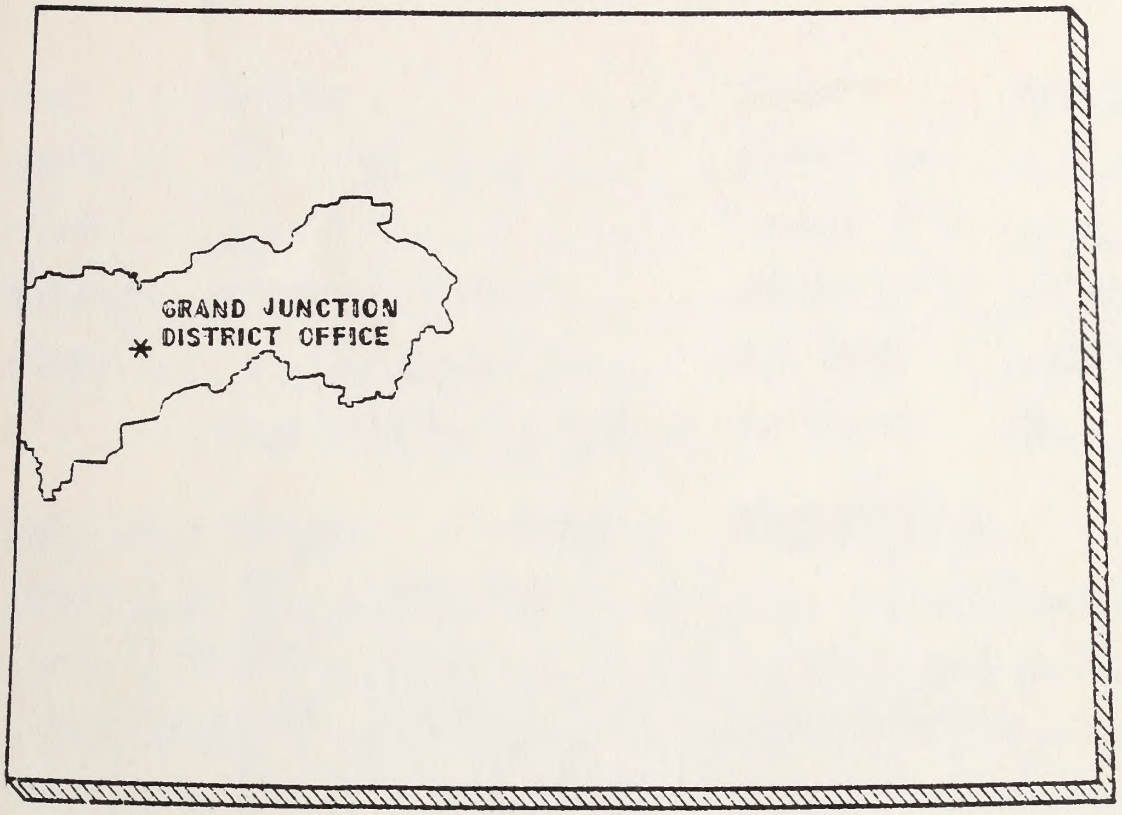
COLORADO



environmental assessment

DORCHESTER COAL CO. PRLA

Documentation of Interdisciplinary Analysis

UNITED STATES
DEPARTMENT OF THE INTERIOR

BUREAU OF LAND MANAGEMENT
GRAND JUNCTION DISTRICT

ACTIVITY 4110/1126
SERIAL No. C-0127832
C-0127833
C-0127834

EA FACE SHEET

STATE :	Colorado	DISTRICT :	Grand Junction
COUNTY :	Mesa & Garfield	RESOURCE AREA:	Grand Junction
ACTION :	Coal PRLA	PLANNING UNIT:	Baxter-Douglas
APPLICANT:	Dorchester Colomine	PROJECT NAME :	Dorchester PRLA
ADDRESS :	2795 Skyline Court	E.A. NUMBER :	CO-070-GJO-113
	Grand Junction, CO 81501	No. of Pages :	148

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Carlos Sauvage CS	Rec. Planner	Recreation & Wilderness	100
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Jim Scheidt JRS	Hydrologist	Hydrology	45

(see page 2)

LEGAL DESCRIPTION

TOWNSHIP	RANGE	MERIDIAN	SECTION	SUBDIVISION	ACRES

Robert W. Kline
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7/18/80
DATE

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7/18/80
DATE

AREA MANAGER
COMPLIANCE OFFICER

UNITED STATES
DEPARTMENT OF THE INTERIOR

BUREAU OF LAND MANAGEMENT
GRAND JUNCTION DISTRICT

ACTIVITY_____
SERIAL No._____

EA FACE SHEET

STATE : _____ DISTRICT : _____

COUNTY : _____ RESOURCE AREA: _____

ACTION : _____ PLANNING UNIT: _____

APPLICANT: _____ PROJECT NAME : _____

ADDRESS : _____ E.A. NUMBER : _____

_____ No. of Pages : _____

TEAM: NAME & INITIALS	TITLE	RESOURCE VALUES	HOURS
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LEGAL DESCRIPTION

TOWNSHIP	RANGE	MERIDIAN	SECTION	SUBDIVISION	ACRES

_____
ENVIRONMENTAL COORDINATOR

_____
DATE

_____
AREA MANAGER

_____
DATE

_____
COMPLIANCE OFFICER

FINAL ENVIRONMENTAL ASSESSMENT
DORCHESTER-COAL COMPANY

February 1981

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Section 1

PURPOSE OF AND NEED FOR

This environmental assessment (EA) is prepared in accordance with the Federal Coal Management Program and in compliance with 43 CFR 3400 and 40 CFR 1500. The Dorchester Coal Company has submitted a preference right lease application (PRLA) for three coal lease areas totaling 14,729 acres. If leased, the coal would most likely be used for local or regional power generation.

Preference right leases are issued to applicants that prove, among other things, that they have discovered commercial quantities of coal. The original applicant, Gerald T. Tresner, applied for, and received three prospecting permits. These prospecting permit areas are the same areas that the coal leases could be issued upon. The leases are issued on a noncompetitive basis to the applicant or his successor. Dorchester Coal Company purchased these rights from Mr. Tresner on January 1, 1981 (43 CFR 3430).

Dorchester Coal Company currently operates a small mine on privately-owned land adjacent to the PRLAs and would like to continue operation of the mine by extending the underground mine into public land. This environmental assessment along with the mining plan and final showing of commercial quantities of coal will be used in the final determination for lease issuance. If the leases are issued and the need for rights-of-way for coal transportation is presented to BLM, then further analysis will be completed on the specific type of transport and exact location of the right-of-way.

BACKGROUND

As part of the federal coal management program the Bureau of Land Management (BLM) has initiated a series of steps toward meeting national and regional targets for coal production. After further study and evaluation, the proposed lease areas may be considered as suitable for leasing and development.

Any areas, containing commerical quantities of coal, that are found to be unacceptable for leasing for environmental reasons may be exchanged for areas that are environmentally acceptable.

Leasing of areas identified in the PRLAs is limited by multiple use management decisions that consider all resource values, resource demands, public concerns, and social and economic values. The leasing is further constrained by application of unsuitability criteria for coal development (43 CFR 3430) that could eliminate specific areas from further consideration for leasing. Unsuitability criteria have been applied to the three proposed lease areas and are discussed in appendix 1. All three lease areas were found suitable for coal leasing according to the criteria.

Any rights-of-way required for transporting coal, employees, or utility corridors are issued separately from the coal leases. The Corps of Engineers

may be requested to issue a permit for a railroad crossing over East Salt Creek. The type of structure and construction method will determine whether a permit (Sec. 404) would be necessary.

The BLM Final West-Central Colorado Coal Environmental Statement 1979 (West-Central ES) was used extensively to provide background data in preparing this environmental assessment and is referenced throughout this document. Data analyzed in this environmental assessment along with other data prepared by the Geological Survey and Office of Surface Mining will be used in making the final decision for granting the lease application.

Volume 1 of the West-Central ES discussed the leasing sequence and legal requirements that must be met prior to coal production.

AUTHORIZATION ACTIONS

Leasing and development will be under the authority of 1) the Mineral Leasing Act of February 25, 1920, as amended by the Federal Coal Leasing Amendments Act of 1976 and the Act of October 30, 1978; 2) the Multiple Minerals Development Act of August 13, 1954; 3) the Federal Land Managmeent and Policy Act (FLPMA) of 1976; 4) the Surface Mining Control and Reclamation Act (SMCRA) of 1977; and 5) applicable Bureau of Land Management (BLM), Geologist Survey (USGS), and Office of Surface Mining Reclamation and Enforcement (OSM) regulations.

Federal agency responsibilities for the management of federally owned coal are listed in part VIII of the July 19, 1979 Federal Register. The proposed leases would be issued to the applicant on a noncompetitive basis, only after meeting all legal requirements.

RELATION OF PROPOSED LEASE AREAS TO DEVELOPMENT NEAR THE AREA AND FUTURE TRENDS

The Dorchester Coal Company is currently mining coal on land owned and leased by the company which borders public lands identified in the PRLAs or proposed lease areas. The company has been mining on a small sale to test mining methods and explore the coal seams. The privately-owned land being mined at this time contains approximately 800,000 tons of coal.

The proposed mine is in addition to seven others in or near Mesa County that have been granted new or extended leases (ARCO, 2 GEX, 2 Midcontinental Coal, Sheridan, and Colorado-Westmoreland). According to the West-Central ES six of these mines would account for 26 percent of Mesa County's growth in the next 10 years. The Dorchester mine would add to that growth and should be viewed in the content of all coal development in the area. Volume 1 of the West-Central ES discusses the full range of future regional development. Granting of these leases would add to future development and environmental impacts.

This assessment will become part of a regional analysis now being prepared which is entitled Uinta-Southwestern Utah Regional Coal EIS.

LEGAL AND REGULATORY REQUIREMENTS INCLUDED AS PART OF THE PROPOSED ACTION

If leases are issued, the company must comply with all federal, state, and local laws and regulations and with decision governing development, operation, abandonment, and reclamation of the mine and transportation routes. In addition, based on interpretation of Office of Surface Mining requirements, the company is required to submit a mine and reclamation plan for the demonstration of feasible methods to accomplish: 1) successful reclamation within 10 years after mining has ceased and 2) the reestablishment of vegetative cover, vegetative composition, and soil productivity to premining levels in the area of the refuse and waste stockpiles and transport routes as described under the preferred alternative (section 2). Before the issuance of BLM rights-of-way for transportation and utility incidental to mining activities on the lease applications, the Office of Surface Mining must approve or indicate its pending approval of the federal mine plan related to mining activities on the leases. All rights-of-way applications are considered as separate actions and will be subject to specific environmental analyses prior to issuance.

GENERAL AND SITE-SPECIFIC ASSUMPTIONS

1. Development (new authorized construction) would begin in 1981 upon approval of these leases.

2. Full scale mining on these federal leases would begin in 1983.

3. Maximum production would be reached year 8 and remain constant for mine life.

4. Life of the mine of these federal leases pursuant to current regulatory requirements is projected to be 40 years.

5. Transportation route and method of transport to be selected.

6. Final reclamation to be completed in the year 2033.

7. Approximately 10 years is required, based on BLM technical assessments and current regulatory requirements, to establish vegetation that would support small animals and birds and 15 to 20 years for the support of larger wildlife.

8. Impacts on vegetation would continue until reclamation completed.

9. Refuse disposal areas will be rehabilitated on a continuing basis.

10. An estimated 2 years is required for filling, shaping, contouring, seedbed preparation, and seeding of the surface facilities.

Section 2

ALTERNATIVES

INTRODUCTION

Three alternatives for leasing have been developed and are evaluated in this environmental assessment: 1) the preferred alternative which is the company's proposed action (lease of three tracts for mining); 2) the leasing of one or a combination of two of the proposed three tracts; or 3) the no action alternative (mining would continue on private lands for a short period of time at the current mine site under the no action alternative). The transportation route and the method of transporting the coal have not been selected; however three routes and three methods were identified by the company; two are analyzed in this EA. To give the reader the full scope of the project and an assessment of the impacts of the entire project, coal transport is described in this section under transportation. Regardless of which alternative is approved for leasing the transporation route and method would be the same.

Significant impacts are summarized for the mining site area and for the transportation routes and methods in table 5. Detailed descriptions of impacts are given in section 4, Environmental Consequences.

Stipulations Required by Unsuitability Criteria

All of the alternatives were analyzed assuming that the following stipulations will be a part of any coal lease issued. The stipulations are taken from the unsuitability criteria in appendix 1.

1. The lessee will obtain a written agreement from all right-of-way grantees for permission to lease and to mine within the area of their right-of-way or for relocation of the right-of-way to the satisfaction of the grantee. A copy of this agreement will be furnished to the BLM.

2. In the event it is impractical to relocate a right-of-way or easement, mining will not be permitted within the right-of-way or within a designated buffer zone along the right-of-way.

3. Relocation of a right-of-way will be required through consultation between the right-of-way holder and the lessee. All costs involved in the relocation will be borne by the lessee.

4. The lessee will obtain a written agreement from the owner of the private dwelling to maintain or adjust the 300-foot buffer zone or to give permission to have the building moved. A copy of the agreement will be furnished to the BLM. If an agreement is not obtained, mining will not be allowed within the 300 foot buffer zone.

5. The lessee will obtain a written agreement from Garfield County for relocation of County Road 16 if deemed necessary. A copy of the agreement will be furnished to the BLM. If relocation of the road it impracticable, mining will be prohibited within the right-of-way for County Road 16 and within a 100-foot buffer zone from the outside line of the right-of-way.

6. All procedures detailed in the "Programmatic Memorandum of Agreement Among the Department of the Interior, Bureau of Land Management, Office of Surface Mining Reclamation and Enforcement, Geological Survey, and The Advisory Council on Historic Preservation Regarding the Federal Coal Management Program" will be followed.

7. Before the approval of a mining plan, the authorized officer may require a survey of all or part of the leased land to provide an inventory of any historical, cultural, paleontological, and archaeological values. The survey will be conducted by a qualified professional paleontologist or archaeologist, approved by the authorized offier, and a report of the survey will be submitted to the authorized officer. The approval of an exploration or mining plan or the continuation of lease operations may be conditioned on the approval of the survey report and the approval of measures to protect the historical, cultural, paleontological, and archaeological values. The cost of any survey or measures to protect such values discovered as a result of the survey will be borne by the lessee and items and features of historical, cultural, paleontological, or archaeological value will remain under the jurisdiction of the United States.

8. If any items or features of historical, cultural, paleontological, or archaeological value are discovered during lease operations, the lessee will immediately notify the mining supervisor and shall not disturb such items or features until the mining supervisor issues instructions. If the lessee is ordered to take measures to protect any items or features of historical, cultural, paleontological, or archaeological value discovered during lease operations, the cost of the measures will be borne by the lessor and such items and feature will remain under the jurisdiction of the United States.

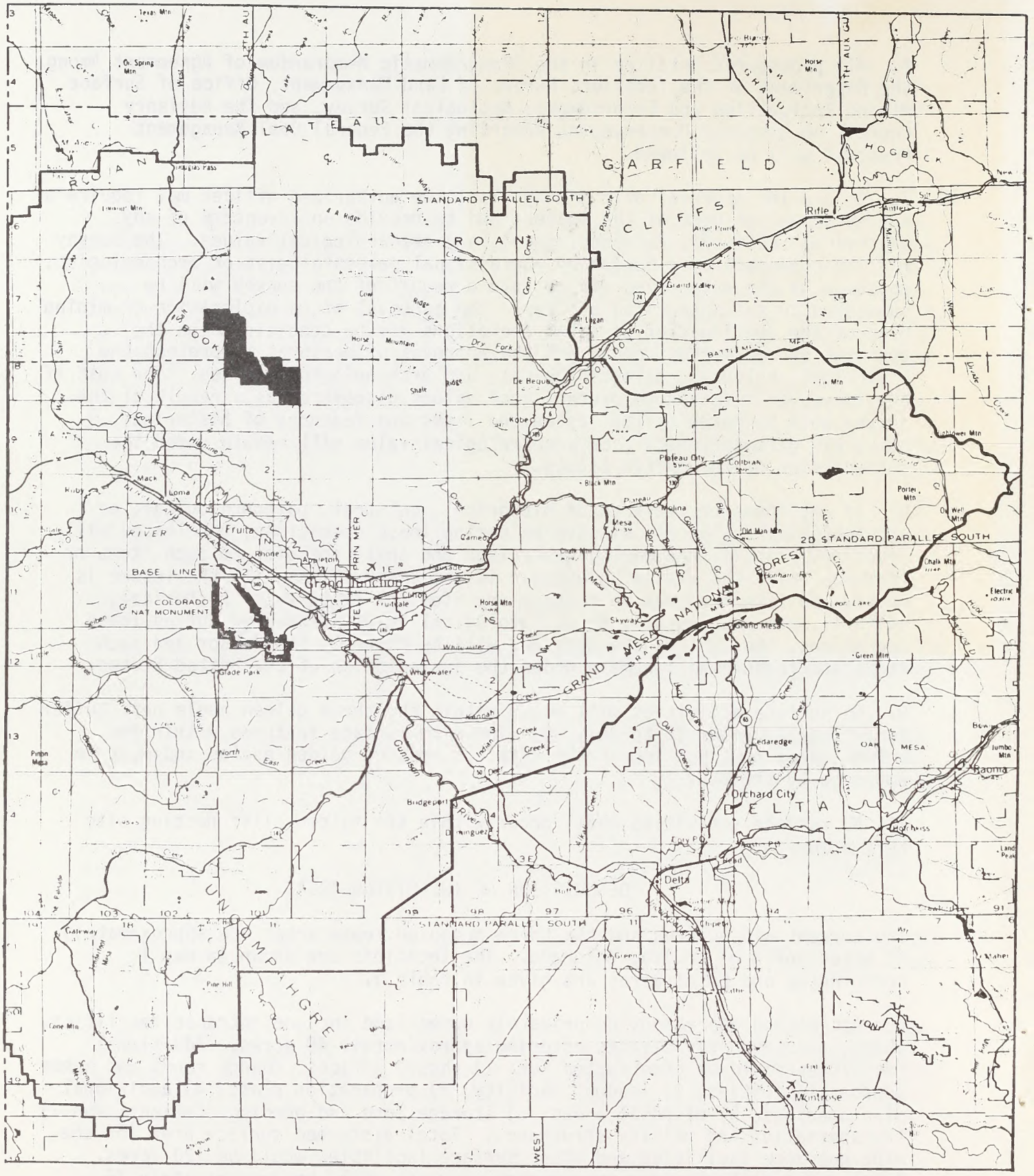
9. No surface activities will occur within the three golden eagle nest buffer zones from December 15 to July 31. The mine surface features within the buffer zones must not impair the site for nesting golden eagles and must be approved by the BLM.

10. No surface activities shall occur within the falcon cliff nesting site buffer zone.

DESCRIPTION OF THE MINING AREAS

The current mining area and the three proposed lease areas are approximately 12 miles north of Fruita, Colorado. The locations are shown on map 1; coordinates and total acres are given in table 1.

Current mining operations on privately owned land include entrance facilities, shops, and temporary offices covering approximately 40 acres. Additional facilities would be constructed for: 1) shops, offices, change rooms and other support facilities; 2) loadout facility; 3) preparation plant; 4) additional mine openings; 5) disposal areas; 6) storage pond and pumping stations; and 7) transportation and utility structures. Total disturbed surface area for the mine entrance facilities and other surface facilities would be 120 acres. Total acres disturbed for transportation route would be approximately 75 acres.



Map 1 - Proposed Lease Areas

0 5 10 15 miles
Scale

N

Source: Dorchester.

TABLE 1

LEASE DESCRIPTIONS

Location	Acres
Coal prospecting permit C-0127832, Garfield County	4,521.60
T. 7. S., R. 101 W., sixth principal meridian, Colorado	
sec. 29: NW¼NW¼, S½NW¼, SW¼	
sec. 30: E½NE¼, Lots 5-10 Incl., and Tract 44 (all-fractional)	
sec. 31: lots 5-8 inclusive (all-fractional)	
sec. 32: lots 1, 2, 3, W½NE¼, N½NW¼	
T. 7. S., R. 102 W., sixth principal meridian, Colorado	
sec. 25: all	
sec. 26: all	
sec. 35: all	
sec. 36: all	
T. 8. S., R. 101 W., sixth principal meridian, Colorado	
sec. 5: lots 3 and 4, S½NW¼, SW¼	
sec. 6: lots 1 to 7 inclusive, S½NE¼, SE¼NW¼, (E½SW¼, SE¼ (All)	
Coal prospecting permit C-0127833, Garfield and Mesa Counties	5,087.06
T. 8. S., R. 101 W., sixth principal meridian, Colorado	
sec. 7: lots 1 to 4, inclusive, E½W½, E½ (all)	
sec. 8: W½, SE¼	
sec. 9: S½SW¼, SW¼SE¼	
sec. 14: SW¼NW¼	
sec. 15: S½N½, S½	
sec. 16: S½NE¼, NW¼NE¼, NW¼, S½	
sec. 17: all	
sec. 18: Lots 1 to 4 inclusive, E½W½, E½ (all)	
sec. 20: all	
sec. 21: all	
sec. 28: N½N½	

conts.....

Coal Prospecting Permit C-0127834, Mesa County.....5,120.00

T. 8 S., R. 101 W., sixth principal meridian, Colorado

sec. 13: S½SW¼
sec. 14: SE¼NW¼, SW¼, W½SE¼, SE¼SE¼
sec. 22: all
sec. 23: all
sec. 24: all
sec. 25: all
sec. 26: all
sec. 27: E½,N½,NW¼
sec. 35: N½,SE¼
sec. 36: all

Total Acreage.....14,728.66

Dorchester-Coal Co. fee land, Mesa County.....400.00

T. 8 S., R. 101 W, sixth principal meridian, Colorado

sec. 30: SE¼NE¼
sec. 30: N½NE¼
sec. 29: NW¼NW¼, SE¼NW¼, SW¼NE¼, NW¼SE¼
sec. 28: S½SE¼
sec. 27: W½SW¼

Total coal reserves including those on private and public land in both the Cameo and Anchor seams are estimated at 320 million tons, recoverable reserves are estimated at 150 million tons at a recovery rate of approximately 45 percent. The coal has a low sulfur (generally less than 1.0 percent) and ash content (less than 10 percent) and an average Btu per pound rating of 11,000 to 11,500. The Anchor seam has a higher sulfur content than the Cameo seam and would have to be mixed with coal from the Cameo seam. This mixing of Anchor and Cameo seam coals will ensure that the sulfur content meets currently applicable federal and state air emission standards for sulfur dioxide. The mixing, or blending, ratio would vary but should average out to be 1 part Anchor to 3 parts Cameo.

