyside, and Price areas which are partially dependent on the Geneva mine.

### 4. Transportation and Utilities

Effects on the present transportation and utility systems would be small, amounting to little more than a local shift in use patterns, as

Geneva mine personnel transfer to B Canyon mine. U-123 traffic could be disturbed by constructing a crossing for the proposed road and railroad spur.

#### 5. Archeologic and Historic Values

Archeological sites may be found during the intensive surveys that will be conducted prior to development. Until such a survey is completed the extent of the impact cannot be determined. Increased population may result in more vandalism of cultural resources in the region. Improved access may result in vandalism to sites that may be present. Surveys will add to the cultural resource knowledge of the region. The one known historic site is in a poor state of repair. Any others that may be in the area of the mine proposal would likely be small and associated with mining or ranching activities. These may also be impacted. No known National Register properties would be impacted.

#### 6. Recreation and Esthetics

A minor amount of recreation would be displaced by the proposed action (fig. 2). Recreation on the pediment south of the plantsite would increase because of improved access, but littering and vandalism would result from the increased use. Except for hunting, trapping, and ORV use, impacts to the recreation resource from increased use would be minimal, even if use increased severalfold.

Facilities and activities associated with the proposal would be viewed primarily on site. Orientation of the majority of visitors is anticipated to be toward mining and associated activities, use of adjacent areas for similar activities, and light recreation use of the area. Less than one-fourth of the visitors would have major concerns about modifying the ranching-natural landscape character to one including industrial facilities and activities. The present character of the pediment and mouth of B Canyon would be extensively modified by mining facilities and activities. Present modifications are limited to the reseeded area on the pediment, low standard roads, and the test portal entry in B Canyon. Proposed modifications of the landscape would include the paved access road, railroad, power and telephone lines, plantsite, and portal entry system.

## 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 State and Federal regulatory agencies 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 B 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.

Supplemental irrigation and fertilizer should be available and, if necessary, should be used in restoring the disturbed areas to 90 percent of original productivity. Poorer quality topsoil could be used for fill in areas where it could be retrieved should it be needed for reclamation. Better quality topsoil should either be stockpiled or used for reclamation concurrent with construction. In places where stable cut slopes blend into the landscape and do not conflict with other planned uses, it may be more desirable to leave the cut bank rather than reconstruct a steep slope. The adjacent leveled land may be more useable and soil erosion reduced.

Visual impacts could be mitigated by establishing no more than two corridors; one for access and utilities and one for the railroad. Utility lines should be buried where possible, but if powerlines are constructed above ground, indiscriminate shooting impacts to perching raptors could be reduced by building them at least 300 yards from roadways. The railroad corridor (one train per day) should not be fenced to allow livestock and big game movement. Enforcement of State and Federal rules and regulations (State Vehicle Code, Antilittering Laws, etc.) could mitigate some visual impacts caused by increased ORV use, littering and vandalism. Impacts to air quality and visibility could be mitigated by bussing the mine workers to the mine site.

## CHAPTER V

### ADVERSE EFFECTS THAT CANNOT BE AVOIDED

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. Land surface deformation from constructing surface facilities and waste disposal would not be totally mitigated by reclamation. Subsidence above mined out areas would endanger surface construction. About 27 million tons of the minable coal in the Lower Sunnyside seam would be left in place as pillars and barriers. The Upper Sunnyside seam is of minable thickness over about 1,740 acres of the property, but less than 10 percent of the acreage is minable because proximity to the lower seam makes mining unsafe. The Gilson seam is also unrecoverable. The coal left in place would be unrecoverable with present day technology.

As much as 262 acres of soil and vegetation would be disturbed, with resultant onsite impacts from erosion and loss in soil productivity during the life of the project. Where soils are disturbed and exposed, onsite erosion could increase two to three times and return to about natural rates after required erosion control and revegetation. Sediment would be collected onsite. Mining would alter ground-water flow and lower water levels at the minesite. Flow to nine springs may be reduced or diverted owing to use and disruption of the water-bearing beds. Subsidence and subsequent fracturing may reduce flows to Grassy Trail Reservoir. Required BACT would reduce the 24-hour TSP increments to about  $45 \mu\text{g}/\text{m}^3$ , which is well below the secondary NAAQS of  $150 \mu\text{g}/\text{m}^3$ .