NO ACTION ALTERNATIVE

The no action alternative considers that no federal leases would be granted. This would essentially terminate current mining operations; however, the company could continue to remove a small amount of coal from its private land (400 acres). No environmental impacts would affect public lands or resources if this alternative is selected. The company however would lose development costs already expended (estimated by Dorchester to be 5 million dollars), and 36 jobs currently held by Mesa County residents would be terminated.

If, in the final analysis of the proposed lease areas, it is determined that: 1) commercial quantities of coal are not present or 2) public interest would not be served owing to adverse environmental impacts, the no action alternative would be chosen. In this event, the company may consider options for exchange whereby public interest would be better met. (See Congressional directives for coal lease exchanges, Fed. Reg. Vol. 44, No. 140, July 19, 1979.)

If no leases are issued transportation impacts would be limited to the areas disturbed by necessary realignment of 18 Road to facilitate mining the remainder of the private coal.

PREFERRED ALTERNATIVE--COMPANY PROPOSAL

The preferred alternative includes the three proposed lease areas and describes the proposed procedures for mining during construction, operation, and abandonment stages. Transportation routes and methods are also discussed under the preferred alternative.

PROJECTED SCOPE OF DEVELOPMENT

If the proposed leases are issued, coal would be mined using underground mining techniques. Annual coal production would be at the rate of approximately 4 million tons at full production per year for an estimated mine life of 40 years.

It is anticipated that mine production would reach maximum recovery levels during year 8 and would continue at this level for mine life. The anticipated production schedule is given in table 2.

TABLE 2

MINING PRODUCTION SCHEDULE

Year	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8+)
1,000 tons/year	150	300	900	1,500	2,000	2,800	3,200	4,000

Source: Dorchester 1980.

Average employment for the development of the mine would be 150 workers for the initial construction stages and 50 to 200 workers for the mining phase. Maximum employment levels would be reached in approximately 9 years with 450 workers and continue at this level for mine life.

MINING OPERATION PROCEDURES

Many procedures and considerations must be evaluated and planned before mining operations would commence. In addition to and following applicable federal, state, and local regulations and laws, plans have been developed for both surface and underground areas for: 1) the actual mining and mine site facilities, 2) refuse and spoils disposals and reclamation, 3) air, noise, and water pollution controls, 4) safety guidelines for employees and for use of equipment, 5) hazard control measures, 6) reclamation of mine site and transportation routes, and 7) transportation of the coal. Utility corridor and work force requirements are also described under the mine plan. Map 2 shows the locations of surface facilities.

Office, change house, shops, ventilation, structures, conveyors, preparation plan, stockpiles, and loadout facilities for a 4-million-ton per year mine are planned. These facilities would be largely located on private land.

Dorchester Mining Plan

The mine is an underground mine with entry of the outcrop on private land. Two seams are proposed to be mined: the Cameo seam (top) and the Anchor seam (lower). It is expected that the full thickness of the Anchor seam (5 1/2 feet) would be mined, but only 11 to 12 feet of the Cameo seam.

The Cameo (upper) seam would be mined first so as not to damage the Anchor (lower) seam and the strata between the seams. As the extraction of the Cameo progresses, mining would commence in the Anchor as long as the Anchor extraction takes place only under the mined-out portion of the Cameo, and not in a manner that will jeopardize the main entry sets in the Cameo.

R. 103 W. R. 102 W. R. 101 W.

T. 7 S.

T. 8 S.

T. 9 S.

T. 10 S.

Map 2 - Surface Facilities

Surface Facilities -

Reject pile -

Utility corridor -

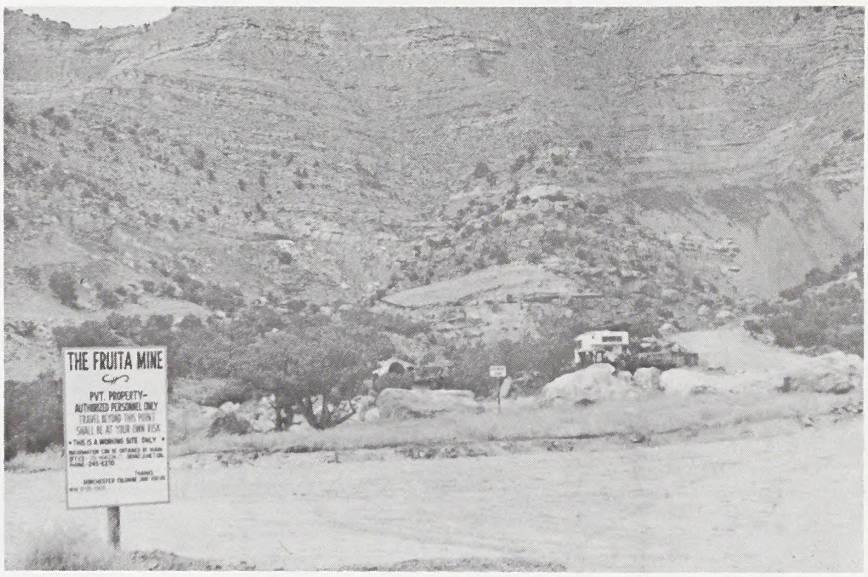
Existing natural gas pipeline -

Storage reservoir -

Air shaft vents -

Source: Dorchester

CURRENT MINING ACTIVITIES



Anchor Seam Portal

The seams are 350 feet apart vertically; both seams would be mined in the same manner with the same general layout. The coal seams would be mined by the longwall system supplemented with room and pillar extraction in the corners of the leases and perimeter of the unit (see map 3).

The longwall mining system is a method of mining coal on a 500 to 700-foot long face that is from 6 to 12 feet high. Highly specialized, and expensive, equipment is required for this mining method. This method would yield a 50 to 60 percent recovery rate. Controlled subsidence of the overburden is part of this mining method. The amount of subsidence and resulting surface disturbance is a factor of the mining method and geologic structures of the remaining overburden (see map 3).

All state and federal safety rules and regulations will be complied with. Plans and training will be updated at regular intervals as the mine develops and production expands.

Refuse and Spoil Disposal Procedures

Refuse and spoil from the mine will be placed in a refuse disposal area, covered with top soil and seeded (see map 2). Human waste will be processed by septic tanks.

The bulk of the waste would be rejects from the washed coal. It will be placed in excavated areas with the previously excavated and stockpiled material redistributed over it, and the separately stockpiled top soil will be redistributed on top. This top soil will then be fertilized and seeded to obtain the required vegetative cover.

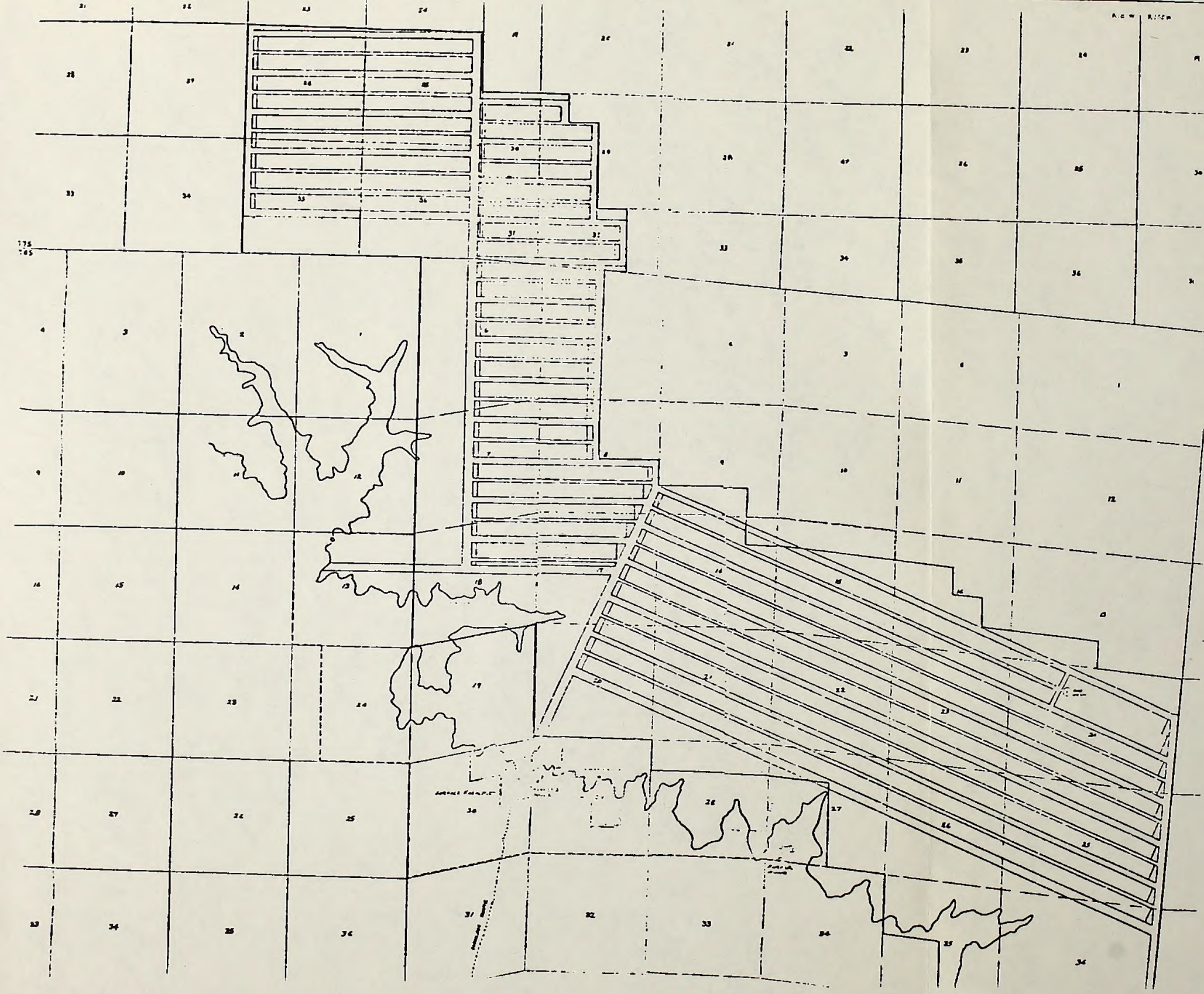
The excavation and covering will be done in steps and sectionalized so that as one section is being filled, another would be reclaimed. Only two sections of 6 acres each will be disturbed in any 1-year period at the rate of 1 million tons production per year. As production increases, excavation would increase to 24 acres per section at the rate of 4 million tons per year.

The ground available for water disposal is in Mancos shale a very impermeable formation, and therefore no release of pollutants into the subsurface would take place. Inert materials would compose 80 to 90 percent of the waste deposit from the mine. The small amount of pyrite and soluble salts would be neutralized in time by the basic Mancos shale.

There is a possibility that much of the mining waste could be returned underground eliminating the need for surface disposal. The underground disposal would be done in the room and pillar areas. Tests will be conducted to determine if this is technically and economically feasible. Until this is determined, there is sufficient waste disposal area on public land in the surface facilities area.

Water Control Structures

18 Road access to mine. Refuse disposal area is in center of photo.



Map 3 - Longwall mining system

Source: Dorchester

Top Soil. Prior to any surface disturbance, topsoil, where available, will be salvaged, stockpiled, and eventually redistributed for reclamation purposes. Two, 6-acre areas would be disturbed on an annual basis and would increase to a maximum of 24 acres per year at full coal production.

Layout of the waste disposal plot is shown on map 2. Each year one plot will be excavated, one plot filled, and one plot restored. Excavation procedures recontouring, and reseeding requires approximately 6 weeks each so for the greater part of any year only one plot will be open while another is being filled.

Mining will be underground, therefore surface restoration in the immediate mine area is a minor problem. The top soil will be redistributed over the covered waste, graded, and seeded, and fertilized if necessary.

Vegetation. Revegetation will be with native species or adapted domesticated species such as Nordan crested wheat grass, Arriba western wheat grass, and Paloma Indian rice grass, shrub and forb species. A weed free, firm seed bed will be prepared and the seeds drilled where possible.

Visual. Where possible, buildings and other apparatus will be designed and painted to blend into the cliff and desert background.

Restoration and Planting. Restoration for the mine is described under abandonment. Grading and backfilling will apply only to the surface facility and waste disposal area. These areas will be reseeded as described under vegetation above.

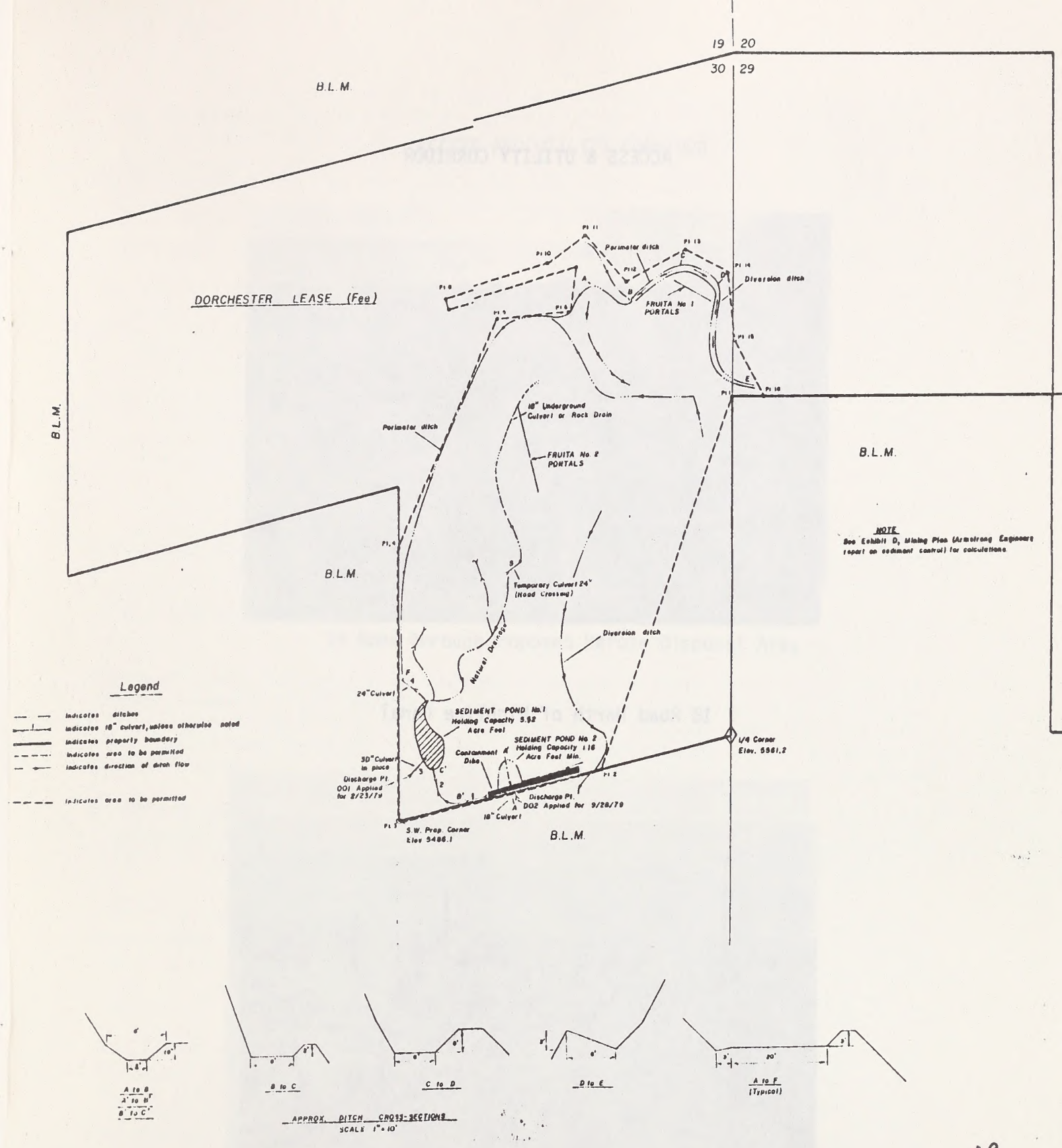
Erosion Controls. Map 4 displays control and drainage of runoff water. The Book Cliffs area is arid to semiarid. Runoff from rain or melting snow is infrequent; paving, planting, and the proposed rocked-over runoff sluice ways will adequately control runoff water.

Map 4 also gives the drainage plan on and away from the surface facilities areas. Since mining is underground, 99 percent of the surface area would not be affected.

Utility Corridor

A 50-foot utility corridor paralleling 18 Road is proposed (see map 2). Included in the utility system would be a power line, telephone line, natural gas pipeline, a 3-acre water reservoir, and an accompanying water pipeline. The power line (25,000 volt) will probably be above ground on poles; the telephone line will be buried.

The natural gas line will be buried and will start where the existing pipeline intesects the utility corridor between section 6 and 7 (see map 2). A water storage reservoir will be constructed and a pumping station installed to provide emergency storage and reliable water pressure at the mine mouth.

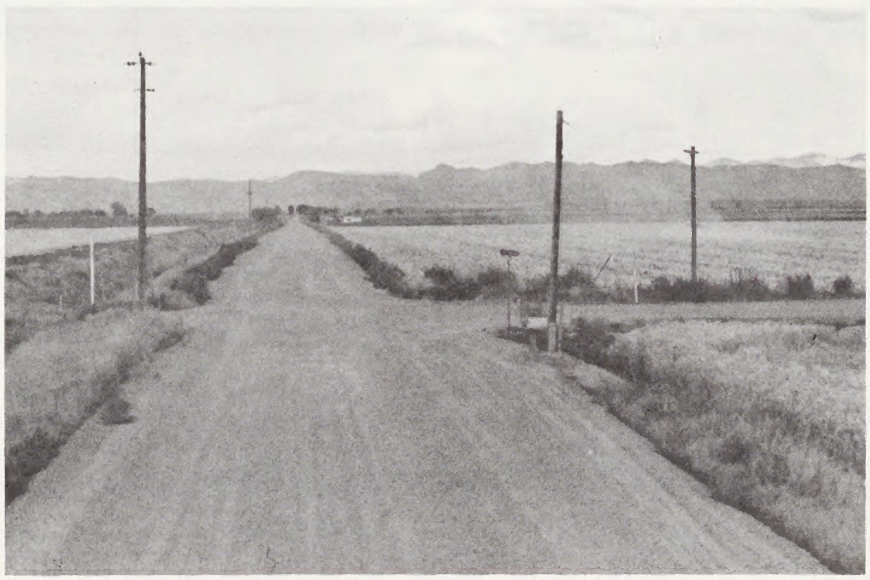


Map 4 - Water drainage system

Source: Dorchester

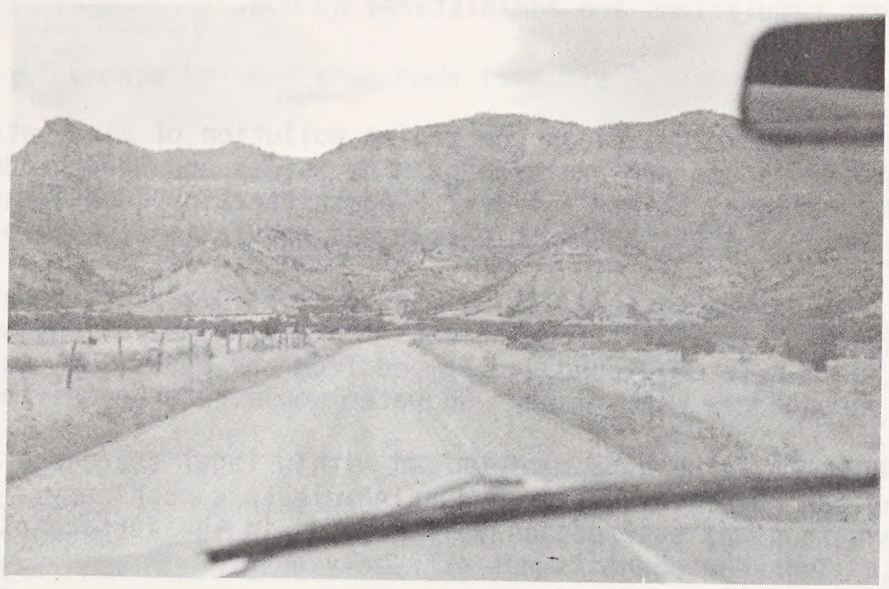
ACCESS & UTILITY CORRIDOR

18 Road North of Highline Canal

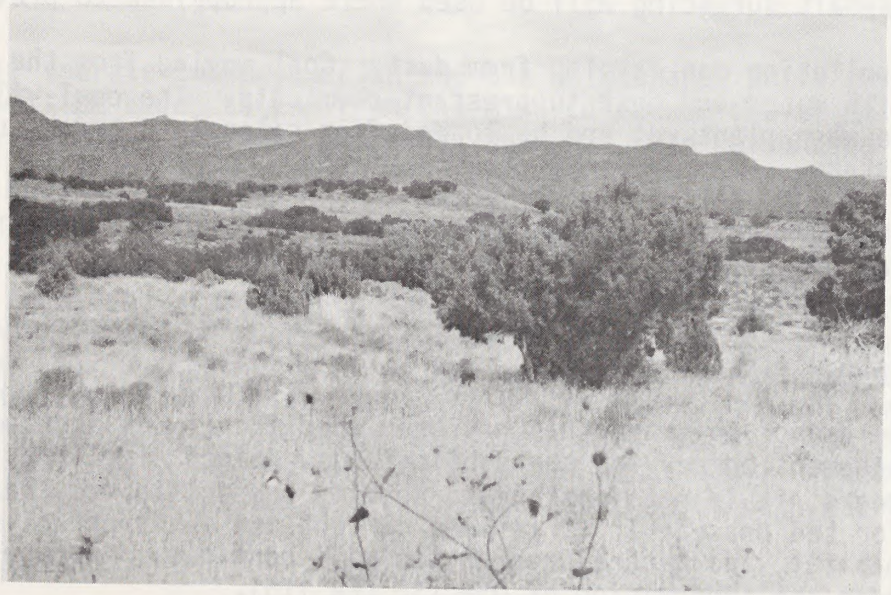


18 Road North of Fruita

ACCESS AND UTILITY CORRIDOR



18 Road through Proposed Refuse Disposal Area



Vegetation of Proposed Refuse Disposal Area

Should most of the waste eventually be disposed of on the surface, approximately 600 acres covered to a depth of 40 feet could possibly be required. Surface restoration is discussed later in this section.

All applicable regulations concerning refuse disposal will be followed (30 CFR 817). These regulations are administered by OSM.

Pollution Controls

There are numerous regulations concerning pollution of air, water, soils, etc. These regulations are administered by Mine Safety and Health Administration (MSHA), Occupational Safety and Health Administration (OSHA), and OSM. All of these, as well as other applicable laws and regulations, will be followed.

Water. It is estimated that 345 million gallons per year of water would be used. Some of these water requirements for mining operations would be obtained from water developed and pumped from the mine. The water will be recycled through the wash plant. No water would enter receiving waters.

Noise. Noise would be at a minimum and within legal standards with most operations taking place underground using electric machinery. All known precautions in sound suppression will be used in the surface plant and loading equipment. Such equipment is not extremely noisy.

Fire. No special surface fire hazards would be encountered. Standard state and federal fire safety procedures would be followed.

Soil Erosion. This would be a minor factor in an underground mine. Roadways will be properly drained and provision made to channel the infrequent runoff from rain and snow into the existing drainage pattern without erosion. Planting of native grasses and trees or approved introduced species and concrete asphalt surfacing will be used where appropriate to prevent erosion.

Air. Air pollution can develop from dust. Coal moving from the mine will be sprayed with water and dust suppressant chemicals. The coal will flow through the wash plant wet and be loaded from silos into trucks or rail cars in a damp state.

Roads may be surfaced or sprayed with water supplements to prevent dust emissions caused by vehicular traffic pursuant to projected dust emissions and applicable regulatory requirements.

Surface Restoration

Post mining use of this area has not been specifically designated by the BLM as the management agency for the public lands. Since mine life is projected to be 40 years, it is not feasible to specify a specific use that far in the future. For the present it is assumed current use -- livestock grazing, wildlife habitat, and general recreation will continue. Surface restoration will be under the supervision of OSM (30 CFR 715).

The water pipeline used to carry water from the pumping station, across private land to the reservoir will be 20 inches in diameter. Water carried from the reservoir to the mine will require a 12-inch diameter pipeline.

Work Force Requirements

Personnel requirements by year are shown in table 3.

TABLE 3

PERSONNEL REQUIREMENTS

Year	1	2	3	4	5	6	7	8+
Number of personnel	53	107	214	250	320	370	420	450

The company proposal is to hire as many local people as possible. A small percentage of employees with skills not available locally may necessarily have to be recruited from other areas. An estimate of the ratio of local to nonlocal employees is:

Year	Percent of Local Recruitment
1	100
2	100
3	90
4	85
5+	80

The mine wil operate two production and one maintenance shift per day. Personnel will be bused to and from the mine to reduce travel on 18 Road and to conserve energy. Specific bus stops have not been designated as yet.

Employee Transportation

At maximum employment, three buses (50 people each) will transport 150 people each shift totalling eighteen, one-way trips per day. During year 3 only half the bus traffic would be needed as compared to that at maximum employment. Bus trips at year 3 together with 84 estimated truck hauling trips (42 round trips per day before conversion to rail) to transport the coal, would bring the average daily traffic count on the access road to 88, which is only 13 percent of the traffic on Highway 139 (Douglas Pass Road). Truck traffic would cease about year 4; bus traffic would continue through end of mine life.

Abandonment

Mining Site

Portals will be sealed with reinforced concrete. Roads other than county, will be covered with rock and soil and seeded as in rehabilitation plan. Surface structures will be removed entirely, including concrete foundations. Soil will be spread over the area and seeded. All signs of past mining activity will be removed.

All of the waste and spoil dumps or plots will have been reclaimed on a continuing progressive basis; only the final plot would remain, but will be reclaimed within 1 year of final abandonment of the mining operation.

The utility corrdior may or may not be rehabilitated depending upon the land uses within the area at the time of the mine closure. All of the buried utilities could be abandoned in place and the road used for general public access. The right-of-way grant will include appropriate rehabilitation measures that will have to be followed if the utilities and road are not needed for other uses. The same situation is true for the coal transportation system.

Coal Transportation--Routes and Methods For Transporting

The preferred transporation route and method to be used for transporting the coal have not been determined by the company. However, of the three routes, A and B are considered the most technically feasible to build by standard construction practices. Route A provides the best average grade and slope of the land allowing for efficient operation of unit trains. Transportation routes are shown on map 5. Route B (and part of route C) is currently an existing transportation corridor. Routes A and B -- using trucks and unit trains -- are analyzed for this assessment. Route C is evaluated for comparative purposes.

Total acreage disturbed for the transportation route would be approximately 75 acres. Impacts would vary depending upon the final route and method selected. Before issuance of rights-of-way on public land a more detailed transportation study will be required. If the PRLAs are issued, BLM would work with the company and all appropriate regulatory authorities to analyze the site specific transportation proposal.

The three methods considered by the Company for transporting the coal include: trucking, railroad, or conveyor belt. A slurry was also considered, but, along with long-term trucking and conveyor belt methods, were found impractical and economically unfeasible methods. The method most likely to be used would be trucking for the first 2 or 3 years until railroad construction is completed.

Regardless of which transportation route and method are chosen, all other portions of the proposed action would remain the same.

Further descriptions of the transportation routes and methods follow.

R. 103 W.

R. 102 W.

R. 101 W.

T. 7 S.

T. 8 S.

T. 9 S.

T. 10 S.

T. 1 N.

R. 1 W.

R. 1 E.

Route A

Route B

Route C

Map 5 - Transportation routes

Source: BLM

Methods

Trucking. Trucking would be used only during the first 3 years. As stated previously, because of the large volume of coal to be transported, it would not be uneconomical to continue trucking for the life of the project. Trucks would be conventional semitrailers with 28-ton load capacity and would use existing public roadways. When feasible 100-ton trucks would probably utilize existing temporary roads built during construction of the railroad. This would eliminate use of public roads for a short period of time. Table 4 gives the number of trucks and trains for the first 8 years of production.

TABLE 4

PRODUCTION (1,000 Tons Per Year)

Tons	150	300	900	1,500	2,000	2,800	3,200	4,000
Years	1	2	3	4	5	6	7	8
Number of 28-ton trucks per day one way	22	45	135	N/A	N/A	N/A	N/A	N/A
Number of 100-ton trucks per day one way	6	12	36	63	N/A	N/A	N/A	N/A
Number of trains per year one way	N/A	N/A	N/A	150	200	280	320	400

Note: Figures are based on 240 work days per year (equal to a 5-day work week).

Truck hauling during the first 3 years would cause the most disturbance to wildlife due to the increased frequency of vehicles, and thus the possibility of vehicle animal collisions would be very high.

Train/Railroad. Trains would be used beginning approximately year 3. Unit trains consisting of approximately 100 cars and designed to carry 100 tons of coal per car would be employed. Trains would be loaded at or near the mine entrance in less than 4 hours. The number of trains per day would depend upon the quantity of coal produced each day at the mine (table 4 shows total trains estimated per year). The trains would run only 5 days per week at the maximum.

Impacts would occur during construction of the railroad but would vary somewhat depending upon the route chosen. Impacts to wildlife would be greater during railroad construction, but would decrease upon completion of the track and the elimination of truck use.

Detailed descriptions of impacts are given in section 4 under Transportation.

Routes

Detailed impacts on all resources for each route are discussed in section 4, Environmental Consequences. Impacts are also summarized on table 5 at the end of section 2. Route locations are shown on map 5.

Route A--17.2 Miles. This route would begin at the mine and head southwest toward Highline Lake to East Salt Wash and then south to the existing D&RGW railroad line west of Mack. The portion of the line from the existing railroad up East Salt Wash is also proposed, according to local news reports, to be used for coal transport by another coal mine--Sheridan Enterprises. Approximately, 4 miles of this route could serve two coal mines. Route A could be utilized for any proposed method of transporting the coal and is this route most likely to be used.

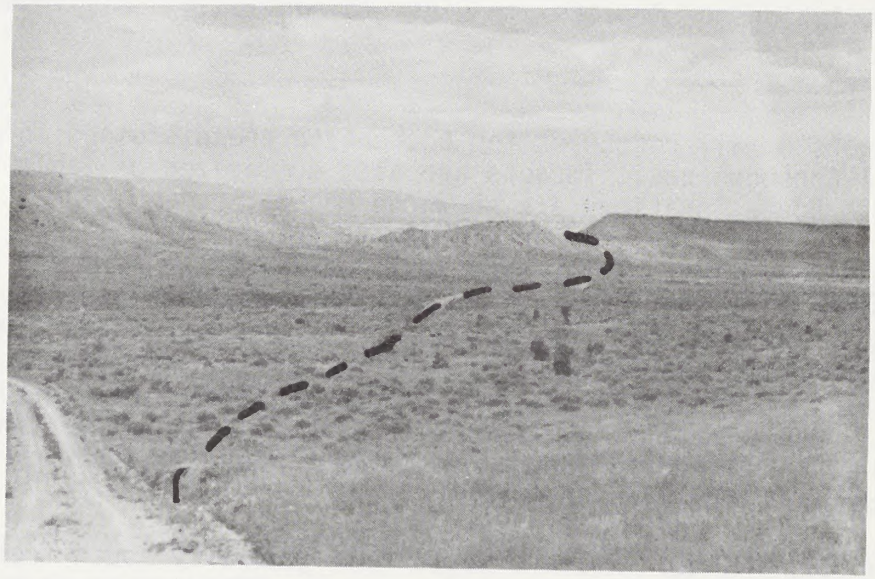
Route B. 14.7 Miles. Route B would head generally south from the mine to Fruita along 18 Road. It would terminate at the D&RGW railroad in Fruita. Railroad construction following route B is not feasible due to grade constraints. A 3 percent grade is considered the maximum for efficient railroad operation. Some portions of this route exceed 5 percent. The construction of a railroad along this route would require an excessive amount of earthwork. It is a viable route for trucking the coal to a railhead near Fruita.

Route C--16.8 Miles. This route would begin at the mine; parallel route A to Douglas Pass Road (Colorado Highway 139 and 16 Road) then follow Douglas Pass Road to Loma and the D&RGW railroad. Route C is considered unfeasible for a railroad route because of steep grades. If this route were chosen, impacts would be similar to route B. Route C has been analyzed in this report for comparative purposes; however, this route is not, at present, being considered as a feasible transportation route by the company.

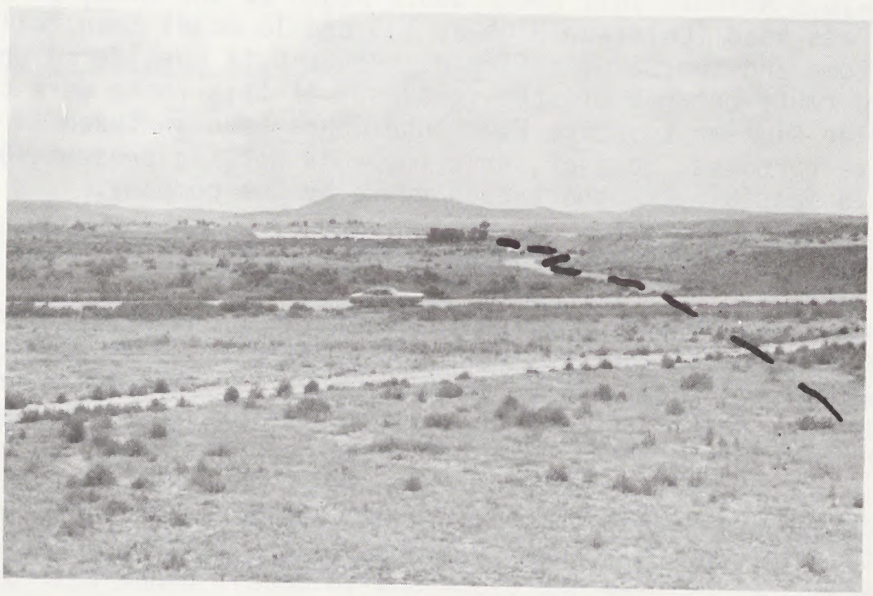
OTHER LEASING ALTERNATIVES

The leasing alternatives are analyzed to determine if adverse environmental impacts would result from the leasing of a specific tract or combination of tracts (see map 6). It has yet to be determined if commercial quantities of coal are present in each tract and the mining plan has not been approved. Therefore, all possible courses of action have been analyzed and compared.

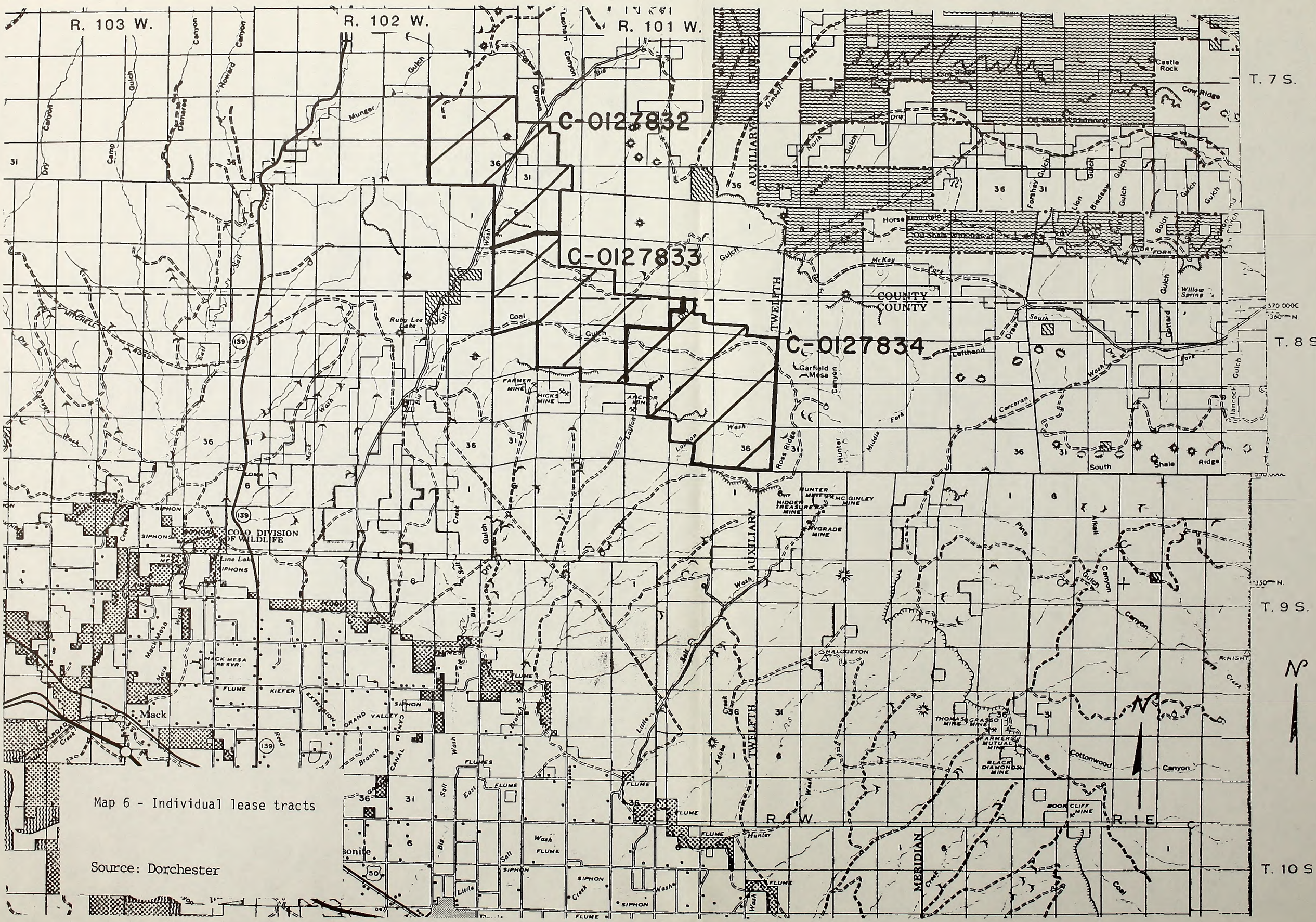
The mining methods and transportation methods would remain the same as outlined in the preferred alternative. Impacts specific to the transportation routes and methods to be used are discussed in detail under Environmental Consequence, section 4.



Route A. Looking West from 18 Road



Route A. Looking West. Car is on Douglas Pass Road; Highline Lake is in the background.



Map 6 - Individual lease tracts

Source: Dorchester

If the actual leasing is different than the company's proposed action then production levels would be reduced. This reduction would change the levels of associated activities and the impacts they cause.

If a particular tract is not offered for lease it may be exchanged for another tract that is acceptable for leasing or other federal coal leasing rights under authority or 43 CFR 3430.5-3 and 3430.5-4.

Environmental impacts for the leasing alternatives would be similar to the proposed action; however disturbance to wildlife would decrease slightly due to the reduced number of workers in the area.

The number of haulage trips would decrease in relation to the amount of coal being mined; however impacts would remain similar to the proposed action.

Lease One Tract--C-0127833

This tract contains 5,087 acres; approximately 1.4 million tons of coal would be removed per year for a 40-year mine life.

Lease Two Tracts--C-0127832 and 33 (9,609 acres) or C-0127833 and 34 (10,207 acres)

Either combination of these two tracts would produce approximately 2.8 million tons of coal per year for a 40-year mine life.

COMPARATIVE ANALYSIS

Impacts from the various transportation routes and methods and the various tract leasing alternatives are summarized in table 5 and are described in detail under Environmental Consequences (section 4).

ALTERNATIVES CONSIDERED BUT NOT INCLUDED

Leasing Alternatives

Leasing of only one of the two areas not contiguous to the private mine was not considered due to the uneconomical aspects of mining a smaller area. Only one lease area is contiguous to the company's private land and mine entrance facilities. If another area were leased new facilities would be required in another location. This would create many new and unnecessary environmental impacts.

Transportation Alternatives

Transportation methods not considered further are full-scale trucking and a conveyor belt. Both methods would be very expensive and would create many severe environmental impacts. The expense of either method would be passed on to the consumer and is viewed as an adverse economic impact.

TABLE 5

IMPACT SUMMARY

RESOURCE	UNIT	ALTERNATIVES					TRANSPORTATION ROUTES AND METHODS								
							RAILROAD			TRUCK			CONVEYOR		
		PREFERRED ALTERNATIVE	LEASE ONE TRACT (33)	LEASE TWO TRACTS (32, 33)	LEASE TWO TRACTS (33, 34)	NO ACTION	ROUTE A	ROUTE B	ROUTE C	ROUTE A	ROUTE B	ROUTE C	ROUTE A	ROUTE B	ROUTE C
Air Quality	Air Pollutants	Insignificant	--	--	--	0	<1% Increase	--	--	--	--	--	--	--	--
Geology and Minerals	MM Tons/Year Total Tons (MM)	4 142.8	1.4 53.2	2.8 100.0	2.8 100.0	0 0.7B	N/A N/A	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --
Soils (loss-1st year)	Tons/Year	Significant	N/A	N/A	N/A	0	20.5	14.0	18.9	42.9	29.3	39.9	5.0	3.6	4.8
Hydrology	--	Minor	N/A	N/A	N/A	0	Slight	Negligible	Negligible	Same as Railroad					
Vegetation	Acres	670	N/A	N/A	N/A	0	1B.5	14.0	11.9	31.8	24.0	20.4	22.B	B.0	16.1
Wildlife/Livestock	--	Minor	N/A	N/A	N/A	0	loss of prairie dogs,riparian veg. disrupt grazing	traffic dist-urbance, disrupt grazing patterns,	traffic dist-urbance, disrupt grazing patterns.	Same as Railroad					
Cultural	--	Minor	N/A	N/A	N/A	0	Moderate	Negligible	Moderate	Same as Railroad					
Visual	--	Negligible	N/A	N/A	N/A	0	Oisrupt scenic quality	Oisrupt scenic quality	Oisrupt scenic quality	Same as Railroad					
Recreation and Wilderness	--	Minor	N/A	N/A	N/A	0	Access restricted, noise dist-urbance	Access Restricted	Access Restricted	Same as Railroad					
Socio-Econ Local Revenue Popuation	 $1,000 Numbers	 2,069 1,500	 1,079	 1,563	 1,563	 0	 N/A	 Residents disturbed by traffic	 N/A	Same as Railroad					
Land Uses	--	N/A	N/A	N/A	N/A	0	Traffic hazards	major traffic hazards 21-32 acres of prime farm-land lost.	traffic hazards 8-13 acres of prime farm land lost.	Same as Railroad					
Product Transportation	Traffic increase	+27% for years 1-3	N/A	N/A	N/A	0	3 minute delay per day	N/A	N/A	N/A	+27% for years 1-3	N/A			
	accidents/5 years	< 1					N/A				< 1				
Employee Transportation	Traffic increase	+ 7%	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A					
Noise	Noise level (dB)	+20 to 26	N/A	N/A	N/A	0	+1.5	N/A	N/A	+2	+3	N/A			
Net Energy	BTUs (million)	77,000 - 80,000	N/A												

AFFECTED ENVIRONMENT

AIR QUALITY

A description of the existing climate and air quality in the vicinity of the tracts can be found in the West-Central ES. The nearest federal Class 1 air quality area is Arches National Park, 50 air miles southwest of the lease area. The Colorado National Monument, located 15 miles south of the lease area, has been designated as a category 1 area by the State of Colorado. It has also been recommended for federal Class 1 status.

GEOLOGY/MINERALS

The proposed lease areas are located on the southwestern edge of the Piceance Creek Basin, a broad synclinal depression in western Colorado.

The Hunter Canyon syncline is located in the southern part of the lease area with the nose of the Hunter canyon anticline along the northern boundary. The Garmesa anticline is a northwest-trending feature along the western boundary of the proposed lease area.

The proposed lease areas include two known geologic structures -- Hunter Canyon and Coal Gulch. There are two producing gas wells within a half mile of the proposed lease areas in sections 9 and 10, T. 8 S., R. 101 W. The wells are shut in pending a pipeline right-of-way in Coal Gulch. The wells are Petro Lewis 1 and 2, oil/gas leases C0124705-A and C088568. Additionally, a Fees-Krey well is located in section 24, T. 8 S., R. 101 W. This well is in oil/gas lease C0128839 and is currently online. The wells are producing from the Dakota Formation.

The area is drained by Big Salt Wash. Tributaries of Big Salt Wash, Coal Gulch, and Hatchet and Garvey Canyons, generally dissect the area in east-west directions. Drainage of the area is not continuous; but rather is with rapid but intermittent stream runoff associated with spring thaw and summaer thunderstorms.

The topography of the area is dominated by the northwestward-trending Book Cliffs form an escarpment along the northern edge of the Grand Valley. The Book Cliffs are comprised of Mancos Shale and the Mesaverde Group (Cretaceous period).

The Mancos Shale consists of grey fissile marine shale with lenses of sandstone. The Anchor tongue of the Mancos Shale interfingers with the basal Mesaverde unit. A lenticular bed of coal occurs near the top of the tongue. The coal seam is 5 to 7 feet thick and is considered to be economical in this area.

The more resistant sandstone of the Mesaverde group caps the Mancos Shale. This has resulted in a steep escarpment with the coal seams of the Mesaverde exposed. The coal bearing units of the Mesaverde are found within the Mt. Garfield Formation. The coal occurs in lenticular beds within the formation.

The Palisade coal zone, located directly above the Sego Sandstone (the basal unit of the Mesaverde), is noncommercial in this area. The zone consists of a series of three to four thin, overlapping lenses of coal in carbonaceous shale.