Wildlife habitat would be lost because of occupancy and disturbance. Vehicle-wildlife and bird-powerline collisions would occur. These impacts would reduce wildlife numbers. The proposed mine would result in a loss of 25 AUM's of grazing capacity per year and some disruption of normal grazing patterns. Increased population in the area may result in vandalism to the cultural resources within the region. The direct impacts cannot be determined until an intensive survey is completed.

The loss of wildlife and subsequent lowering of hunting and trapping success would be unavoidable. Use of ORV's would increase, resulting in a minor loss of vegetation, soils, wildlife habitat, wildlife, and watershed values. Vandalism and littering would increase, even with increased law enforcement. The ranching-natural landscape character would be mixed with industrial (mining) character. To individuals wanting to maintain the present landscape character, this mix would be adverse.

## CHAPTER VI

### SHORT-TERM USE VERSUS LONG-TERM PRODUCTIVITY

The proposed B Canyon mine is planned in an area with a long history of mining and is near operating coal mines. It will replace a nearby existing mine. The work force in the existing mine will transfer to the new mine and very little change is anticipated in any nearby communities.

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. The use of as much as 262 acres of land surface for plant 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 of undermined areas could affect surface structures over the long term. Mining coal would reduce long-term productivity of energy resources. If improved mining methods and (or) changed economic conditions enable recovery of all or part of the estimated 27 mty of unmined coal in the Lower Sunnyside seam and the unknown amount in the Upper Sunnyside seam, long-term productivity would be restored at least partly. The deeper Gilson seam is generally less than 4 feet thick (fig. 6) and is not minable by present methods.

During the life of the mine soil productivity would be lost on as much as 262 acres of land (table 1), but most would be rehabilitated after mining. Land occupied by transportation systems (about 25 acres) could be out of production for the long term. Over the short term, vegetation and associated range forage and woodland products would be lost. Reclamation would restore vegetation in about 5 to 10 years after mining. The decreased wildlife population potential would be short term. Human encroachment through new routes could continue to depress wildlife productivity over the long term. Transportation impacts are likely to be short term, for the most part ending with mining. However, retention of the access road is likely after mining, as it would provide access for other purposes. The railroad is likely to be salvaged for materials, but the roadbed probably would remain and become a permanent landscape feature. The utility lines also are likely to be permanent, serving future development.

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 ensure recording of information that otherwise could be lost to natural forces or vandalism. The short-term use of the area for mining would not appreciably reduce the opportunity for recreation. Improved access would generate additional recreation in the area on a long-term basis. The present landscape would be modified to include industrial development and activities. After mining and reclamation, the paved access route and minor residuals of mining would remain and would constitute a permanent minor modification of the ranching-natural landscape character of the area.

## CHAPTER VII

### IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

An undetermined number of uninventoried exposed and unexposed fossil localities would be impacted or lost. About 21 million tons of coal would be mined and consumed as a nonrenewable resource and about 27 million tons would remain in place as unmined pillars, fire barriers and other roof-supporting structures. This unmined coal and an additional unknown amount of coal would be irretrievable unless and until suitable recovery methods can be developed.

Soils disturbed by mining projects, transportation systems, and community development would be permanently altered from their natural characteristics. Energy and materials used in reclamation would be irreversible and irretrievable commitments. Changes in ground-water flow patterns resulting from mining and subsequent subsidence would be irreversible.

Emissions from secondary growth and its 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.

Plants now growing on the areas to be disturbed, along with the grazing capacity and woodland products, would be irretrievably lost. Twenty-five AUM's per year for 25 years total 625 lost AUM's. A small volume of fenceposts, pinyon Christmas trees, firewood, and pinyon nuts would be lost. If the access road and railroad are not reclaimed, these areas would be irretrievably lost. Proper reclamation of the disturbed areas will prevent irreversible commitment of grazing and vegetal resources. Individual wildlife and habitat loss would be irretrievable.

Unsalvaged materials in the road, railroad, and waterline would constitute an irretrievable commitment of resources, as would the use of energy in construction. Irreversible and irretrievable commitment of resources by transportation would consist of the energy and materials to transport the coal and the mine workers. Based on national data, train haul over 19 miles would require  $10^9$  Btu to transport  $10^{12}$  Btu of coal. Mine workers commuting an average of 7.1 miles one way over at least 25 years would travel 12.9 million miles and consume half a million gallons of gasoline. More than 80 cars and light trucks per hour would be using the access road during commuting hours.

Any cultural resources located in the immediate project area could not be preserved in place. If the paved access road remains in place after mining and reclamation, the area would be irreversibly committed 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 practices (limited-controlled hunts) after mining ceases. The area will revert to near the present landscape character after mining and reclamation, except for some incidental residuals and the main access road. The present ranching-natural landscape character would not be totally retrievable.