The Cameo coal zone, located approximately 350 feet above the Anchor coal zone, contains an economical coal seam ranging from 12 to 18 feet thick. The Anchor coal zone, located approximately 350 feet below the Cameo coal zone, contains a probable economic coal seam (depending on blending with lower sulfur coals) ranging from 1.4 to 6 feet thick. The Carbonera coal zone, located approximately 60 to 160 feet aabove the Cameo seam, average 3 feet in thickness. The coal is a highly split, carbonaceous shale-coal sequence considered to be noneconomical for mining in the lease areas.

The proposed lease areas cover approximately 15,000 acres in the Book Cliffs. The strata within the lease area dip 2 to 12 degrees to the northeast. No major faults are known to exist within the lease areas. The elevation at the mine entrance is approximately 5,520 feet. Elevations within the proposed lease areas range from 5,360 feet near the entrance to Coal Gulch to a maximum of 7,300 feet in the northwest corner of the lease area.

Clinker beds, shale, and sandstone baked red by burned coal seams are apparent along the Book Cliffs escarpment. The most affected zones of burning are the Carbonera and Cameo zones, especially along the cliff front between Big Salt Wash and West Salt creek. Burning was most extensive in the massive spurs. In Coal Gulch, the clinker walls are from 130 to 150 feet high. Burning not only destroys the burned coal but the heat produced drives off volatiles from the adjacent unburned coal.

SOILS

The proposed lease areas and the proposed transportation routes encompass three soil survey areas, as shown on map 7. General characteristics and properties of soils of the affected environment are displayed by soil survey area in table 6. The soils have been mapped by the Soil Conservation Service. Soils within the proposed lease areas are shown on map 8; soils along the proposed transportation routes are shown on map 9.

TABLE 6
SOIL PROPERTIES
LEASE TRACTS

Soil Survey Area	Soil Mapping Unit Symbol	% of Area	Soil Name	Parent Material	Depth to Bedrock	Drainage	Surface Texture (Thickness)	Subsoil or Underlying Texture	Reaction	Permeability	Erosion Hazard	Revegetation Potential
Garfield & Mesa Counties (General Soils)	99	73	1) Veatch	Colluvium from sedimentary rocks	20-40"	Well drained	Channery loam	Channery sandy loam	Moderately alkaline	Moderate	High	Poor
			2) Castner	Sandstone	< 20"	Well drained	Channery sandy loam	Very channery loam	Neutral to moderately alkaline	Moderate	High	Poor
			3) Rock outcroos--characteristics not rated									
	100	6	1) Arvada	Sedimentary rocks	>40"	Well drained	Fine sandy loam	Clay	Mildly to strongly alkaline	Very slow	Moderate	Poor
			2) Haverson	Alluvium	>40"	Well drained	Loam	Loam	Moderately alkaline	Moderate	Moderate	Fair
			3) Heldt	Alluvial fan sediments	>40"	Well to moderately well drained	Silty clay loam	Silty clay	Moderately to strongly alkaline	Slow	Moderate	Poor
			4) Scholle	Alluvial fan sediments	>40"	Well drained	Gravelly loam	Gravelly clay loam	Mildly to moderately alkaline	Moderate	Moderate	Fair
			5) Nihill	Alluvium	>40"	Well to excessively drained	Gravelly loam	Very gravelly loam	Mildly to moderately alkaline	Moderately rapid	Moderate	Poor
	116	4	1) Parachute	Sandstone	20-40"	Well drained	Loam	Loam	Neutral	Moderate	Moderate	Fair
			2) Irigul	Igneous & metamorphic	< 20"	Well drained	Very channery loam	Very channery loam	Mildly alkaline	Moderate	High	Poor
			3) Castner	Sandstone	< 20"	Well drained	Channery sandy loam	Very channery loam	Neutral to moderately alkaline	Moderate	High	Poor
Mesa County	Rp	17	Rock outcrops--characteristics not rated									

conts.....

TABLE 6 (continued)
TRANSPORTATION ROUTES

Soil Survey Area	Soil Mapping Unit Symbol	Soil Name	Parent Material	Depth to Bedrock	Drainage	Surface Texture (Thickness)	Subsoil or Underlying Texture	Reaction	Permeability	Erosion Hazard	Revegetation Potential
Mesa County Area	AvC 3-12% slopes	Avalon loam	Alluvium	>40"	Well drained	Loam (6")	Loam	Moderately alkaline	Moderate	Moderate	Fair
	Ba	Badland -- characteristics not rated								Very high--severe geologic erosion	Poor
	Bs 0-3% slopes	Billings silty clay loam	Alluvium	>60"	Well drained	Silty clay loam (3")	Silty clay loam	Moderately alkaline	Slow	Slight to moderate	Fair
	FaC 3-12% slopes	Fruita loam	Alluvium	>60"	Well drained	Loam (5")	Clay loam	Mildly to moderately alkaline	Moderate	Moderate to high	Fair to good
		Avalon loam	Alluvium	>40"	Well drained	Loam (6")	Loam	Moderately alkaline	Moderate	Moderate to high	Fair
	PeD 3-25% slopes	Persayo silt loam	Shale	<20"	Well drained	Silt loam (5")	Silt loam	Moderately alkaline	Moderately slow	High	Fair to poor
	Yo 0-3% slopes	Youngston loam	Alluvium	>60"	Well drained	Loam (4")	Loam	Moderately alkaline	Moderate	Moderate	Fair
Grand Junction Area	Bc 0-2% slopes	Billings silty clay loam	Alluvium	>60"	Well drained	Clay loam (3")	Silty clay loam	Moderately alkaline	Slow	Slight	Fair
	Ca 2-5% slopes	Chipeta shaly loam	Shale	<20"	Well drained	Shaly loam (5")	Silty clay	Mildly alkaline	Slow	Moderate	Poor
		Persayo shaly loam	Shale	<20"	Well drained	Shaly loam (4")	Silty clay loam	Moderately alkaline	Moderately slow	Moderate	Poor
	Cb 5-10% slopes	Chipeta shaly loam	Same as Chipeta component in Ca except slope and erosion hazard							High	Poor
		Persayo shaly loam	Same as Persayo component in Ca except slope and erosion hazard							High	Poor
	Cc 5-10% slopes	Chipeta silty clay loam	Shale	<20"	Well drained	Silty clay loam (5")	Silty clay	Mildly alkaline	Slow	High	Poor
		Persayo silty clay loam	Shale	<20"	Well drained	Silty clay loam (4")	Silty clay loam	Moderately alkaline	Moderately slow	High	Poor
	Cd 0-2% slopes	Chipeta silty clay loam	Shale	<20"	Well drained	Silty clay loam (5")	Silty clay	Mildly alkaline	Slow	Moderate	Poor
	Ce 2-5% slopes	Chipeta silty clay loam	Same as Cd except slope							Moderate	Poor
	Fa 5-10% slopes	Fruita gravelly loam	Alluvium	>60"	Well drained	Gravelly loam (10")	Loam	Mildly to moderately alkaline	Moderate	Moderate	Fair
		Ravola gravelly loam	Alluvium	>60"	Well drained	Gravelly loam (4")	Clay loam	Mildly to moderately alkaline	Moderate	Moderate	Fair
	Fb 20-40% slopes	Fruita gravelly loam	Same as Fruita component in Fa except slope and erosion hazard							High	Poor
		Ravola gravelly loam	Same as Ravola component in Fa except slope and erosion hazard							High	Poor
	Fe 0-2% slopes	Fruita clay loam	Alluvium	>60"	Well drained	Clay loam (10")	Clay loam	Mildly to moderately alkaline	Moderate	Slight	Fair to good
	Ff 2-5% slopes	Fruita clay loam	Same as Fe except slope and erosion hazard							Slight to moderate	Fair to good
	Fg 0-2% slopes	Fruita clay loam, moderately deep	Alluvium	20-40"	Well drained	Clay loam (10")	Clay loam	Mildly to moderately alkaline	Moderate	Slight	Fair to good
	Fh 2-5% slopes	Fruita clay loam, moderately deep	Same as Fg except slope and erosion hazard							Moderate	Fair to good

TABLE 6 (continued)

TRANSPORTATION ROUTES

Soil Survey Area	Soil Mapping Unit Symbol	Soil Name	Parent Material	Depth to Bedrock	Drainage	Surface Texture (Thickness)	Subsoil or Underlying Texture	Reaction	Permeability	Erosion Hazard	Revegetation Potential
	Fn 2-5% slopes	Fruita gravelly clay loam, moderately deep	Alluvium	20-40"	Well drained	Gravelly clay loam (10")	Clay loam	Mildly to moderately alkaline	Moderate	Moderate	Fair
	Fo 5-10% slopes	Fruita gravelly clay loam, moderately deep	Same as Fn except slope and erosion hazard							High	Fair to poor
	Fp 0-2% slopes	Fruita very fine sandy loam	Alluvium	>60"	Well drained	Very fine sandy loam (10")	Very fine sandy loam	Mildly to moderately alkaline	Moderate	Slight	Fair to good
	Fs 0-2% slopes	Fruita very fine sandy loam, moderately deep	Alluvium	20-40"	Well drained	Very fine sandy loam (10")	Very fine sandy loam	Mildly to moderately alkaline	Moderate	Slight	Fair to good
	Ft 2-5% slopes	Fruita very fine sandy loam, moderately deep	Same as Fs except slope and erosion hazard							Moderate	Fair to good
	Pa 0-2% slopes	Persayo silty clay loam	Same as Persayo component in Cc except slope and erosion hazard							Moderate	Poor
		Chipeta silty clay loam	Same as Chipeta component in Cc except slope and erosion hazard							Moderate	Poor
	Pb 2-5% slopes	Persayo silty clay loam	Same as Persayo component in Cc except slope							High	Poor
		Chipeta silty clay loam	Same as Chipeta component in Cc except slope							High	Poor
	Ra 0-2% slopes	Ravola clay loam	Alluvium	>60"	Well drained	Clay loam(10")	Clay loam	Mildly to moderately alkaline	Moderate	Slight	Fair to good
	Rc 0-2% slopes	Ravola fine sandy loam	Alluvium	>60"	Well drained	Fine sandy loam (10")	Loam	Mildly to moderately alkaline	Moderate	Slight	Fair to good
	Rd 2-5% slopes	Ravola fine sandy loam	Same as Rc except slope and erosion hazard							Moderate	Fair to good
	Re 0-2% slopes	Ravola loam	Alluvium	>60"	Well drained	Loam (10")	Loam	Mildly to moderately alkaline	Moderate	Slight	Fair to good
	Rf 0-2% slopes	Ravola very fine sandy loam	Alluvium	>60"	Well drained	Very fine sandy loam (10")	Loam	Mildly to moderately alkaline	Moderate	Slight	Fair to good
	Rp	Rough broken land Chipeta and Persayo soil materials								Very high--severe geologic erosion	Poor
	Rs	Rough broken land								Very high	Poor

R. 103 W. R. 102 W. R. 101 W.

T. 7 S.

T. 8 S.

T. 9 S.

T. 10 S.

R. 1 W. R. 1 E.

SIXTH PRINCIPAL MERIDIAN

UTE MOUNTAIN UTE INDIAN RESERVATION

COLORADO DIVISION OF WILDLIFE

Map 7 - Soil survey areas

Garfield & Mesa Counties ------- (General soils)

Mesa County Area ----------

Grand Junction Area ----------

Source: SCS

R. 103 W.

R. 102 W.

R. 101 W.

T. 7 S.

T. 8 S.

T. 9 S.

T. 10 S.

Map 8 - Soil types

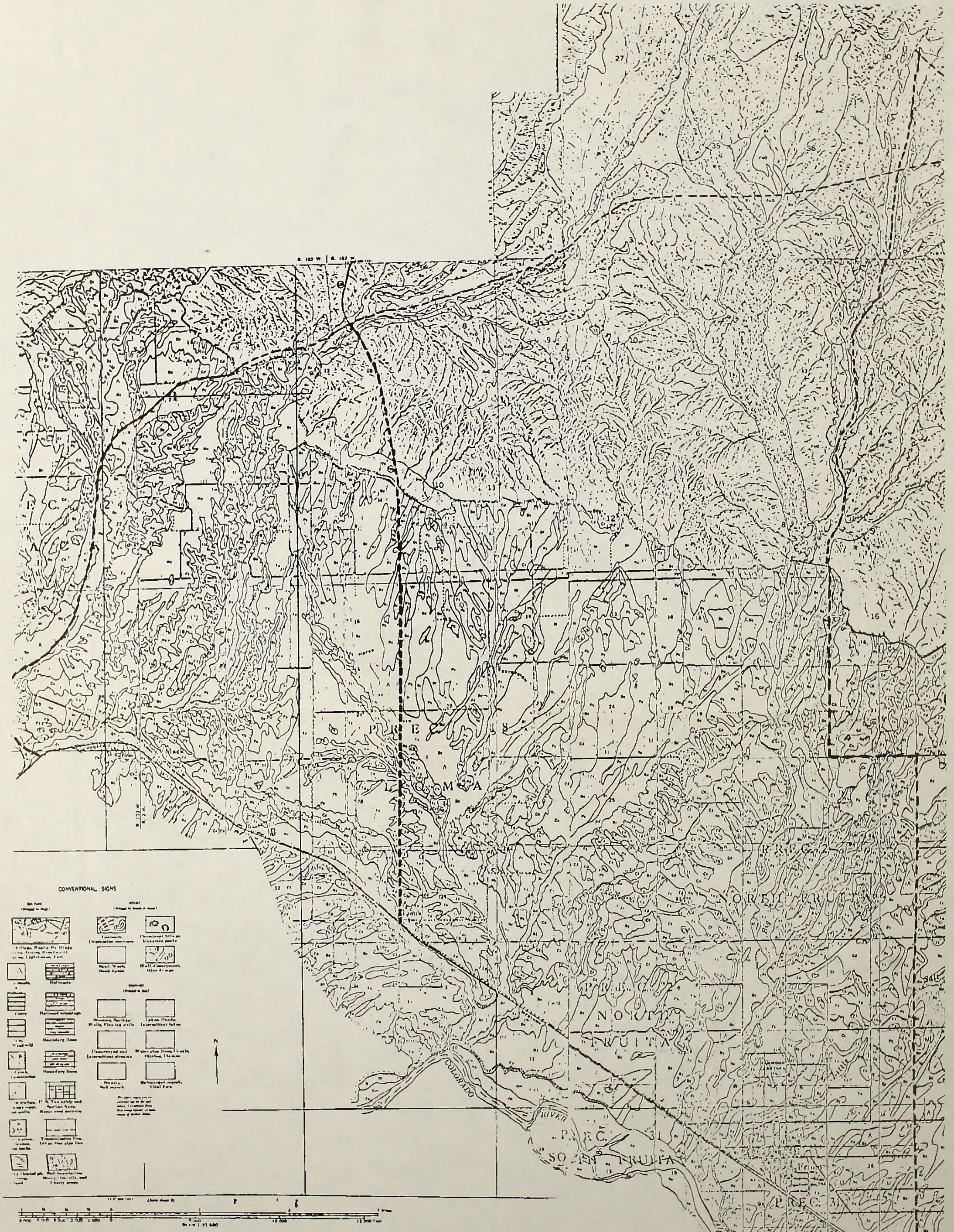
Association 99 -----

Association 100 -----

Association 116 -----

Mapping unit Rp -----

Source: SCS



MAP 9
SOIL TYPES

Transportation Routes

WATER RESOURCES

Leasing Alternatives

The proposed lease areas are basically drained by west-southwesterly trending ephemeral tributaries of Big Salt Wash. These creeks generally flow less than 1 month each year in response to spring snow melt or intense summer thunderstorms. Big Salt Wash is a perennial stream that flows southward joining the Colorado River just west off the town of Fruita. Discharge data from a geological survey gaging station located about 10 miles downstream of the lease areas are presented in table 7. This gaging station was removed in 1977.

Big Salt Wash provides irrigation water to farms. The court adjudicated water rights are: 4.1 cubic-feet-per-second (cfs) original, 20.7 cfs supplemental, 90.5 cfs supplemental/conditional (Water Division 5, Decreed Water Rights, dated July 1, 1978).

The limited ground water data available for the proposed lease areas indicate little or no water would be encountered in the mining operation. To supplement the existing data base, and to comply with OSM and Colorado Mined Land Reclamation Board regulations the company has drilled five of the nine proposed ground water monitoring holes of sufficient depth to penetrate both the Cameo and Anchor coal seams. The cased and capped holes would be samples and measured quarterly, or as required by regulations, to monitor ground water. Proposed well locations are shown on map 10.

Transportation Alternatives

The transportation routes would cross or parallel 10 to 20 ephemeral stream channels, many are tributary to Big Salt Wash or East Salt Creek. The south-southwesterly trending drainages carry runoff from the Book Cliffs to the Colorado River. Flow generally occurs less than 1 month each year in response to spring snow melt and/or intense thunderstorms. No discharge or water quality data are available for any of the tributary streams.

Big Salt Wash and East Salt Creek are perennial streams in the lower portions of their respective watersheds. Stream discharge data for a gaging station located about 10 miles downstream of the proposed crossing are presented in table. East Salt Creek which would be paralleled by route A has an average discharge of 2.86 cublic feet per second(cfs) based on 1973-78 period of record. Minimum and maximum discharges of 0.06 and 2,630 cfs have been recorded, respectively.

VEGETATION

The utilities corridor, storage reservoir, and spoil disposal area, would all occur in the vegetative types as described for route A.

Reclamation success on the vegetative types depends upon seed bed preparation, moisture at the proper time, seed source and quality, soil conditions, and many other variables that could affect the process as it occurs.

TABLE 7

BIG SALT WASH DISCHARGE DATA * (Station 09153270)

in cubic feet per second

1973	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Min	-	-	-	-	-	10	10	81	88	70	89	114
Max	-	-	-	-	-	21	129	160	197	247	114	138
Mean	-	-	-	-	-	13.4	66.6	125	142	105	105	129

1974	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Min	114	16	11	10	6	5.4	5.4	63	66	65	72	96
Max	158	83	17	13	13	62	117	88	96	85	92	122
Mean	141	26.1	14.3	11.4	9.2	14.1	75.1	72.3	77	75.7	81.3	109

1975	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Min	96	17	11	8.1	7.3	8.5	6.9	83	67	65	82	92
Max	134	64	17	11	10	39	164	120	128	123	106	140
Mean	115	25	13.6	9.7	8.1	15.1	83	101	88	92.6	92.6	118

1976	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Min	99	16	12	8.1	7.7	5.3	6.1	60	84	61	87	86
Max	116	75	16	12	24	14	104	113	110	101	113	145
Mean	107	24	14	9.8	9.8	8.1	64.6	89.9	95.9	81.7	97.6	118

1977	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Min	80	17	12	6	5.3	6.1	48	78	74	77	75	94
Max	152	81	17	12	8	158	96	121	105	248	132	150
Mean	122	27.7	14.6	8.1	6.8	33.4	66.2	88.3	89.5	110	92.8	109

*NOTE: Discharge at the proposed lease area would be considerably less than flows listed due to decreased watershed area and to flow introduced from Government Highline and Grand Valley Canals.

R. 102 W.

R. 101 W.

T. 7 S.

T. 8 S.

T. 9 S.

T. 10 S

Map 10- Proposed water monitoring wells

Well location -- ⊗

Source: Dorchester

Route A

This route traverses 1 mile of pinyon-juniper vegetation, 5.5 miles of saltbush vegetation. .25 miles of greasewood vegetation, and .5 miles of grassland vegetation. The pinyon-juniper vegetative type consists of a scattered growth of Utah juniper, (Juniperus osteosperma) and a few pinyon pines (Pinus edulis) just below the Book Cliffs (see map 11).

The area is dominated with rocky soil, that supports a sparce pinyon-juniper understory of shrubs, forbs,and grasses (e.g., four-wing saltbush, (Atriplex canescens), daisies (Erigeron sp.), annual fescue (Festuca sp.), and galleta (Hilaria jamesii). This vegetative type has poor production varying from 40 to 100 acres per animal unit month (the amount of forage required to graze one cow one month) in this area. The saltbush vegetation in this area on rolling mancos shale hills is dominantly vegetated with shadscale (Atriplex confertifolia) and nuttalls saltbush (Atriplex nuttallii). Associated with these species are several other shrubs, forbs, and grasses. Important among these are aster (Erigeron sp.), loco weeds (Astragalus sp.), galleta, Indian ricegrass (Oryzopsis hymenoides), and cheatgrass (Bromus tectorum). This vegetative type has good production averaging 8 to 12 acres per animal unit month.

Greasewood vegetation is present in the flats near drainages and in intermittent drainages. Vegetation consists of black greasewood (Sarcobatus vermiculatus), Russian thistle (Salsola kali), scarlet globemallow (Sphaeralcea coccinea), African mustard (Malcomia africanas), and cheatgrass. This vegetative type has poor production averaging 35 to 45 acres per animal unit month.

Grassland vegetation is similar to the saltbush type except that grass is more dominant. This may be caused primarily by a change in the soil. Vegetation consists of cheatgrass, crested wheatgrass (Agrophyron cristatum), galleta, and snake broomweed (Xanthocephalum sarothrae). Production on this vegetative type averages from 8 to 12 acres per animal unit month.

Route B

This route traverses 2.5 miles of pinyon-juniper vegetation and 3 miles of grassland vegetative type (see route A for description of vegetation).

Route C

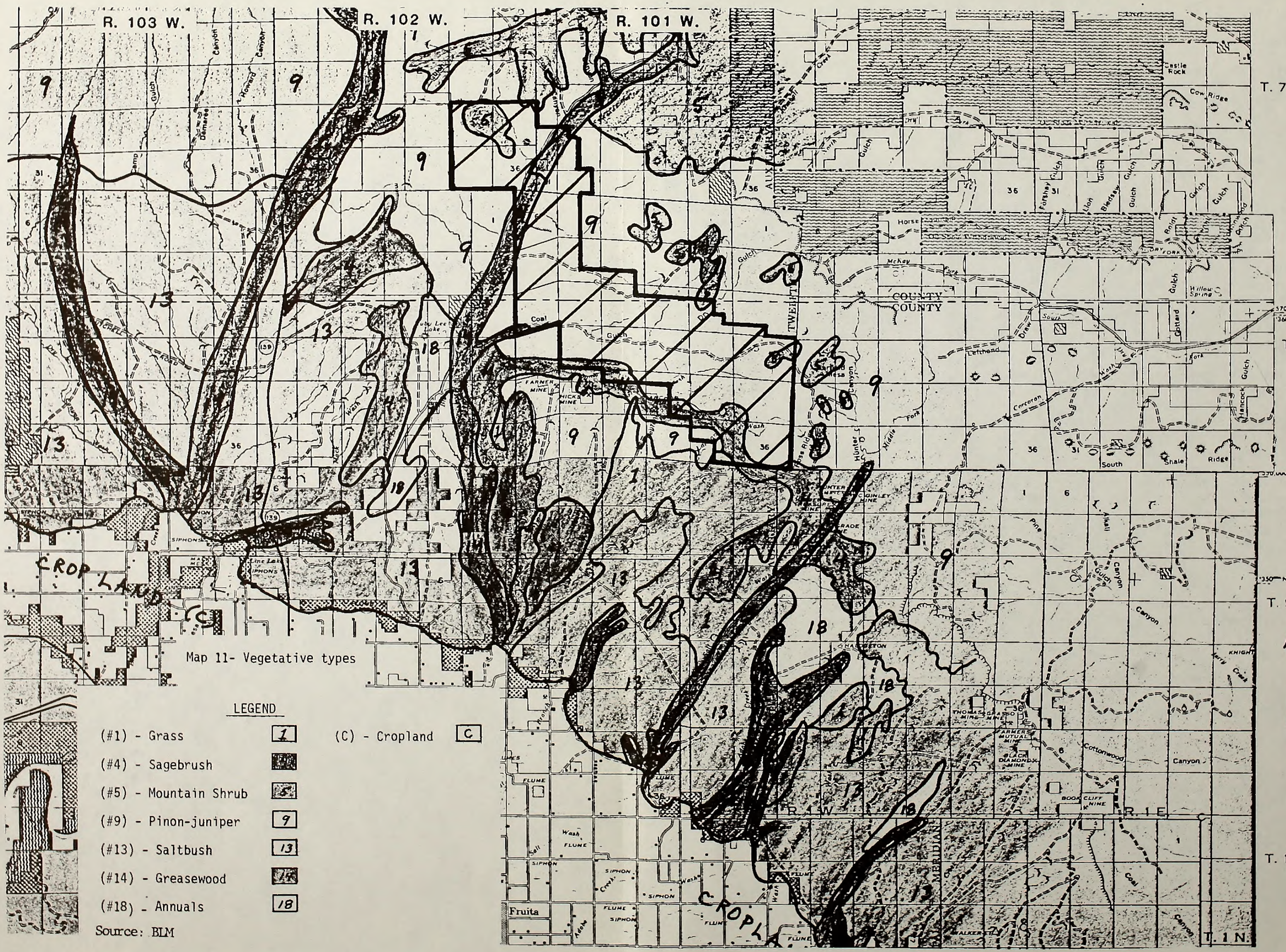
This route traverses 6 miles of saltbush vegetation, 1 mile of pinyon-juniper vegetation, .75 mile of grassland vegetation, and .25 mile of greasewood vegetation (see route A above for description of various types of vegetation).

WILDLIFE

A list of vertebrate species known to exist in the desert of Grand Valley and along the Book Cliffs is available at the BLM Grand Junction Resource Area office.

Big Game Mammals

Big game mammals inhabiting the area include pronghorn, mule deer, elk, black bear, and mountain lion.



Map 11- Vegetative types

Pronghorn

There have been at least three releases of pronghorn antelope in the desert area along the Book Cliffs in Colorado. Seventeen were released in 1948, another seventeen in 1949, and forty-eight in 1968. Though the animals persisted until 1968 and thereafter, they have not maintained or increased their numbers. The most recent census turned up an estimate of 37 head--10 bucks, 18 doe, 8 kids, and 1 unidentified--in small bands and singles (Withrow, unpublished Division of Wildlife paper, 1976). The Division of Wildlife estimates forage and water are available for a much larger herd.

Mule Deer

As indicated by appreciation of unsuitability criteria (see appendix 1), virtually the entire lease area is within critical deer winter range. The comments regarding deer populations within the environment of the Sheridan Coal ES apply here also, yet the deer population is more dense along Big Salt than it is along East Salt. Deer can also be found elsewhere on the desert, but more frequently near the base of the Book Cliffs and along Big Salt Creek.

Elk

Recently a few bands of elk have wintered in the area, one band loitering just north of Highline Canal. Each year the numbers of elk in low country have been greater, and perhaps 5 years hence this will become an important winter range (Schaeffer, Division of Wildlife, personal communication 1980).

Black Bear

A moderately good population of bears exist in the conifer and mountain shrub country north of the Book Cliffs. These animals come down into pinyon-juniper vegetation to feed on seviceberries and acorns found on the hillsides and in the draws.

Mountain Lion

The Little Book Cliffs have a reputation for lions. The Division of Wildlife estimates that game management unit 30 supports 40 lions. Six of the cats were taken legally last year and an estimated two others were taken.

Smaller Mammals

In the approximate order of abundance, furbearing mammals within the area include: coyotes, long-tailed weasels, spotted skunks, gray fox, bobcat, and badger. Raccoons and striped skunks occur along Big and East Salt Creeks as well as ringtailed cats, who also prefer the rocky adjacent Book Cliffs.

Other small mammals of this xeric land are discussed under Sheridan Enterprise Loma project in the West-Central Coal ES. All but three of these are burrowing animals. Prairie dogs may be the staple food resource of most carnivores and raptors. White-tailed prairie dogs den in loose, uncongested colonies; the known "dog towns" are shown on map 12.

R. 103 W.

R. 102 W.

R. 101 W.

T. 7 S.

T. 8

T. 9 S

T. 10

N

Map 12 - Prairie dog distribution

Prairie dog towns -----

Source: BLM

Game Birds

The most common game bird is the mourning dove. There are some doves in Grand Valley year-round, but most appear on the proposed lease areas and desert in early spring and leave in the fall. Chukars are seen in modest number along the Book Cliffs. Gambel's quail and ring-necked pheasant are found in the greasewood drainages and agriculture lands; the pheasant preferring the more mesic conditions found around Highline Canal south. Waterfowl rest on the desert ponds and nest around the ponds in tall herb vegetation. March/April and October/November are periods of greatest concentrations of waterfowl in the area.

Other Birds

The unsuitability criteria report records raptor activity on the proposed lease areas. In addition to data in this report, an active golden eagle tree nest and a long-eared owl nesting pair have been sighted near Big Salt Wash. Barn owls are reported in the Big Salt Wash area, and if nesting in a creek bluff cavity may be the only such of this species in Mesa or Garfield Counties. Burrowing owls are expected in half of the prairie dog towns.

A few bird species, chiefly the horned lark, have adapted to acquiring all their needs on the open saltbush/annuals desert. Many other birds require trees or tall shrub stands such as greasewood for at least part of their life. Taller woody vegetation is in short supply and therefore an important resource when stocking the desert with wildlife.

Reptile and Amphibians

The Woodhouse's toad is the most probable amphibian to be found in this desert country. Eastern fence, short-horned, northern whiptail, and collared lizards are common. Western rattlesnakes (midget-faded) and gopher snakes are found throughout the area, the latter species is more common.

Aquatic Life

Big Salt Wash and East Salt Creek are perennial streams within the area of the coal transportation routes and the mine site. Runoff is typically high in sulfates, chlorides, total dissolved solids and suspended particles, and as a result only persistent aquatic life occur in these streams such as crayfish and flannelmouth suckers. The Colorado River, 12.5 miles from the mine portal, is the source of some water for which the company is seeking water rights for use in it's mining operations. This river is characterized by great fluctuations in discharge and turbidity. Six endemic fish species occur in the river. Gamefishes, channel catfish, bullhead, largemouth bass, green sunfish, and other species also occur.

Threatened and Endangered

A BLM management objective is to maintain a prairie dog population for the eventual reintroduction of the black-footed ferret. Bald eagles spend the greater portion of their time along water courses and impoundments, but the importance of the desert uplands for the bald is becoming increasingly clear, especially where livestock and deer carrion are common or rabbits are abundant. Greater sandhill cranes (on the State endangered species list) stopover in the desert, especially at the ponds. Foster whooping cranes have also been seen over Fruita along with the sandhill cranes.

The endemic Colorado River squawfish and the humpback chub inhabit the Colorado River in the Grand Valley and downstream. The U. S. Fish and Wildlife Service has recommended this section of the river as critical habitat for the squawfish. Recently (1980) another endemic species, the humpback (razorback) sucker has been withdrawn from proposed threatened status. Ironically this species appears to be more endangered than the two listed species and it is recognized as such by the State of Colorado. BLM policy is to maintain at least the status quo of the threatened and endangered species on both the federal and state lists.

CULTURAL RESOURCES

General data concerning cultural resources in the proposed lease areas are adequately documented in the Final West-Central Colorado Coal Lease Report, prepared by Archaeological Associated, Inc. (1979) of Boulder, Colorado; the Cultural Resources Inventory Report of the Dorchester-Colomine Coal Company Fruita Project and Haulage Route, prepared by the Grand River Institute of Grand Junction, Colorado (1979); and a recent study west of the lease area, MAPCO's Rocky Mountain Liquid Hydrocarbons Pipeline, prepared by BLM (1980). The applicable laws, regulations, and policies concerning cultural resource protection are contained in appendix 3.

Cultural resources in or adjacent to the proposed lease areas and routes include forty-seven known cultural resource sites within a 3-mile wide corridor and/or buffer zone along the proposed transportation routes and proposed lease areas (see table 8 and appendix 3).

These sites reflect a broad pattern of prehistoric trade networks, migration patterns, and land use.

VISUAL RESOURCE (VRM)

The valley landscapes accommodating the corridor are divided into three VRM categories and define the value of the valley's visual resources. VRM definitions and rating criteria are described in appendix 4. The portion of the valley north of Highline Canal is classified as VRM Class III. VRM Class III stipulates that visual contrasts due to management activities may be evident as partial local elements, but should remain subordinate to the existing characteristic landscape.

TABLE 8

CULTURAL RESOURCE SITES

Registry Number	Township and Range	Class	Remarks
		Mine and Refuse Area	
AR-05-07-1120	T8S, R102W, Sec. 35	S2	Site is a habitation site. The cultural affiliation is undetermined. 2 manos were collected.
AR-05-07-763	T7S, R101W, Sec. 20	S2	Site is a collapsed Partially burned logs lying parallel were observed. It is a historic Ute site. This site is important for distribution and land use studies of the Ute.
HS-05-07-465	T9S,R101W, Sec. 9	S3	Site is a modern campsite. Cans, coal, sawcut lumber, upright and fallen posts, and the remains of a ramada were observed.
HS-05-070-459	T9S, R101W, Sec. 9	S3	Site contains sandstone slabs which are structural ruins. One axe-like handle and one semi-squared off pole were observed.
HS-05-070-280	T8S, R101W, Sec. 32	S3	Site contains a hog wire fenced corral with an adjoining pen, a brush enclosure, a trash dump, a wood cutting area and two iron stakes in the ground. It is probably a sheep-herders camp.
		Route A	
AR-05-07-49	T10S, R103W, Sec. 5	S4	Isolated find, exhausted core
AR-05-070-50	T10S, R103W, Sec. 5	S4	Isolated find, exhausted core
AR-05-07-51	T10S, R103W, Sec. 5	S4	Isolated find, projectile point
AR-05-07-52	T10S, R103W, Sec. 5	S3	Open workshop, lithic scatter of quartzite flakes.
AR-05-07-413	T10S, R103W, Sec. 5	S3	Open workshop, lithic scatter of quartzite flakes.

TABLE 8 -- Continued

CULTURAL RESOURCE SITES

Registry Number	Township and Range	Class	Ramarks
	Route A (Continued)		
AR-05-07-414	T10S, R103W, Sec. 7	S2	Overhang with rock wall.
AR-05-07-415	T10S, R103W, Sec. 7	S1	Petroglyph and Pictograph; historic and prehistoric.
AR-05-07-1053	T10S, R103W, Sec. 6	S3	Lithic scatter, grey quartzite.
AR-05-07-1054	T10S, R103W, Sec. 6	S1	Lithic scatter beneath overhang.
AR-05-07-1057	T10S, R103W, Sec. 5	S3	Wide lithic scatter.
AR-05-07-1058	T10S, R103W, Sec. 5	S3	Quarry
AR-05-07-1060	T10S, R103W, Sec. 5	S3	Shipping station.
AR-05-07-1061	T10S, R103W, Sec. 5	S3	Lithic scatter.
HS-05-07-92	T10S, R103W, Sec. 5	S3	Cement lined pit.
HS-05-07-93	T10S, R103W, Sec. 7	S3	Overhang with rock wall, same as AR 414.
HS-05-07-97	T10S, R103W, Sec. 7	S3	Rock and railroad tie structure possibly used for storage of explosions.
HS-05-07-98	T10S, R103W, Sec. 7	S3	Spanish bread oven of sandstone slabs.
HS-05-07-100	T10S, R103W, Sec. 7	S3	Ranch complex (house, root cellar, shed, corral).
HS-05-07-212	T8S, R102W, Sec. 27-34	S2	Quaker town.
HS-05-07-406	T10S, R103W, Sec. 6	S3	Rock alignment and associated rock circle. Apparent tent stakes.
	Route B		
	No sites were located in route B area.		

TABLE 8 -- Continued

CULTURAL RESOURCE SITES

Registry Number	Township and Range	Class	Ramarks
		Route C	
AR-05-07-182	T1N, R3W, Sec. 5	S3	Quartzite quarry.
AR-05-07-401	T1N, R3W, Sec. 16	S3	Open campsite, lithic scatter.
AR-05-07-402	T1N, R3W, Sec. 17	S3	Lithic scatter, quartzite flakes.
AR-05-07-636	T1N, R3W, Sec. 15	S3	Manufacturing site, quartzite flakes.
AR-05-07-664	T1N, R3W, Sec. 15	S4	Manufacturing and campsite.
AR-05-07-665	T1N, R3W, Sec. 22	S4	Manufacturing sites, quartzite flakes.
AR-05-07-666	T1N, R3W, Sec. 22	S4	Manufacturing site, quartzite flakes.
AR-05-07-668	T1N, R3W, Sec. 15	S2	Quartzite flakes, mano fragments, possible hearth.
AR-05-07-669	T1N, R3W, Sec. 15	S4	Manufacturing site.
AR-05-07-670	T1N, R3W, Sec. 15	S4	Manufacturing site.
AR-05-07-671	T1N, R3W, Sec. 15	S3	Manufacturing and campsite, lithic scatter, mano.
AR-05-07-672	T1N, R3W, Sec. 15	S4	Manufacturing site.
AR-05-07-788	T1N, R3W, Sec. 15	S3	Manufacturing site, quartzite flakes.
AR-05-07-789	T1N, R3W, Sec. 15	S1	Overhang with lithic scatter.
AR-05-07-790	T1N, R3W, Sec. 15	S2	Overhang with hearth, lithic scatter.
AR-05-07-791	T1N, R3W, Sec. 15	S3	Overhang with quartzite flakes, tools.
AR-05-07-792	T1N, R3W, Sec. 15	S3	Overhang of quartzite flakes.
AR-05-07-799	T1N, R3W, Sec. 15	S3	Overhange with quartzite flakes.
AR-05-07-800	T1N, R3W, Sec. 22	S3	Ranch with stone and wood house, corrals, cultivated land.
AR-05-07-800	T1N, R3W, Sec. 22	S3	2 overhangs with two flake tools.

TABLE 8

CULTURAL RESOURCE SITES

Registry Number	Township and Range	Class	Remarks
HS-05-07-108	T1N, R3W, Sec. 9	S3	Ranch with stone and wood house, corrals, cultivated land.
HS-05-07-234	T1N, R3W, Sec. 15	S3	Log cabin with log corral.
National Register			
HS-05-07-212	Is considered by the BLM Colorado State Historian as being eligible for inclusion to the National Register of Historic Places.		

Note: Determination of eligibility will be done for all sites that may be impacted by this proposed undertaking (36 CFR Part 63).

See appendix 3 for resource site significance and class.

Compiled from literature search.

END Table 8

The general character of the valley is that of a dry, semiarid landscape with a moderately dissected surface texture. The resultant hills, buttes, and stream channels are the primary local elements; vegetation is sparse and soil colors are uniformly gray and yellow-brown.

The visual quality of this western part of the Grand Valley is also a function of the interrelationship of the valley floor and surrounding Book Cliffs to the north and the Uncompahgre Plateau to the south. The land heights define the horizon line and the boundaries of the viewshed for valley viewers. The resultant visual quality is partially due to a sense of space that is created by the long view to the surrounding cliffs.

The landscape south of Highline Canal and north of the Colorado River is designated VRM Class IV. Class IV allows for surface modification to attract attention, but these changes should use the inherent form, line, color, and texture of the surrounding area to reduce visual incompatibilities. The presence of State Highway 50, power and telephone lines, and the expanded residential patterns have created a more developed, nonnatural landscape character.

The third landscape area, the urban area around Fruita, is composed primarily of private lands where city and county zoning regulations apply.

The scenic determinants for the proposed transportation routes are derived from land-use compatibilities, safety considerations, and dust emissions.

WILDERNESS

There are no wilderness areas or wilderness study areas within the area of the proposed action.

AREAS OF CRITICAL ENVIRONMENTAL CONCERN

An area of critical environmental concern (ACEC) is an area "within the public lands where special management attention is required (when such areas are developed or used, or where no development is required) to protect and prevent irreparable damage to important historic, cultural, or scenic values; fish and wildlife resources; or other natural systems or processes; or to protect life and safety from natural hazard" (BLM 1980).

There are no ACEC areas within the impact area of the leasing alternatives or transportation routes.

RECREATION

Public land affected by the proposed action is used for a variety of extensive types of recreational uses such as big and small game hunting, target shooting, and off-road-vehicle (ORV) driving. Most of the public land south of the Book Cliffs is composed of rolling hills where ORV travel is not generally restricted by topographic features; however, most vehicle travel is confined to existing jeep roads. Within the much more rugged Book Cliffs, most vehicle travel is confined to several constructed roads crossing the

proposed leasing area. These roads provide access to public land both on the proposed lease areas and to land farther into the Book Cliffs in the Coal Gulch and Big Salt Wash areas.

Highline State Recreation Area (HSRA) may be affected by several of the transportation alternatives described in the proposed action (see location on map 2 section 1). This area is administered by the Colorado Division of Parks and Outdoor Recreation. Highline Lake is the central attraction and is used primarily for motorboating, waterskiing, and sailing. The adjacent Mack Mesa Lake, also a part of HSRA, is a fishing lake where motorboats are not permitted. Waterfowl and other birds use Highline Lake, Mack Mesa Lake, and wetlands at the northern end of HSRA, particularly during the winter. Waterfowl hunting and birdwatching are popular activities. In 1979, 720 hunters and 1,201 birdwatchers used this area. Most fishing at HSRA occurs on Mack Mesa Lake, 8,492 fishermen in 1979. The northern end of HSRA is predomiantely a quiet-oriented recreational use area.

The southern portion of the HSRA, including Highline Lake, is more heavily used. Visitor use in 1979 was: boating 10,482 visitors; camping 1,167 visitors; picnicking 60,078 visitors, and sightseeing 2,875 visitors. Total use at HSRA was about 87,000 visitors in 1979. Most visitors to the area travel north from Loma on Highway 139, west on Q Road, and follow the signs to HSRA. Most motorboats used on Highline Lake are towed on this route.

The transportation proposals may affect the northern end of Highline State Recreation Area and the recreation-oriented travel to the area.

TRANSPORTATION AND UTILITIES

Major transportation corridors in the area are Interstate 70; State Highway 139; Mesa County Roads 10, 16, 18, M.8., and R; and the Denver and Rio Grande Western (D&RGW) railroad.

Interstate 70 is a paved 4-lane highway traversing east and west through Colorado and serves the towns of Mack, Loma, Fruita, and Grand Junction. State Highway 139 runs from Interstate 70 north over Douglas Pass to Rangely.

Mesa County Roads 10 and 18 are paved roads running north and south. Mesa County Road 16 is a gravelled north-south road. County Roads R and M.8 are paved roads running east and west. The average daily traffic (ADT) count for the affected roads is:

	I-70	S.H. 139	CR-10	CR-16	CR-18	CR-R	CR-M.8
1978 ADT	4,000	1,250	150	50	250	150	900

The D&RGW railroad runs between Salt Lake City, Utah, and Denver, Colorado; and passes through Mack, Loma, Fruita, and Grand Junction. Daily traffic on the line is approximately 25 trains per day. The line has centralized traffic control (CTC) enabling it to have a capacity of 48 trains per day.

Numerous natural gas pipelines cross the area. Water, electric power, natural gas, and telephone communication corridors occur in the area. Pipeline and powerlines over public lands would be a minimum of 6 miles.

Highline Canal provides irrigation water from the Colorado River to the private farmlands of the area. The canal generally divides public and private lands in the area. Land south of the canal is private; land north of the canal is public.

LAND USE

Major land uses in the area include livestock grazing, irrigated farming, natural gas production, and limited coal mining. A state recreation area is located at Highline Lake in the Loma-Mack area (see appropriate sections).

Agriculture

Approximately 120,000 acres of irrigated farmland lie in the area served by Highline Canal west of Grand Junction, approximately 50 to 60 percent of this is considered prime farmland. The classification of prime farmland is in accordance with Soil Conservation Service criteria.

Residences

Numerous rural farmsteads and other residences are located in the irrigated farm areas north of the communities of Fruita, Loma, and Mack. The more populated areas average four or five residences per mile. The majority of residences are connected with farming operations although an increasing number of people working in Grand Junction reside on small rural acreages in this vicinity.

SOCIAL AND ECONOMIC CONDITIONS

It is anticipated that virtually all of the identifiable social and economic impacts brought about by the mine would occur in Mesa County. Because of its proximity to the mine, Fruita may feel a disproportionately large share of those impacts.

Population

The history and location of Grand Junction has made it the transportation, sales, and service center for a large portion of western Colorado and eastern Utah. This role has made Mesa County the most populous on the Western Slope with three times more people than any other Western Colorado county. The preliminary census estimate of Mesa County's 1980 population is 81,482; 50 percent greater than the 1970 population estimate. The rapid growth of Mesa County during the 1970s is a reflection of the energy minerals exploration and development, and to a lesser extent, increased recreation activity that has occurred throughout the region. Very little of the growth can be associated with energy development within the county itself. Early census reports and recent new home construction figures indicate Fruita's current population is in excess of 3,000 with another 1,500 people living in the immediate vicinity.

A count of residences along the proposed truck route (18 and 19 Roads) indicates that 150 and 200 people live along the route.

Community Services

The rapid rate of growth has in recent years put stress on some community services and facilities. The Grand Junction Sanitation District was in violation of EPA discharge standards several times during the summer of 1979; School District 51 has had to put some schools on split shifts and has had to rely on modular units for additional classroom space; the effects of drought during the summer of 1977 demonstrated the fragility of the county's water supply.

There are programs underway, however, to greatly expand facilities and, by 1985, most community facilities should have excess capacity. At that time sewage and water treatment facilities should have sufficient capacity to support a county population of 125,000. The Ute Water Conservation District, the likely supplier of water for most new growth in the area, and several other water districts have taken measures to expand the water supply considerably. The health care system, more than sufficient for the current population, will have expanded. Police and fire protection was assessed as adequate by the West-Central ES, although local police jurisdictions appear to be experiencing high turnover rate. The county jail is at capacity now and there is apparently no plan for construction of a new facility soon.