## 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 no action would be the same as described subsequently under the alternative "Reject the Mining and Reclamation Plan."

The proposed B Canyon mine and the operating Geneva mine are in the part of the Book Cliffs coal field that produces coking coal. The company controls no other undeveloped coal resources in this area, and company officials have stated that no other sources of coking coal are known in Utah. If the application to develop the B Canyon property should be denied, the company would have to find a source of coking coal elsewhere. Over time the Geneva mine would close and the population of East Carbon-Sunnyside-Drageron would be reduced about one-third. Impacts would be shifted to a new source area for coking coal.

Unemployment of approximately 200 personnel would have a significant secondary economic impact to businesses in the East Carbon-Sunnyside-Drageron area. Needs for elementary school instructional personnel and other supportive personnel would be less. About 10 percent of the permanent homes could be vacated.

#### 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 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:

- . Modification of the proposal to correct deficiencies unrelated to SMCRA or to reduce or avoid environmental impact.
- . Acquisition of additional data to provide an improved basis for technical or environmental evaluation.
- . Further evaluation of the proposal and (or) alternatives.

- . 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 activity 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."

If prevention of further development of existing leases were accomplished, substantial quantities of coal known to be present would be left in place and not recovered for use. To replace the resources foregone by this alternative course of action, additional coking coal mines would have to be developed on company controlled property in northwest Colorado to supply the requirements of the steel plant in Provo, Utah. This would require about 250 additional miles of rail haul.

#### 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."

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 agreeable 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 costs 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 this 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 relates 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

Impacts of the alternative transportation and utility routes (table 2 and fig. 8) would be about the same as for the primary proposals (fig. 6). The routes eventually chosen would depend on engineering and economic factors.

TABLE 2.--Summary company-proposed alternative transportation and utility routes

[See fig. 8]

	Right-of-way			Surface disturbance (acres)
	Miles	Width	Acres	
Highway-----	5.13	100 ft	62.2	40.4
Railroad spur-----	7.48	100 ft	90.7	90.7
Telephone line-----	4.36	30 ft	15.9	4.2
Water pipeline-----	5.17	20 ft	12.5	12.5

### 2. Federal Proposed Alternatives

#### a. Truck-haul coal to Wellington

Although not as energy efficient as rail transport, hauling to the Wellington washing facility is less capital-intensive, especially in the early years of operation. Hauling coal 19 miles to the washing facility would require 154, 25-ton trucks. This would increase traffic on U-123 to 289 heavy trucks (6-wheels and over) and 895 cars or light trucks per day. West of its junction with U-123, US Highway 6 in 1975 carried 479 heavy trucks and 2,690 cars or light trucks per day. Thus, truck haulage to Wellington from the B Canyon mine would more than double heavy truck traffic on U-123 and add about half again as much heavy truck traffic on US Highway 6. Exhaust emissions and TSP from fugitive dust would be increased over the primary proposal.

Impacts on vegetation and grazing would be reduced by the area used for constructing the proposed railroad. Approximately 8 AUM's per year would be gained over the original proposal. More traffic on the haul road would reinforce the need for large animal crossings. Other impacts and uses would remain similar to the basic proposal.