The only major infrastructural system in Mesa County currently operating beyond capacity and has no expansion program underway is School District 51. Current capacity limits are 14,716; enrollments are at about 15,000 (1979-80 school year). A school bond issue was defeated in 1978, but another bond, valued at $23.5 million, was passed on the November 4, 1979 ballot. This funding will address current undercapacity and accommodate growth for the next few years. Continued growth may present the need for more such school funding.

Housing

Housing availability has just kept pace throughout the period of growth. Currently a temporary surplus of homes is available for sale due to very high interest rates (about 800 homes are on the market in Mesa County). Demand for housing has pushed prices to levels beyond the ability of many wage earners. The average sales price of Mesa County homes during the first quarter of 1980 was $57,500 which, at 20 percent down and 12 percent interest, would require an annual income of about $23,000.

The 1979 average annual wage in the county is estimated at $12,000. Average household income for 1979 may have been as high as $20,000. The mobile home share of the housing stock has grown from 7 percent in 1970 to 14 percent in 1979 and, driven by high home prices, can be expected to increase. In 1979, mobile home permits made up 21 percent of total home construction and siting permits. Rental availability has been and remains very tight.

Community Attitudes

No surveying of community attitudes toward local energy development has been done recently im Mesa County. However, recent surveys in nearby areas, discussions with those involved in administration of community services, and daily media material on the issues involved suggest several observations:

1. Long-time residents of the area have in the past expressed the need for increased local employment opportunities to allow younger generations to remain in the area. Growth has brought jobs and this is viewed favorably.

2. There is a general feeling that growth and development is necessary to satisfy national policy goals, to broaden the local economic base, and to justify capital expenditures already being made in anticipation of growth.

3. As development proceeds, there appears to be increasing concern, not that it be stopped or even slowed down, but that it be carefully managed and the beneficiaries of development share in the cost of development.

4.. There remains opposition to development and to the population growth it brings, especailly to the extent individual projects damage those environmental and cultural qualities that were the original impetus for many people moving to the Mesa County area. In addition, much of the acceptance of development must be characterized as fatalistic. It is accepted by some people because they feel nothing can be done to stop it.

The Local Economy

The predominance of the sales and service sectors is indicated by employment figures. Almost 40 percent of the Mesa County work force in 1979 was employed in either the sales or service trades while just over 10 percent were involved in agriculture. Less than 1 percent were actively involved in mining. Unemployment in Mesa County dropped to 3.4 percent in 1979 from rates in excess of 5 percent in the early and mid-1970s.

Mesa County is rapidly becoming an expensive place to live. The American Chamber of Commerce Index of Cost of Living in 100 cities listed Grand Junction at 94.4 in 1978, meaning that Grand Junction was among the less expensive places to live. By the first quarter of 1980, the Grand Junction index rose to 101.6, placing the city in the category of more expensive places to live. The rise in the index was driven by sharp increases in the local costs of food, housing, and utilities. Per capita income increased rapidly between 1973 and 1978, growing from $4,115 annually to $7,217 in 1978, a 75 percent increase. During the same period, aerage per capita income for Mesa County was, however, still only 90 percent of the state average. As indicated earlier, the average annual wage in 1979 in Mesa County was an estimated $12,000, while total annual household income may have been as high as $20,000. Grand Junction and Fruita both have a 2 percent retail sales tax (Fruita's increased to 3 pecent on July 1); Palisade has a 1 percent tax. Revenues from

sales tax in 1979 are estimated at 11 million dollars for Grand Junction and 500 thousand dollars for Fruita. As development continues on the Western Slope, sales tax receipts should continue to be a healthy source of revenue.

The total assessed valuation of property in Mesa County almost doubled between 1974 and 1979, increasing from 140 to 272 million dollars. Due to legislatively imposed restrictions on annual proeprty tax revenue increases, revenues over the same period did not increase as much but still grew by 80 percent from 11.3 to 20.4 million dollars. According to the county budget director, the 7 percent limit on annual revenue increases is a problem and will continue to be so.

Mesa County and jurisdictions within the county are eligible for financial assistance from the Oil Shale Trust Fund (created from the state's share of federal lease payments on oil shale tracts Ca and Cb), the Energy Impact Assistance Fund (made up of Colorado's share of federal mineral lease payments), and Farmers Home Administration grants and loans. However, as Mesa County has not been directly affected by much of the energy development in western Colorado, it has had a more difficult time making its case for assistnace. A description of the distribution of receipts from royalties on federal leases is given under environmental consequences (section 4).

NOISE

General noise levels around the mine site are approximately 40 decibels (dB). However, noise levels are higher around transportation corridors. The existing noise level for transportation route A is approximately 43 dB and 47 dB for route B (at 50 feet). All figures contained in the noise analysis are in equivalent continuous sound (Leg).

Section 4

ENVIRONMENTAL CONSEQUENCES

Environmental consequences are described for each resource in two parts.

Impacts from construction and operation at the mine entrance area and other surface facilities located within the lease areas and utility corridors, and

Impacts from construction of the transportation route and subsequent impacts occurring during transportation of the coal.

Air quality impacts are considered for the total action. Impacts described for the preferred alternative and the other leasing alternatives are identical for most resources; however, impacts on wildlife and economics would differ slightly and are described under Other Leasing Alternatives for that resource.

Route C is evaluated in some instances for comparative purposes; however, this route is not being considered as a feasible route. All impacts where analyzed using the general and site-specific assumptions listed at the end of section 1.

IMPACTS--LEASING ALTERNATIVES

AIR QUALITY

The only measurable increase in pollutants would be total suspended particulates (TS). The background level is 44 microgram per cubic meter (mg/M^3). The predicted increase from the company's proposed mining activities is 17 mg/m^3; this a 28 percent increase and is well below the federal and state standard of 75 mg/m^3. Carbon monoxide would increase along route B during years 1 to 3 due to the truck haulage of coal and employee transportation to and from the mine. However, this increase is predicted to be so slight that it was not predictable on a computer mode. Visibility would be impaired slightly. It is predicted that visibility from the Colorado National Monument, 15 miles to the south, would be reduced by less than 1 percent. The visibility now is 53.9 miles and the reduction is predicted to be 0.1 mile. At a distance of 1.2 miles from the mine, visibility would be reduced by 0.5 miles or 1 percent (PEDCO site specific study 1980).

GEOLOGY AND MINERALS

Considering a 45 percent recovery rate, 150 million tons of coal would be removed from the Cameo and Anchor seams during the 40-year mine life. Destruction of the natural topographic features would be unavoidable in the refuse disposal areas.

The applicant's preliminary subsidence report indicates no appreciable subsidence potential. Subsidence over the room-and-pillar areas would not have any effects on the surface or interruption of intermittent surface water.

The subsidence over the longwall areas would result in a uniform settling of the overburden. This would not affect surface uses. The possible changes in streambed gradients would be less than 1 percent and is considered insignificant.

Conflicts between coal production and oil and gas exploration and production is handled by the U.S. Geological Survey. They negotiate a cooperative agreement between the coal lessee and the oil and gas lesee. This agreement would allow the exploration and production of both coal and oil and gas with a minimum of conflict and a maximum of resource recovery.

SOILS

Impacts to soils arising from mining operations would be minor since underground mining would be used. Some disturbance would occur from excavating areas for construction of buildings, offices and other structures.

Disturbance caused from installing air vent shafts would be minimal. Slight increases in erosion would occur, but probably would not be significant. All of the increased erosion would be contained through drainage systems and other sediment control measures.

Soil impacts would occur in the refuse disposal area. Where the salvagable topsoil (surface soil) would be scraped off and stockpiled, the physical and biological properties of soils would be altered. After the surface soil is removed and the underlying material is exposed, erosion would increase significantly. With a moderate amount of time and monetary expenditures, the proposed disposal area could be rehabilitated by the use of mulches, contouring, and reseeding. It would probably require 10 years to establish a self-sustaining vegetative cover similar to the existing conditions. Once rehabilitated however, erosion rates could return to baseline or lower than baseline prior to mining activities. The proposed site covers 600 acres. Although only 24 acres would be the maximum exposure at any one time, the cumulative amount of erosion, before complete and successful rehabilitation is achieved, could be substantial.

The runoff from all disturbed areas must be contained onsite until the effluent meets the standards in 30 CFR 817.42.

WATER RESOURCES

Impacts to water resources from the proposed mining activities would be minor. The mining activity would be essentially underground, so impacts to surface waters would be limited to drainage modification, consumptive water use, and possible water quality degradation from tailing disposal runoff.

Temporary diversion ditches have been constructed around the disturbed area at the mine portal modifying natural surface runoff patterns. Surface runoff, up to a 10-year, 24-hour precipitation event occurring within the 50-acre disturbed area, would be caught by a sediment pond. The water would be held for at least 24 hours before pond dewatering, essentially eliminating sediment

impacts. If a precipitation event occurred of greater than design magnitude the pond would spill potentially resulting in short-term sediment and salinity increases to Big Salt Wash. The drainage modification at the mine mouth would last for the life of the project.

An estimated 1,000 gallons per minute (2.3 cubic feet per second) of water would be needed at full production. An application for water rights has been filed for 20 cubic feet per second on Big Salt wash and 10 cubic feet per second on the Colorado River. Withdrawal of this quantity from these sources would correspondingly reduce the amount of water available downstream for other uses. The water would be pumped through pipelines to a storage reservoir proposed for a site about 2-1/2 miles south of the mine portal. Pipeline construction would result in short-term sediment and salinity increases from the disturbed area. This increase would return to near base levels following rehabilitation. The storage reservoir would reduce runoff from the ephemeral drainage due to reduced watershed area.

Reject from mining activities may be placed in a refuse area, fill-covered with topsoil, seeded, and fertilized. If a runoff event occurred shortly following fertilization, a nutrient flush could occur, degrading water quality. Impact would be minor and short-term.

No significant impacts to ground water resources are anticipated from mining operations. The limited data available for the area indicate little or no ground water would be encountered. In an area where mining is at or below the water table, mining could disturb the natural ground water flow pattern. Overlying saturated strata could be fractured causing water drainage into the mine. Any water encountered in the mine would be used in the washing plant, so no discharge to surface water would occur. Following mining reclamation recharge-discharge relationships, groundwater water-quality could approach premining conditions. There would be no impacts to alluvial valley floors, special flood plains, municipal watersheds, or natural resource waters.

VEGETATION

Mine Site and Surface Facilities

Impacts to vegetation from mine site and surface facilities would not change with the issuance of any combination of one, two, or three leases. Total acreages disturbed are:

Area	Acres Disturbed	Acres Out of Production	AUMs Lost Per Year
Utilities	67	0	5
Spoil disposal	600	48*	Insignificant
Storage pond	3	3	.4

AUMs = animal unit months
*This figure could vary depending upon rehabilitation.

The expected impacts to vegetation for all alternatives would be the removal of the existing plants in the proposed construction areas. The amount of vegetative disturbance, and possible rehabilitation, varies depending upon the route and transportation method. The spoil disposal area would change vegetation disturbance in size by proportion to the leases not issued.

Utilities Corridor

Utilities would include construction of the following: telephone, natural gas pipeline, electric powerline, waterline and storage reservoir. These utilities, except the reservoir, would disturb vegetation in a 100-foot right-of-way for 5.5 miles, traversing 2.5 miles of pinyon-juniper vegetation and 3 miles of grassland type (see Little Salt Wash Allotment Management Plan). Approximately 67 acres of vegetation would be disturbed during construction but would be revegetated. The reservoir would disturb another 3 acres and would remain unproductive for the life of the project.

Pinyon-juniper vegetative types near the base of the Book Cliffs produces little forage for livestock. The 30 acres disturbed would reduce livestock forage an immeasurable amount. The 37 acres of grassland vegetative types produces about 5 animal unit months per year and would be lost until revegetation is successful.

Spoil Disposal

Spoils from mining operations would be disposed of on public land as shown on map 2 (section 2). The disposal area is located in pinyon-juniper vegetation. It is projected that a total of 600 acres would be disturbed and rehabilitated during mine life. At full mine production, maximum acreage disturbed for spoils disposal and rehabilitation at any one time would be 48 acres. Disposal and rehabilitation would occur concurrently--24 acres for disposal; while the previous 24 acres is rehabilitated. Pinyon-juniper vegetation in this area near the Book Cliffs is very low in production for livestock forage and the amount lost to grazing is too small to measure.

If possible, spoils would be returned to the excavated mining tunnel as described under the preferred alternative (see Mining Plan, section 2). Vegetation in this area would receive no impact if the tunnel process is used.

Revegetation of the spoil disposal area would probably be more difficult than the other disturbed areas as topsoil would be moved from one area to another. Since topsoil is very shallow in this area, it is likely that soil material of poorer quality would be mixed in with the topsoil reducing topsoil quality. This additional problem would be added to those already described under reclamation success potential.

Reclamation Success Potential

Reclamation of all disturbed areas would be difficult owing to the arid climate and the types of soil present. Successful revegetation would depend upon good seed bed preparation, moisture at the correct time, and many other variables. Soils play an important part of revegetation and different soils

have different reactions to disturbance (see Soils table 14). Loss of diverse vegetation, disturbed nutrient cycling systems, and additional erosion would hinder rehabilitation efforts. Undesirable annual vegetation has invaded other disturbed sites in the area or the proposed disturbance and has slowed the return of native vegetation. Current reclamation techniques such as redistributing topsoil have only been utilized a few years and sufficient information is not available for this area on the amount or time required for native vegetation reestablishment. It is assumed that vegetation would establish well enough to support small birds and animals within 10 years and 15 to 20 years for support of large wildlife. (See also Wildlife section for detailed impacts to wildlife).

WILDLIFE

Impacts on wildlife vary slightly depending upon the number of tracts to be leased. Impacts described here are for the preferred alternative only.

The proposed method of underground operations would probably have no direct effect upon wildlife. Refuse and spoil disposal areas would have impacts to wildlife if it is determined that underground disposal is not feasible.

The results of the application of unsuitability criteria (see appendix 1) to the proposed lease areas adequately illuminates the wildlife issues on the surface above the mine. Problems are expected in the rehabilitation of the refuse area. The floor material of the Cameo seam is low in pH (4.2) and does not compact well. Burrowing animals would not likely colonize this new unstable ground. If a large percent of the refuse is of this carbon material, the result would be an insignificant loss of 1 square mile of hunting ground for most raptors nesting in the nearby Book Cliffs and Big Salt Creek. Also, coyotes and badgers would have little use for the area until the vegetation recovered. Again, this would be an insignificant loss.

The refuse piles would be shaped to resemble the local topography and no obstacle to deer and pronghorn passage is expected. Approximately 50 acres of juniper woodland would be destroyed if the landfills are not designed to avoid it. In pinyon-juniper country this is not much, but it is a significant portion of the woodland at the base of the Book Cliffs. The present human activity reduces the value of the woodland to desert-venturing deer and elk. Cottontail rabbits are the most conspicuous herbivores that have an affinity to the juniper cover type. Several of the bird species that were found here also depend upon juniper cover.

The sides of sediment ponds are to be sloped on more than 2:1 ratio. This would be enough to eliminate most of the drowning hazard to small mammals and birds. Slopes that are 20 pecent (5:1) or less have the opportunity of growing beneficial shoreline vegetation. No water would be taken from Big Salt Wash above Highline Canal, thus impacts to this riparian zone are limited to the effects of increased human population in the area and to the railroad crossings discussed under transportation impacts.

The population of most wildlife species could significantly decline because of the large increases in human populations.

The proposed action could divide the western and eastern ends of the desert range for antelope. This could cause a very slight decline in populations.

Utility Corridors

The pipeline and powerlines over public land would be a minimum of 6 miles in length. Routes can be flagged avoiding active prairie dog and burrowing owl den areas. Following rehabilitation the corridors would likely be colonized by these animals in preference to adjacent areas. The power poles would be used to the benefit of golden eagles, prairie falcons, ravens, horned and long-eared owls. Simple designs providing safety from electrocution to these birds are available.

Employee Transportation

The increase of vehicle traffic poses a major threat to wildlife; however, busing of up to 450 employees primarily over three short periods in the day would dramatically reduce potential impacts to wildlife by reducing the frequency of vehicular passage, and thus decreasing disturbance and harm to animals.

An average daily traffic count of 88 means on an average a vehicle theoretically passes over the road every 15.5 minutes. This is much less frequent than on Douglas Pass Road, but the events are more regular and would affect the movement of wild ungulates, particularly pronghorns. Yet, it is not believed their movements would be prevented.

Threatened and Endangered Species

The U. S. Fish and Wildlife Service has determined that the proposal would not affect the bald eagle the only endangered or threatened species that was thought to have the most significance to the lease area (see appendix 2).

Other Leasing Alternatives--Wildlife

Lease One Tract (C-0127833)

The impacts to wildlife from leasing only one PRLA would be the same kind as from the preferred alternative. The intensity beyond 3 years of these impacts would be close to a third that of the first alternative. The important advantage to wildlife offered by this alternative is in the period of human activity. The principal activity would occur during the daylight hours, providing the night for the majority of sensitive species to move about undisturbed.

Lease Two Tracts (C-0127832, 33)

The impacts to wildlife from leasing tracts C-0127832 and 33 would be the same as the preferred alternative. The intensity beyond 3 years of these impacts would be close to two-thirds that of the first alternative. It is doubtful the absence or sharp diminution of traffic during the graveyard shift would be useful to many forms of wildlife.

Lease Two Tracts (C-0127833, 34)

The impacts to wildlife from leasing tracts C-0127833 and 34 would be the same as preferred alternative. The intensity beyond 3 years of these impacts would be approximately two-thirds that of the first alternative.

CULTURAL RESOURCES

Cultural resources include both historic and prehistoric values.

Laws, policies, and procedures pertaining to federal responsibilities and the management of cultural resources are given in appendix 3.

A statistical method of predicting the number of possible sites was applied to the leasing alternatives. This method is shown in appendix 3. A summary of this analysis is shown below.

Lease Tract	Route	Possible Number of Sites
33, 34	A	36
33, 34	B	36
32, 34	A	34
32, 34	B	34
33	A	19
33	B	19

When considered on a regional level, the impacts to cultural resources would be minimal. Mitigation procedures pertaining to Federal Coal Management and established in a Programmatic Memorandum of Agreement between BLM, OSM, U.S. Geological Survey, and the Advisory Council on Historic Preservation would help diminish adverse impacts. Estimates project from 19 to 36 cultural resource sites exist in the proposed impact area. However, mitigation procedures will reduce the impact to a moderate level.

All procedures detailed in the "Programmatic Memorandum of Agreement among the Department of the Interior, Bureau of Land Management, Office of Surface Mining Reclamation and Enforcement, and U.S. Geological Survey, and The Advisory Council on Historic Preservation regarding the Federal Coal Management Program" will be followed (see attachment 1 to appendix 1).

Two cultural resource examinations have been performed in conjunction with proposed coal mining in this general area. The first was the "Final Report West Central Colorado Coal Leases" prepared by Archaeologist Associates of Boulder, Colorado in 1979. The second, more specific examination was the "Cultural Resources Inventory Report of the Dorchester-Colomine Coal Company Fruita Project and Haulage Route," performed in 1979 by the Grand River Institute of Grand Junction, Colorado.

The examination by Grand River Institute covered an estimated 510 acres and led to the conclusion that no cultural resources eligible for inclusion to the

National Register of Historic Places are located in the immediate mining area or on the proposed 18 Road realignments.

Refuse and Soil Disposal Procedures

Portions of the proposed refuse area were examined and are considered devoid of cultural resources eligible for inclusion to the National Register of Historic Places. The remaining area will be examined before mining begins.

Utility Corridor

The utility corridor was examined and is considered devoid of cultural resources eligible for inclusion to the National Register of Historic Places.

PALEONTOLOGICAL RESOURCES

No estimate can be made regarding possible impacts from mining to paleontological resources because no actual mining has occurred in the proposed lease areas nor has there been an examination for paleontological resources.

Proposed Paleontological Mitigating Procedures

All proposed impact areas will be examined where applicable for paleontological resources.

Mitigation procedures, evaluations, and recommendations concerning paleontological resources will be sought from a professional paleontologist.

VISUAL RESOURCES

The visual impacts derived from the various leasing alternatives would be related primarily to the deposition of waste material. The dark-hued material would be a significant color contrast from the light grays, tans, and reds dominating the Book Cliffs. Shadow patterns, the use of topsoil overburden, and light-hued mulches would diminish this contrast. Initially successful revegetation and soil stabilization would make the impact short-term for all lease alternatives.

A second impact, common to all leasing alternatives, would be construction of transmission lines. Mitigation would minimize the extent that this linear modification could be seen, but the structures would still be visible. This addition to the valley floor would further influence the development of an industrial "look" at the Dorchester site, but it would be in character with other proposed facilities.

WILDERNESS

See Wilderness, Affected Environment, section 3.

RECREATION RESOURCES

No significant impacts would occur to recreational resources under any of the leasing alternatives as long as public access is not restricted into the Coal Gulch and Big Salt Wash areas. If the railroad route is within 1 mile of the Highline State Recreation Area, adverse impacts would result from unit trains transporting the coal (See Transportation impacts).

SOCIAL AND ECONOMIC IMPACTS

Dorchester Coal Company estimates that leasing three tracts would enable them to come to a full-production level of 4 million tons annually by the ninth year of operation. They project employment of 53 persons in the first year of operation, gradually increasing to a full-production labor force of 450. It should be noted that the company's employment projections imply a very high level of productivity, almost 9,000 tons per worker annually at full production. Such a rate is far higher than any existing underground operation in the area or any operation considered in the West-Central ES. At a productivity rate similar to those mines, Dorchester Coal Company full-production work force would be greater than 650, or about 45 percent higher. If actual employment were to be at a higher level, impacts associated with employment growth, most notably population and income, would increase by roughly the same percent the actual work force exceeded the level considered here. Construction work at the mine would be performed by permanent mine personnel. It is assumed any work on roads, utilities, and railroad and rail facilities would be done by subcontractor employees already residing in the area.

Population

Assuming the mine were to begin operation in 1982, full production would be reached in 1989. By that time, population growth directly attributed to the mine would be just under 1,000. While the company plans to emphasize the hiring and training of people already living in the area (without advertising, over 250 applications have already been received), this would not greatly reduce resultant immigration. The very low unemployment rate in the county suggests most residents hired by the company would have to be replaced by immigrants.

In addition to direct population growth, increased business activity due to the mining operation would add about 500 more people, bringing the total population impact to about 1,500 new residents. Virtually all of the population increase can be expected to reside in Mesa County. The distribution of the new residents within the county must remain speculative. However, as the mine work force is presumed to have been drawn largely from the labor stock already located in the county, the new population not directly tied to the mine would tend to locate near a variety of workplaces, and the company has indicated that it would provide bus service to the mine from several locations. There is a high probability, however, that perhaps as much as a third of the new population would locate in or near Fruita.

The projected population growth associated with this mine would not of itself have a significant adverse effect on Mesa County's economic and social well-being or on the availability of community facilities and housing. Fifteen hundred people would represent about 1.5 percent of Mesa County's projected 1990 population of 101,000 or slightly more than 5 percent of the growth projected for the next 10 years. However, this mine is in addition to seven others in or near Mesa County that have been granted new or extended leases (ARCO, 2 GEX, 2 Midcontinental Coal, Sheridan, and Colorado-Westmoreland). According to the West-Central Coal ES, six of these mines would account for 26 percent of Mesa County's growth in the next 10 years. The Dorchester Mine would add to that growth and should be viewed in the context of all coal development in the area.

Community Services

The population growth anticipated due to this mine and other coal mines would not create demand for water and sewage treatment beyond the systems' capacities, assuming facility upgrading and construction projects underway and planned are completed. Similarly, planned expansion of health care facilities, if carried through, would be adequate for projected growth. Police and fire protection services in the future would appear to be adequate to the extent communities are able and willing to finance expanded payrolls. The need for and financing of expanded detention facilities is being discussed now. Any population growth would intensify the need. The next 10 years could see a growth in the student population of 7,000 (400 attributable to the Dorchester mine), placing the current school facilities at 150 percent of capacity. Even with the recently passed bond issue, District 51 is the system most likely to be adversely affected by population growth.

Housing

Projected growth would require over 10,000 new residential units by 1990, of which 600 would be directly and indirectly attributable to the Dorchester mine. The rate of construction required to achieve this is comparable to that which occurred in Mesa County during the last 4 years and thus clearly within the capacity of the local building industry if the demand and financing materialize. If recent trends continue, new housing would consist of 5,400 single-family residences, 2,200 multiple-family units, and 3,200 mobile homes. The coal mine work force would have annual incomes such that many of the employees would be capable of buying single family residences.

Community Attitudes

Growth associated with this mine, and with other anticipated mines in the area, would appear to be within the range of that which current area residents expect to occur. The general benefits, in terms of jobs, increased income, and public revenues, would do much to offset the general disadvantages associated with growth. However, this mine would probably be the largest single development project to be located in Mesa County and there might be limited adverse reaction to some aspects of the mining operation. This would be the case particularly with regard to the 2 to 3 years of truck traffic on

18 and 19 Roads contemplated by the company. Truck traffic could reach the point where a truck passed a home on the route every 2 to 4 minutes, 16 hours a day, 5 days a week. This amount of traffic would create noise, dust, and increase the risk of accidents, and those living on the route would be likely to object.

The Local Economy

At full production, the mine would be marketing about 64 million dollars of coal a year (3.2 million processed tons at $20.00 per ton). This would generate additional business activity within the region (primarily Mesa County) of about 85 million dollars for a total business impact of about 150 million dollars. The increased business activity is the source of the additional employment and population discussed above and of a total additional annual income of 17 million dollars, equal to 5 percent of Mesa County's current estimated income from wages and salaries. The miners themselves would earn an average of $22,000 a year (in 1980 dollars, at $10.50 an hour), nearly double the current average Mesa County salary of $12,000. This kind of disparity would serve to marginally drive up both wages and prices and as the Dorchester mine contributes to local coal development so too it would contribute to higher wages and prices (see table 9).

Public Finance

Severance Tax. Coal from underground mines in Colorado is subject to a severance tax. At the current rate of 36 cents per ton of processed coal, the annual full production level of processed coal, 3.2 million tons, would require payment of $1.1 million annually. Fifteen percent of this amount, $171,000 a year, would be distributed to Mesa County and incorporated places within the county, based on the listed residence of mine employees. The remaining 85 percent, $971,000 annually, would go into the State's Energy Impact Assistance Fund, that provides project grants to communities impacted by energy development and for which grants jurisdictions in the area would be eligible.

Mineral Lease Royalties. Assuming Dorchester pays an 8 percent royalty to BLM on the market value of mined coal, and assuming a $20 per ton market price on 3.2 million tons of processed coal, the company would make an annual payment of $5.12 million to BLM. Half of that amount would go into the U.S. Treasury and the other half to the State of Colorado. Fifty percent of what the State received in mineral royalty payments is to return to the county of origin except that the amount a county receives in any one year may not exceed $200,000. Any excess goes into the State's Public School Fund. As it appears Mesa County is already receiving $200,000 from other lease royalties, none of Dorchester's royalty payment would return directly to Mesa County. Jurisdictions in the county would, however, receive some benefit from their 15 percent of the State's share of royalties which goes into the Energy Impact Assistance Fund.

Property Taxes. The mine would be liable for property taxes on the mined coal, depleted acres, equipment and furnishings, and on the railroad. Annual property taxes would amount to about 1.4 million dollars to be distributed to

TABLE 9

ECONOMIC IMPACTS UNDER THREE LEASING ALTERNATIVES 1/

	Leasing Alternatives		
	Three Tracts	Two Tracts	One Tract
Year of full production 2/	1989	1987	1985
Full-production level (1,000 tons)	4,000	2,800	1,500
Value of production (mil.$) 3/	64.0	44.8	24.0
Total business activity (mil.$)	147.2	103.0	55.2
Employment: 4/			
Direct	450	350	200
Total	684	532	304
Income (1,000 $): 4/			
Direct	9,828	7,644	4,368
Total	16,702	12,990	7,423
Population: 4/			
Direct	977	760	434
Total	1,485	1,155	660
Public revenue (1,000 $):			
Local	2,069	1,563	1,079
Total	8,475	6,069	3,498

1/ Employment and population levels projected to occur at time, or shortly after, full production is reached. All dollar projections are annual figures.

2/ Assumes operation would begin in 1982 and proceed according to schedule provided by Dorchester-Colomine.

3/ Processed coal equal to 80 percent of mined coal; sale price of $20.00/ton.

4/ As indicated in the narrative actual employment might be 40 percent, or more, greater than that which was considered here. In that case, impacts associated with employment growth, most notably population and income, would increase by roughly the same percent that the work force increased.

Mesa County, School District 51, and Ute Water Conservation District. It should be noted that two of the major taxable items are the mined coal and the mining equipment and that as the mining activity moves into Garfield County (the county line roughly bisects the three tracts), the portion of mining activity occurring in Garfield County would cause some tax revenues to be diverted to Garfield County.

Housing for the new population associated with the mine would add an additional 350,000 dollars a year to property tax revenue.

Sales Tax. Assuming unchanged spending patterns and no changes in the tax rates, sales tax receipts to the state would increase by about $315,000 annually, and local receipts would increase by about $185,000 annually (see table 10).

Other Leasing Alternatives--Social and Economic

Lease of Two Tracts

The company projects annual production of 2.8 million tons with the lease of two tracts and a permanent work force of 350. Impacts on the community and on the local economy would diminish in roughly the same proportion that the full-production level of operation would. However, the decline in production, 30 percent, relative to the decline in work force, 22 percent, suggests the degree to which productivity would be affected. Efficiency would also be reduced as the physical plant and equipment needs of the mine would not be reduced as greatly as production. While lower rates of productivity and efficiency mean higher per ton production costs to Dorchester Coal Company, and hence a less competitive product, they also generally mean an increased public revenue yield per ton of mined coal. Property tax and sales tax receipts would not decline as much as the level of production.

Lease of One Tract

Under this alternative, the company projects annual production of 1.5 million tons, 63 percent less than the three-tract alternative, and a permanent work force of 200, only 45 percent less. Productivity is also reduced under this alternative. According to company projections, plant and equipment use would become extremely inefficient. The ratio of capital costs to the annual market value of the coal would rise from about .9 under the company proposal to about 1.6. Under this alternative, the mined coal would still be more costly and less competitive. Public revenue yield per ton would of course be higher.

Summary

The proposed mine, although a large underground mine by westen Colorado standards, would not have any significantly adverse social or economic impacts. The county's population base is sufficiently large to absorb the impacts. This should be the case even if the actual work force were to exceed the employment level considered by 40 to 50 percent. Despite the recent passage of a 23.5 million dollar bond issue, School District 51 will probably continue to be under stress in the mid to late 1980s unless further funding is

TABLE 10

STATE AND LOCAL REVENUE GENERATED ANNUALLY BY DORCHESTER COAL MINE AT FULL PRODUCTION ($1,000, 1980 DOLLARS)

	Severance Tax	Royalty Payments	Property Tax	Sales Tax	Total
Company and/or employee liability	1,142	5,120	1,713	500	8,475
State revenue		2,176		315	2,491
Energy Impact Assistance Fund	971	384			1,355
Local revenue	171		1,713	185	2,069*

*The major part of this total is made up of property taxes on coal and equipment. After 5 or 6 year revenues will begin going to Garfield as well as Mesa County; perhaps as much as 20 percent of the total could flow to Garfield County.

made available. If the school system is operating beyond capacity at that time, the proposed mining operation would be only one of many factors contributing to that situation. There is potential for temporary adverse local reaction by those who live near or use the truck route. The public revenue benefits of the mine would be considerable but would be widely dispersed. If a lease is approved, the three tract leases would appear to be the more productive and more efficient. While the per ton revenue yield is not as high, the marketed coal could be more competitively priced.

LAND USE

Impacts on land use for the mine site and surface facilities would be temporary in nature. The acres involved in the spoils disposal would affect limited grazing and wildlife land use but would be under a constant state of rehabilitation and not all of the acreage would be out of production at one time (see vegetation and soils, section 4). The construction of a storage pond would change the land use on approximately 3 acres for the life of the project.

Other Leasing Alternative

The impacts on land use would be the same as above except that the size of the spoils disposal would vary.

Utilities Corridor

Land use on approximately 67 acres of limited grazing/wildlife habitat land would be temporarily changed during construction of the utility lines but would be returned to nearly normal as the land is revegetated.

NOISE

Noise would increase at the proposed mine site. The noise level would be approximately 66 dB at 500 feet; noise levels at the lease boundary would be 60 dB or less. There are no residences within approximately 2-1/3 miles of the mine; however impacts might affect animals in the area but would be insignificant.

IMPACTS--TRANSPORTATION ROUTES AND METHODS

Of the three routes originally submitted by Dorchester only routes A and B--using trucks and unit train--are analyzed for this assessment. Route C is evaluated in some instances for comparative purposes, but is not considered a feasible route for long-term trucking or conveyor belt because of economical constraints and high maintenance requirements.

Currently, the preferred route would follow route B using trucks for 2 or 3 years, then follow route A utilizing unit trains.

Some resources identify impacts only by route designation. However, if the method of transportation changes the degree or significance of the impacts. Impacts are also described for each method.

SOILS

The proposed transportation routes and methods are discussed in section 2 under the Preferred Alternative; routes are also displayed on map 5, in section 2.

Impacts to soils would occur using any of the transportation routes. These impacts would be more significant than those impacts from the mining operations, primarily because more area would be be disturbed.

Where disturbance occurs, such as grading, leveling, and stockpiling, soil properties would be altered. Soil structure would be adversely affected; this in turn, would decrease infiltration and permeability rates. With a reduction in ground cover, soil erosion would increase.

Soil loss would occur from the disturbance along each alternative transportation route. The amount of erosion would depend upon the amount of disturbance (areal extent and kind) and the same time required for successful rehabilitation.

Table 11 shows the soil erosion hazard classes for each alternative.

Forty-nine percent of the area that route A encompasses is characterized of slight to moderate erosion hazards; route B, 92 percent. Thus, route B would be best in terms of minimizing erosion hazards.

Table 12 displays minimum soil loss, by soil mapping unit, anticipated after the first year following disturbance. Note that this is the minimum soil loss expected; actual soil loss could be more than four times this minimum amount. Factors which could contribute to larger soil losses include steeper slopes and wider disturbance widths than those assumptions given in table 13. The soil loss rates would begin to decrease after the first year due to increased ground cover and would continue (providing successful rehabilitation is attained in several years, the soil loss rates should not significantly affect the productivity of the soil) to decrease with time until successful revegetation is accomplished.

TABLE 11
SOIL EROSION HAZARD CLASSES

Erosion Hazard Classes	Using Rail, Truck, or Convevor					
	Route A		Route C		Route B	
	Miles	Percent	Miles	Percent	Miles	Percent
Slight	3.3	19	2.7	16	4.9	33
Slight to Moderate	1.7	10	1.3	8	-	-
Moderate	3.4	20	4.9	29	8.6	59
Moderate to High	0.8	4	0.8	5	-	-
High	1.7	10	2.9	17	0.7	5
Very High	6.3	37	4.2	25	0.5	3

TABLE 12

MINIMUM SOIL LOSS ANTICIPATED AFTER FIRST YEAR FOLLOWING OISTURBANCE (Tons/YEAR)*

Soil Mapping Unit	Train			Truck			Conveyor Belt		
	Route A	Route B	Route C	Route A	Route B	Route C	Route A	Route B	Route C
ArC	2.4	1.9	2.3	5.0	3.9	4.9	0.6	0.4	0.6
Ba	6.0	0.5	6.2	12.6	1.0	12.9	1.4	0.1	1.4
Bs	1.9	-	1.3	3.9	-	2.8	0.4	-	0.3
FaC	0.6	-	0.6	1.3	-	1.3	0.2	-	0.2
PeD	2.0	-	3.1	4.1	-	6.4	0.5	-	0.7
Yo	-	2.9	0.1	-	6.0	0.3	-	0.7	0.05
Ba	3.6	2.0	2.2	7.6	4.2	4.6	0.9	0.5	0.5
Ca	-	0.1	-	-	0.3	-	-	0.05	-
Cb	0.1	-	0.1	0.3	-	0.3	0.05	-	-
Cc	-	0.6	-	-	1.3	-	-	0.1	-
Cd	-	2.0	0.3	-	4.2	0.7	-	0.5	0.1
Ce	0.3	0.5	0.5	0.7	1.0	1.0	0.1	0.1	0.1
Fa	-	0.1	-	-	0.2	-	-	0.05	-
Fb	-	0.1	-	-	0.2	-	-	0.05	-
Fe	-	-	0.1	-	-	0.3	-	-	0.05
Ff	-	-	0.1	-	-	0.2	-	-	0.05
Fg	-	0.4	0.3	-	0.8	0.6	-	0.1	0.1
Fh	-	0.1	0.4	-	0.3	0.8	-	0.05	0.1
Fn	-	-	0.1	-	-	0.2	-	-	0.05
Fo	-	-	0.1	-	-	0.2	-	-	0.05
Fp	-	0.1	-	-	0.3	-	-	0.05	-
Fs	-	0.1	-	-	0.2	-	-	0.05	-
Ft	0.1	0.3	-	0.2	0.6	-	0.05	0.1	-
Pa	-	-	0.7	-	-	1.6	-	-	0.2
Pb	-	-	0.7	-	-	1.6	-	-	0.2
Ra	-	0.2	0.2	-	0.3	0.3	-	0.05	0.05
Rc	-	0.5	-	-	1.0	-	-	0.1	-
Rd	-	0.1	-	-	0.2	-	-	0.05	-
Re	-	0.4	0.1	-	0.8	0.2	-	0.1	0.05
Rf	-	0.1	-	-	0.3	-	-	0.05	-
Rp	-	0.1	0.1	-	0.3	0.3	-	0.05	0.05
Rs	3.5	0.1	-	7.2	0.3	-	0.8	0.05	-
Total Soil Units of Public Lands	12.9	5.3	13.6	26.9	10.9	18.6	3.1	1.2	3.3
Total Soil Units of Private Lands	7.6	8.7	5.3	16.0	18.4	11.3	1.9	2.4	1.5
Total all soil mapping units	20.5	14.0	18.9	42.9	29.3	39.9	5.0	3.6	4.8

*ASSUMPTIONS:

Disturbance width for railroad alternatives = 35 feet.
Disturbance width for truck alternatives = 60 feet.
Disturbance width for conveyor alternatives = 12 feet.
5 percent ground cover for entire year after disturbance.
Average slope = 1 percent.
The basic erosion rate of the dominant soil in the association was used in soil loss calculations.

TABLE 13

SOIL DISTURBANCE

TRANSPORTATION ROUTES

Soil Survey Area	Soil Mapping Unit Symbol	Soil Name	Route A		Route B		Route C		Acres Disturbed by Soil Unit								
			Miles	% of Route	Miles	% of Route	Miles	% of Route	Train			Truck			Conveyor		
									Rt. A	Rt. B	Rt. C	Rt. A	Rt. B	Rt.C	Rt. A	Rt.B	Rt.C
Mesa County Area	AvC 3-12% slopes	Avalon loam	3.1	18	3.0	18	2.4	16	17.0	1.3	17.4	29.1	2.2	29.8	5.8	0.4	5.9
	Ba	Badland	4.0	23	4.1	24	0.3	2	7.2	--	5.1	12.4	--	8.7	2.5	--	1.7
	8s 0-3% slopes	Billings silty clay loam	1.7	10	1.2	7			3.4	--	3.4	5.8	--	5.8	1.2	--	1.2
	FaC 3-12% slopes	Fruita loam Avalon loam	0.8	5	0.8	5			6.8	--	10.6	11.6	--	18.2	2.3	--	3.6
	PeD 3-25% slopes	Persayo silt loam	1.6	9	2.5	15			--	15.7	0.8	--	26.9	1.5	--	5.4	0.3
	Yo 0-3% slopes	Youngston loam			0.2	1	3.7	25	14.0	7.6	8.5	24.0	13.1	14.5	4.8	2.6	2.9
Grand Junction Area	Bc 0-2% slopes	Billings silty clay loam	3.3	19	2.0	12	1.8	12	--	0.4	--	--	0.7	--	--	0.1	--
	Ca 2-5% slopes	Chipeta shaly loam Persayo shaly loam					0.1	1	0.4	--	0.4	0.7	--	0.7	0.1	--	0.1
	Cb 5-10% slopes	Chipeta shaly loam Persayo shaly loam	0.1	1	0.1	1			--	1.7	--	--	2.9	--	--	0.6	--
	Cc 5-10% slopes	Chipeta silty clay loam Persayo silty clay loam					0.4	3	--	5.5	0.8	--	9.5	1.5	--	1.9	0.3
	Cd 0-2% slopes	Chipeta silty clay loam			0.2	1	1.3	9	0.8	1.3	1.3	1.5	2.2	2.2	0.3	0.4	0.4
	Ce 2-5% slopes	Chipeta silty clay loam	0.2	1	0.3	1	0.3	2	--	0.4	--	--	0.7	--	--	0.1	--
	Fa 5-10% slopes	Fruita gravelly loam Ravola gravelly loam					0.1	1	--	0.4	--	--	0.7	--	--	0.1	--
	Fb 20-40% slopes	Fruita gravelly loam Ravola gravelly loam					0.1	1	--	0.4	--	--	0.7	--	--	0.1	--
	Fe 0-2% slopes	Fruita clay loam			0.2	1			--	--	0.8	--	--	1.5	--	--	0.3
	Ff 2-5% slopes	Fruita clay loam			0.1	1			--	--	0.4	--	--	0.7	--	--	0.1
	Fg 0-2% slopes	Fruita clay loam, moderately deep			0.4	2	0.5	3	--	2.1	1.7	--	3.6	2.9	--	0.7	0.6
	Fh 2-5% slopes	Fruita clay loam, moderately deep			0.5	3	0.2	1	--	0.8	2.1	--	1.5	3.6	--	0.3	0.7

conts....

TABLE 13 (continued)

SOIL DISTURBANCE

TRANSPORTATION ROUTES

Soil Survey Area	Soil Mapping Unit Symbol	Soil Name	Route A		Route B		Route C		Acres Disturbed by Soil Unit								
									Train			Truck			Conveyor		
			Miles	% of Route	Miles	% of Route	Miles	% of Route	Rt. A	Rt. B	Rt. C	Rt. A	Rt. B	Rt.C	Rt. A	Rt.B	Rt.C
	Fn 2-5% slopes	Fruita gravelly clay loam, moderately deep			0.1	1			--	--	0.4	--	--	0.7	--	--	0.1
	Fo 5-10% slopes	Fruita gravelly clay loam, moderately deep			0.1	1			--	--	0.4	--	--	0.7	--	--	0.1
	Fp 0-2% slopes	Fruita very fine sandy loam					0.2	1	--	0.8	--	--	1.5	--	--	0.3	--
	Fs 0-2% slopes	Fruita very fine sandy loam, moderately deep					0.1	1	--	0.4	--	--	0.7	--	--	0.1	--
	Ft 2-5% slopes	Fruita very fine sandy loam, moderately deep	0.1	1			0.4	3	0.4	1.7	--	0.7	2.9	--	0.1	0.6	--
	Pa 0-2% slopes	Persayo silty clay loam			0.6	3			--	--	2.5	--	--	4.4	--	--	0.9
		Chipeta silty clay loam															
	Pb 2-5% slopes	Persayo silty clay loam			0.2	1	0.2	1	--	0.8	0.8	--	1.5	1.5	--	0.3	0.3
		Chipeta silty clay loam															
	Ra 0-2% slopes	Ravola clay loam					1.0	7	--	4.2	--	--	7.3	--	--	1.5	--
	Rc 0-2% slopes	Ravola fine sandy loam					0.6	4	--	2.5	--	--	4.4	--	--	0.9	--
	Rd 2-5% slopes	Ravola fine sandy loam					0.1	1	--	0.4	--	--	0.7	--	--	0.1	--
	Re 0-2% slopes	Ravola loam			0.1	1	0.5	3	--	2.1	0.4	--	3.6	0.7	--	0.7	0.1
	Rf 0-2% slopes	Ravola very fine sandy loam					0.2	1	--	0.8	--	--	1.5	--	--	0.3	--
	Rp	Rough broken land Chipeta and Persayo soil materials			0.1	1	0.1	1	--	0.4	0.4	--	0.7	0.7	--	0.1	0.1
	Rs	Rough broken land	2.3	13			0.1	1	9.8	0.4	--	16.7	0.7	--	3.3	0.1	--

Anticipated soil disturbance for each transportation route is displayed in table 13 and figure 1. The route using conveyor systems clearly yield the smallest increase in soil loss, railroads follow, and trucking would yield the largest increase in soil loss. In addition, the route to Fruita has the smallest increase in soil loss. Route A to Mack would show the greatest increase in soil loss.

Table 14 shows the revegetation potential of soils for each route.

From table 14, route B would clearly provide the best soils for revegetation, the soils for the other alternatives are essentially the same. Factors contributing to a "poor" soil rating for revegetation include fine textured soil textures, shallow root zones, low available water capacities of soils, and low annual precipitation of the area.