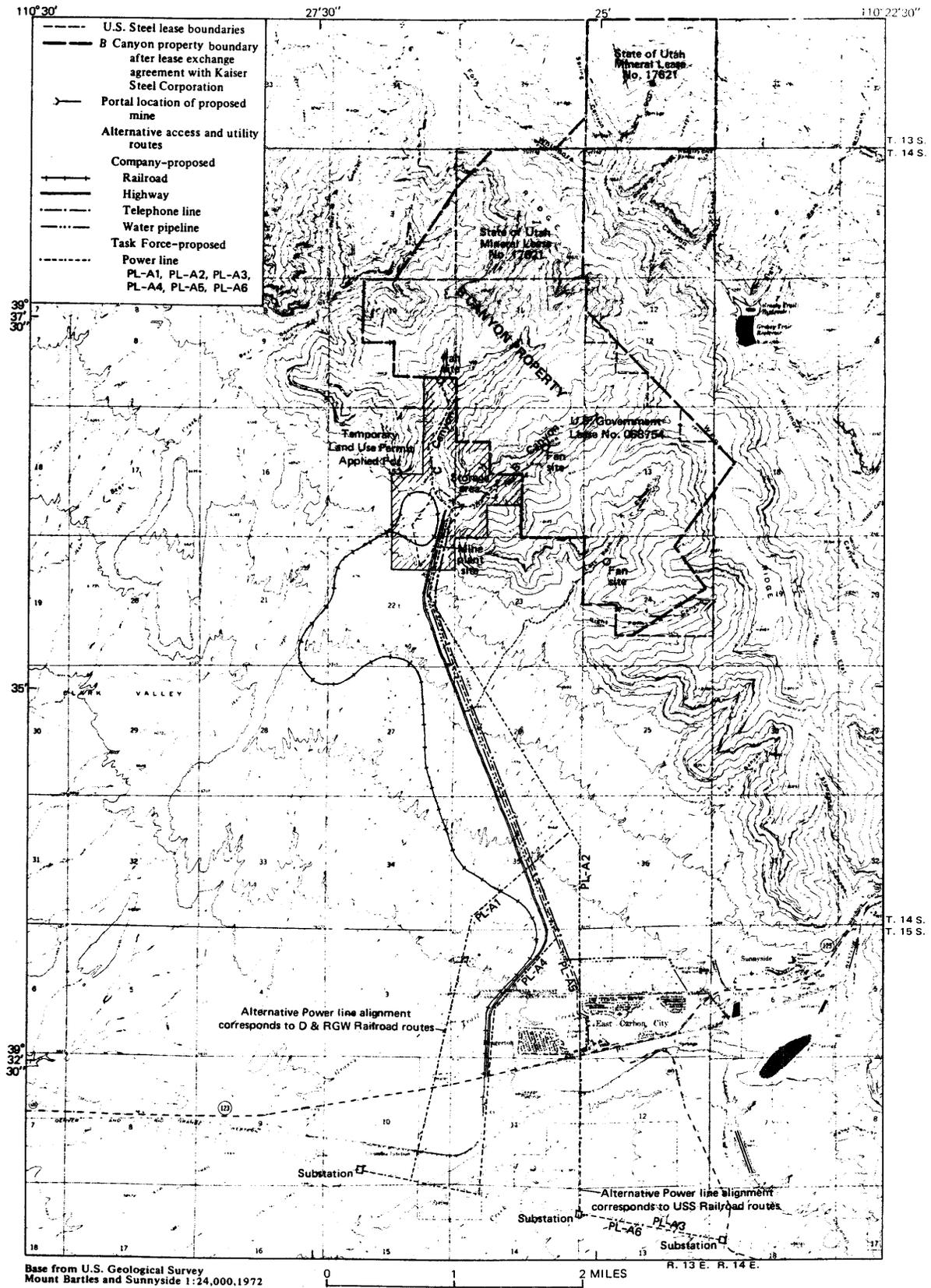


FIGURE 8.--Alternate access and utility routes.

## b. Convey coal by rubber-belt

A conveyor-belt system from the B Canyon plant to the present railhead near East Carbon has been suggested as an alternative to truck or railway haul. However, a conveyor belt would still require a good access road from Dragerton and Sunnyside to the minesite. Total TSP emissions would be less than those expected from the primary proposal. The conveyor, nevertheless, would impact the esthetic resource more; partly restrict recreation user access; and impede big game movement.

## c. Commuter transport by bus

Commuter traffic, estimated to be 300 vehicles per day, can be reduced somewhat by providing bus service to the mine from the Dragerton-East Carbon-Sunnyside area. Three 45-passenger busses (or a commensurately larger number of smaller busses), each making two trips per day, could carry the total anticipated employees. In practice, however, some employees' homes are too scattered for efficient bus transport, and others would drive even if bus service were available. The number of employees who would or could use bus service is unknown. Commercial bus service probably could not operate profitable without company subsidy. An alternative would be company-operated buses.

TABLE 3.--Length and acreage of primary and alternate proposed utility routes, B Canyon mine, Carbon County, Utah

	Length miles	Right-of-way acreage required			Total acres
		Federal	State	Private	
Powerline as proposed (fig. 2)-----	5.30	54.1	0	10.1	64.2
Powerline alternatives (fig. 7):					
PL-A1 <sup>1</sup> -----	6.40	55.7	0	19.4	75.1
PL-A2 <sup>1</sup> -----	5.82	43.2	9.1	18.3	70.6
PL-A3 <sup>1</sup> -----	7.38	49.4	9.1	21.5	80.0
PL-A4 <sup>2</sup> -----	6.60	45.0	0	29.6	74.6
PL-A5 <sup>2</sup> -----	5.63	49.6	0	18.8	68.4
PL-A6 <sup>2</sup> -----	7.19	55.8	0	22.0	77.8
Water pipeline as proposed (fig. 2)-----	4.89	7.6	1.4	2.6	11.6
Water pipeline, alternative (fig. 7)-----	5.17	8.4	0	4.1	12.5
Telephone line as proposed (fig. 2)-----	4.56	13.1	0	3.5	16.6
Telephone line, alternative (fig. 7)-----	4.36	12.2	0	3.7	15.9

<sup>1</sup>Parallel to proposed highway, in part, extending to different substation locations.

<sup>2</sup>Parallel to alternate highway route, in part, extending to different substation locations.

d. Corridorize utility lines

Except for the railroad, which has severe grade limitations, all access to the B Canyon property would fit into a single corridor at the north end (as proposed by the company) and could be changed in alignment to fit into a single corridor at the south end (not proposed).

The company-proposed access-utility routes and alternative routes, respectively, are shown in figures 2 and 8. Three Federal proposed alternative powerline routes (PL-A1, PL-A2, PL-A3) parallel the proposed access highway in the north and extend to different substations on the present powerline. Three alternative routes (PL-A4, PL-A5, and PL-A6) parallel the alternative access highway in the north and extend to the same substations on the present powerline. Lengths and acreages of the alternative powerline, telephone, and water pipeline routes are given in table 3, with the length and acreage of the proposed route for comparison.

Another alternative, not shown in figure 8, would extend the waterline along U-123 from the waterplant to the west line of sec. 1, T. 15 S., R. 13 E., where it would join the telephone and powerline alternatives in the same corridor. The length of this alternative, would be about the same as that of the company's alternative, if the alternative utility corridor were used.

The primary advantage of these task force-proposed alternatives is that some rights-of-way could be combined and, in some cases, the total amount of acreage could be reduced. The water and telephone lines could be placed in the same right-of-way and, where parallel and adjacent to the access highway, could be set within the access highway right-of-way. Results are shown in table 4. It is inadvisable to combine the powerline into this composite right-of-way because of the probability of causing eddy currents in telephone and buried pipelines, although the powerline could effectively parallel the other two. Consequently, the powerline right-of-way is not included in anticipated reduction of required acreage.

TABLE 4.--Comparison of length and acreage proposed and alternative utility routes

Feature	Miles by land ownership			Acres by land ownership			
	Federal	State	Private	Federal	State	Private	Total
Corridorization of proposed layout:							
Road-water-telephone-----	2.71	0	0	37.0	0	0	37.0
Additional road-----	1.23	0	1.25	16.8	0	16.0	32.8
Water-telephone-----	0.45	0.62	1.11	1.6	2.3	4.0	7.9
Additional waterline-----	0	0	1.19	0	0	2.9	2.9
Totals-----	4.39	0.62	3.55	55.4	2.3	22.9	80.6
Rights-of-way as proposed-----	10.71	0.62	3.44	74.6	1.5	22.6	98.6
Decrease in right-of-way needed	6.32	0	1-0.11	19.2	1-0.8	1-0.3	18
Corridorization of alternative layout:							
Road-water-telephone-----	3.50	0	0	44.8	0	0	44.8
Additional road-----	0	0	1.33	0	0	16.1	16.1
Water-telephone-----	0	0	1.75	0	0	6.4	6.4
Additional waterline-----	0	0	1.19	0	0	2.9	2.9
Totals-----	3.50	0	4.27	44.8	0	25.4	70.2
Alternative rights-of-way as proposed-----	10.37	0	4.09	65.6	0	24.0	89.5
Decrease in right-of-way needed	6.87	0	1-0.18	20.8	0	1-1.4	19.3

<sup>1</sup>A negative sign indicates that more length or area would be used in corridorization than would be used in the proposal or in the alternative, in the indicated category.

## 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, State Engineer, State Climatologist, Division of Wildlife Resources, Division of State Lands, Division of Parks and Recreation, 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 governmental offices were consulted during preparation of the EIS.

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

United States Steel Corporation  
Vaughan Hansen Associates

#### E. GENERAL CONSULTATION AND COORDINATION

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

## CHAPTER X

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

Belina No. 2 Mine

O'Connor Mine

On all or parts of lease Nos. U-017354, U-067498, U-073120,  
U-020305, and U-044076

Proponent: Valley Camp of Utah, Inc.