WATER RESOURCES

Route A

Impacts to water resources along this route would include short-term salinity and sediment increases during construction, possible drainage modification, and consumptive water use. The initial 7.5 miles (45%) of the alignment from the mine portal would cross 10 to 15 ephemeral drainages. Sediment and salinity increases would be anticipated from construction disturbance in the channels, especially during the first runoff event. Following rehabilitation, sediment and salinity production would approach preconstruction levels. Drainage modification would occur if no culverts or undersized culverts, are installed at the crossings. During significant runoff events, the integrity of the transportation system would be tested, possibly resulting in failure. A failure would increase salinity and sediment production. Improper culvert installation could change the channel equilibrium causing an aggrading or degrading action. Erosion or deposition would occur until a new base level was established in the channel.

Approximately 3.6 miles (20%) of the route parallels an intermittent stream channel tributary to East Salt Wash. The remaining 6.1 miles (35%) of the route parallels the perennial East Salt Wash channel. Construction activities within the watershed could introduce sediment to the stream and increase dissolved solid levels degrading water quality. Sediment and salinity increases would be minor and short-term. Water would be used for dust control during construction and during hauling operations if the coal is trucked. The amount of water used by Dorchester would decrease correspondingly the amount available to downstream users. Of the three route alternatives, route A would require the most water for dust control.

Route B

Impacts to hydrologic resources along this route would be minimal since the entire alignment is on or parallels existing roads. Minor straightening and widening would be proposed on the 6.2 mile gravel portion resulting in localized short-term sediment and salinity increases. Following rehabilitation, these increases would approach preconstruction levels. Water would be used

ANTICIPATED SOIL LOSS (FIRST YEAR)

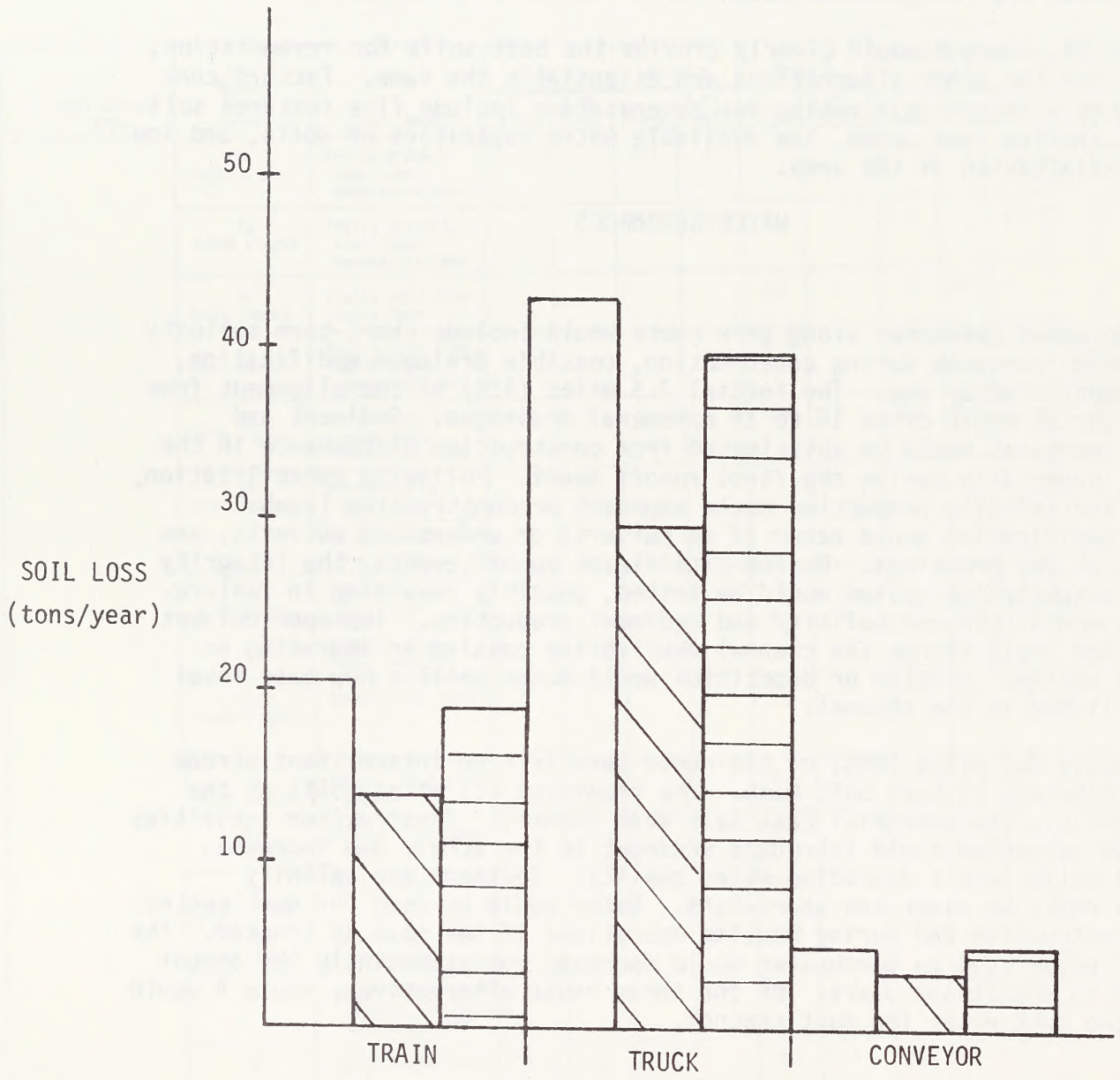


Figure 1 -- TRANSPORTATION SYSTEMS

□ — Transportation Route to Mack (Route A)
▨ — Transportation Route to Fruita (Route B)
▤ — Transportation Route to Loma(Route C)

TABLE 14

REVEGETATION POTENTIAL

Classes	Using Rail or Truck			
	Route A		Route B	
	Miles	Percent	Miles	Percent
Good	--	--	--	--
Fair to good	0.1	1	3.8	26
Fair	8.9	52	8.0	54
Poor to fair	1.6	9	--	--
Poor	6.6	38	2.9	20

for dust control during the construction phase and during haulage operations if trucks are used. Water requirements for dust control along this route would be the least of the three route alternatives. The amount of water used by Dorchester would correspondingly decrease the amount available to downstream users. Drainage modification and improper culvert installation impacts would be similar to route A.

VEGETATION

A 100-foot right-of-way will be fenced preventing grazing on the entire length of the right-of-way. The area inside the fence would be lost to grazing for the life of the project; however fencing would prevent possible collision with animals.

Route A--Railroad

Route A traverses approximately 7.25 miles on public land crossing pinyon-juniper, saltbush, greasewood, and grassland vegetation types. Railroad construction disturbance would be assumed to average 35 feet in width; approximately 31 acres of vegetation after construction is completed. The remaining 19 acres would be out of production for the life of the project.

Grazing would be impacted by a reduction in animal unit months and a change in grazing patterns caused by fencing. Approximately 9 animal unit months would be lost from grazing. In addition route A would divide pastures in the following grazing allotments: Little Saltwash, Big Salt Wash, Garr Mesa, and East Salt Creek. Construction of under passes in the various allotments should reduce the impact to the rancher and allow access to both sides of the right-of-way.

Route A--Truck

Long-term truck transport would have the same impacts as train transport, with the following exceptions. The vegetation disturbance would be greater; approximately 53 acres of vegetation would be disturbed during construction activities. Of the initial disturbance, 21 acres would be rehabilitated and 32 acres would remain out of production for the life of the project.

Route B--Railroad

Route B traverses approximately 5.5 miles of public land, and would disturb pinyon-juniper and grassland vegetation types. The disturbance is expected to average 35 feet in width with a total disturbance of approximately 23 acres. About 9 acres would be revegetated upon completion of construction and the remaining 14 acres would be out of production for the life of the project.

Grazing would be impacted by a reduction in animal unit months and a change in grazing patterns due to fencing. Approximately 5 animal unit months would be lost from grazing. Route B would divide the upper pasture of Little Salt Wash allotment. Placement or underpasses would allow access to all areas of the pasture and reduce impact to the rancher.

Route B--Truck

This route using trucks for mine life would have little impact on vegetation as the road is in place and would require only minor realignment. This route would disturb 40 acres of public land during the initial construction phase. Sixteen acres would be revegetated after construction is completed. The remaining 24 acres would be out of production for the life of the project.

Comparison

The preferred method of transport from the point of view of vegetation disturbance and grazing allotment impacts would be the use of trucks for the life of the mine. However, with mitigation, revegetation, and underpass construction, there is no significant advantage or disadvantage to any transportation method or route.

Adverse impacts which cannot be avoided would be the loss of vegetation for life of the project, loss of vegetation during construction, and loss of animal unit months, causing a slight change in grazing patterns (see table 15).

Table 15

VEGETATION DISTURBANCE

	Total Acres Disturbed	Total Acres Lost	Total AUMs Lost/Per Year
Route A			
Railroad	31	87	9
Truck	53	87	9
Route B			
Railroad	23	67	5
Truck	40	Unknown	1

WILDLIFE

Route A

Route A presents considerably more disturbance to wildlife than do the other two routes. Seven and two-thirds miles of this route follows that of route C. Within a mile of the proposed right-of-way along this section are prairie dog towns with a den count of 968 (MAPCO EIS). These are the healthiest colonies

in the valley. The amount of destruction or diminished value to the prairie dog towns would depend upon the care taken in designing the route. Prairie dog towns have a value beyond the aesthetic and shooting sports they provide. They are the food base for badgers and large diurnal raptors. Prairie dog populations are relatively stable when unmolested by man and can help to divert the coyote pressure on sheep. The dens are inhabited by burrowing owls, and according to earlier management decisions, are to be maintained for existing dog towns as potential reintroduction sites for the black-footed ferret, one of the two most endangered mammal species in North America.

Where the proposed right-of-way crosses Big Salt Wash, long-eared owls are nesting. An active golden eagle tree nest is about a mile to the south. The final right-of-way design over Big Salt Wash, as elsewhere, should be derived with the services of a Bureau wildlife biologist.

West of Highway 139 route A passes through or adjacent to a prairie dog town of 270 dens, and then enters East Salt Creek. The largest wildlife concern using route A is in East Salt Creek. This route could consume 30 percent of the greasewood/riparian vegetation along the creek and reduce the value of the remainder. It would encourage the Sheridan Enterprises line to come down East Salt Creek from the Book Cliffs. The creek provides a cover corridor across the desert for deer, elk, and on occasion, even bear. Desert dwelling fauna water here. Some birds, such as Bullocks' orioles and mockingbirds, nest here and forage in the desert. This vegetation type in Grand Valley is an important link in the survival of pheasants and Gambels quail. A section 404 permit from the U.S. Army Corps of Engineers appears required for the East Salt Creek crossing.

Route B

Route B presents the least disturbance to wildlife of the three routes. It is the shortest and involves the least public land. Within a mile of the right-of-way are prairie dog towns with 1,020 dens counted. Disturbance to these is apparently avoidable. East Branch south of Highline Canal contains valuable riparian vegetation. Crossing East Branch may require a Corps of Engineers 404 permit. If this route keeps on or close to the existing road, it would represent not new, but increasd traffic disturbance.

Railroad

From a wildlife standpoint, a railroad would be the preferred means of product transport by any route chosen. The infrequency of traffic events (one per day) and the relative constancy of train speed favor least disturbance.

Construction activity for the railroad would, however, be more disturbing to all forms of wildlife than the actual operation of trains. A railroad would diminish the overall traffic disturbance to wildlife even when comparing year three with maximum production years.

Route B and a bit more than half of route C follow existing roads. A railroad would require more acreage to be removed from vegetation production. It would affect resident small mammals and prairie dog towns along both routes.

Conversely, a railroad bed through cropland would benefit burrowing mammals perhaps to the detriment of crops outside the right-of-way. If the railroad right-of-way is fenced a new attitude toward the railroad is created. A fence plus a scare device, i.e., train, equals a negative synergistic effect upon ungulates. A fence normally negotiable would often snag panic struck animals.

Truck

At maximum production the average daily traffic count due to full-time trucking would be 1,200. That is, every 1.2 minutes a truck theoretically passes any point along the route 24 hours a day. It is believed this much traffic day and night would be an effective barrier to deer, elk, and pronghorn; and a hazard to other wildlife from both collisions and shooting.

At the mining rate of 1.4 million tons per year, hauling one shift a day, trucking would be the preferred method of product transport, but only if route B is followed.

CULTURAL RESOURCES

General data concerning cultural resources in the proposed lease areas are adequately documented in the Final Report, West-Central Colorado Coal Leases, prepared in 1979 by Archaeological Associates, Inc. of Boulder, Colorado; the Cultural Resources Inventory Report of the Dorchester-Colomine Coal Company Fruita Project and Haulage Route prepared in 1979 by the Grand River Institute of Grand Junction, Colorado; and a recent study west of the lease area, MAPCO's Rocky Mountain Liquid Hydrocarbons Pipeline, prepared in 1980 by the Bureau of Land Management. The applicable laws, regulations, and policies concerning cultural resource protection are contained in appendix 3.

Cultural resources in or adjacent to the proposed areas and routes are described below. Forty-seven cultural resource sites are known to exist within a 3-mile wide corridor and/or buffer zone along the proposed transportation routes and proposed lease areas (see table 8, section 3 and appendix 3).

These sites reflect a broad pattern of prehistoric trade networks, migration patterns, and land use.

Eighteen Road, proposed for realignment, has been examined for cultural resources. No cultural resources were recorded; none of the other proposed routes were examined.

All proposed methods for transporting the coal (railroad, truck, and conveyor belt) are considered to be equal in their potential for impacts to cultural resources (see map 5, section 2).

The cultural resource impacts from the proposed transportation routes however are not equal. Potential impacts include parts (a), (b), and (c) of 36 CFR 800.9:

(a) Destruction or alteration of all or part of a property
(b) Isolation or alteration of its surrounding environment
(c) Introduction of visual audible or atmospheric elements that are out of character with the property or alter its setting.

Route B (from the mine to Fruita on 18 Road and Dry Gulch) was examined and no National Register Properties or potentially eligible properties were recorded. The probability of finding significant cultural resource sites within that proposed corridor is considered lower than the other two proposed corridors(see appendix 3 for methodology).

Route A (from the mine to Mack via Salt Creek) was not field examined. The probability of finding cultural resource sites within this proposed route is known to be higher than within the route B via 18 road and is also considered to be higher than route C utilizing the Douglas Pass Road. More land is involved for route A and the utilization of East Salt Creek and the crossing of Big Salt Wash would increase the probability of encountering more cultural resource sites.

VISUAL RESOURCES

The potential development of coal transportation routes is analyzed in two formats: truck and utilization and as a railroad corridor for future use. The former evaluation uses a 300-round trips per day assumption for 28-ton haul trucks; the railroad utilization assumes 200 trips per year for 2 million tons carried by a 100-unit train and the development of tracks next the initial haul route.

Route A

Route A (17.2 miles) avoids any population centers and crosses about 10 miles of the northern VRM Clas III landscape prior to turning south across the lower VRM Class IV zone. Scenic quality for the two zones are respectively "B" and "C" and each is catagorized as having moderate sensitivity (see appendix 4 for VRM classification description). The development of a linear road or railroad modification requires leveling a bed surface so that cut and fill excavations are necessary. Depending upon the size of these alterations, determined by a center line profile, impacts could be significant. Landform alterations and descriptive ground surface textures would, therefore, attract attention and become local elements. This type of change, however, could be a short-term (5 to 10 years) intrusion if the original design and post-construction revegetation are adequately implemented. The lack of vegetation in that part of the valley and the uniform soil color would help reduce those potential color contrasts that could draw attention to the cuts and fills. A "low-profile" design with minimal earth work would be necessary for this alteration to meet VRM Class III objectives; the Class IV landscape would allow more contrast, but it would still have to borrow form, line, color and texture from the surrounding area.

A detailed analysis of the preferred centerline will be conducted using the Visual Contrast Rating system prior to construction. This evaluation allows specific problem and contrast identification and will be assessed using VRM class stipulations.

The alignment of a road surface would create a dark, smooth-surfaced modification viewed from many angles. The movement of 28-ton haul trucks for an approximate 300 trips per day would further emphasize the presence of the road; increase noise, dust, and safety problems; and would influence the visual appraisal of the road. The combination of traffic and construction modifications would not meet Class III objectives, Class IV objectives would be compromised by the route A development.

The termination of route A by Interstate 70 and the resultant location of the loadout facility would create a new, industrial modification next to that travel corridor. This location is removed from local residences, but would influence the transient viewers' impression of the valley. The loadout facility would be unable to repeat lines, textures and colors unique to the site and, therefore, could not meet VRM Class IV objectives.

Route A--Railroad

The use of this route for a railroad assumes the alignment would be used strictly for the railbed, and trucks would be used on an alternate route during the rail construction period. The surface descriptions for putting the bed foundation on grade would include cut and fill slopes and other general grading. These modifications would specifically be detailed in the engineering phase but would probably be unable to meet the VRM Class III objectives, especially in the short-term, postconstruction phase. Revegetation and design mitigation could reduce visual impact during this period and successful rehabilitation would make the land disturbances less obvious.

The rail alignment would remain as a focal element because of parallel fencelines, a potential phone line, and road crossing signs required for safety reasons. The round trips for unit trains would further draw attention to the corridor and would become a major focal point for the viewshed. This change would be acceptable in VRM Class IV landscape, but would disturb the naturalness of VRM Class III.

Route B

This more direct north-south route crosses both the northern VRM Class III landscape and the VRM Class IV area adjacent to Fruita and the Interstate 70 corridor. The existing road surface would be upgraded and new major surface disruptions or additional fencing would be needed. The primary visual impact would be due to the visual and other conflicts/contrasts of locating an industrial land use such as the loadout facility in a commercial/residential area.

Even though the road modification has been essentially completed, the increase in truck traffic would make this feature much more visible. Activity patterns would make the corridor much more dominant in the landscape; this and associated modifications along the road and at the terminal ends would be enough to lower the VRM classes. The loadout facility is lcoated in an urbanized (commercial and residential) area and would establish a major

industrial feature that would be in contrast. Additional planting along the roads would also accentuate this modification and therefore, should be avoided in the open grass landscapes. Heavy trucking would primarily affect the visual quality of the residential neighborhoods classified as VRM Class IV or in the "urban" category; the loadout facility and traffic would degrade the affected areas.

Route B--Railroad

The use of route B for a rail corridor would not be feasible and is not evaluated.

Comparison

Route B is an estalished transportation corridor and would solve the trucking need for an immediate route for hauling the coal. The area north of the Highline Canal is classified as VRM Class III, and impacts would be essentially the development of a visual focal point; i.e., the road corridor and its heavy traffic volume. The combination of the road and the mine development would change the VRM Class III to a localized Class V. The landscape resource in this portion of Grand Valley is not inherently notable by itself, but as an element in a larger visual unit--the valley viewshed--it serves as a foreground for very scenic cliffs. The truck volume would degrade this scenic potential.

The important visual problem with route B would be the incongruity of the loadout facility, the southern five miles of road, and the increased truck traffic conflict with the existing land-use pattern. Relative to the termination points of the other alternative routes, the route B loadout site near Fruita offers the most potential problem for visual conflicts; the loadout facility, truck concentration, and coal storage area are significantly out-of-character with the local urbanizing pattern and the associate public sensitivity.

The route A loadout is the most secluded from the local population and is the most apparent for the Interstate 70 viewing point. It would also have high sensitivity, but the transient public is not as critical as a local population. The route C loadout in Loma is also readily apparent to a local population, but the site is removed from a heavily populated center.

By assuming that route B would not be possible for a rail connection, it leaves the proposed corridor from the mine west to State Highway 139 as a given route. Routes A and C essentially traverse VRM Class III and IV landscapes with equal impact in respect to surface disruption. Specific comparisons between the two corridors would be dependent on comparing center-line alignments and visual contract ratings.

Route A's alignment in agricultural and open range lands would cause more land use disruption but this would be further removed from local traffic corridors. Route C's alignment next to State Highway 139 would parallel a disturbed corridor and be in less contrast to the existing land uses. This corridor would be more visible because of necessary intersections with existing roads

and its proximity to residences along State Highway 139. This latter route would also have more influence on the Highline Lake Recreation area, because of coal and recreation traffic integration.

Route C would expand a local corridor; route A would create a new linear modification/intrusion. Visually, they would have about equal impact with the former being derived from increased sensitivity, and the latter from design contrasts or landscape character conflicts.

RECREATION

Route A

Impacts on recreational uses of public land would occur if access were restricted by any of the methods for transporting the coal. Access primarily needs to be maintained at the places where route A crosses existing roads, including jeep roads. Noise created by coal transportation (either train, conveyor belt, or truck) might occassionally be heard at Highline Lake, Highline State Recreation Area (HSRA) but would be insignificant.

Route B

Accessibility to some of the public land along route B would be restricted if crossings are not provided for either the railroad or conveyor belt.

Route B would also restrict public access but would affect less public land than either route A or C.

Railroad

A railroad would restrict public access if road and jeep trail crossings are not provided. Occassional train noise would be noticeable at HSRA.

Truck

Trucking would have little impact on recreational resources except that truck noise would occassionally be heard at HSRA. However, trucking would cause additional safety concerns and congestion or State Highway 139 to people visiting HSRA.

WILDERNESS

No significant impacts to wilderness resources would occur under any of the routes.

LAND USES

Route A--Train

If a railroad is built, four railroad crossings of existing roads would create potential traffic hazards. No significant prime or unique farmland would be affected. Only one or two residences would be within a quarter mile of the route and would not be impacted.

Route B--Train

One railroad crossing would be required at U.S. Highway 50. Thirty-two acres of prime farmland would be removed from production. Eighteen to twenty-seven acres of potential farmland above the Highline Canal would be destroyed. Thirty-eight residences would be affected by noise and loss of rural atmosphere.

Route A--Truck

Four road crossings would be required with increased traffic hazards. No significant impacts on prime farmland or residences would occur.

Route B--Truck

Significant impacts would occur on public transportation systems from the increase of 50, 28-ton trucks or more per day. No significant impact would occur on prime or unique farmland. Thirty-eight residences would be affected significantly be increased traffic hazards, noise, dust, and loss of rural atmosphere.

TRANSPORTATION AND UTILITIES

Trucking

During the first three years of production, trucking would increase the average daily traffic count on County Roads 18 and 19 by 67. This would represent a 27 percent increase in traffic. This increased average daily traffic count would result in increased: 1) noise (see Noise), 2) air pollution (see Air Quality), 3) animal road kills (see Wildlife), 4) traffic accidents, and 5) maintenance costs. The increase in traffic accidents is unquantifiable but is expected to be less than one accident per year. The cost of the increased road maintenance, approximately $70,000 per year, will be borne by the applicant.

Route B using trucks would have basically the same impacts as discussed in the previous paragraph for the first year of production, Route B would increase average daily traffic count on County Roads 18 and 19 by 22 (9 percent). During the second and third year, this route would use offroad trucking. The route taken by these trucks would intersect County Roads 16, 10, M.8, and R. Also the route would cross State Highway 139. Depending upon the type of traffic control at these intersections, public safety could be impacted. The amount of this impact is unquantifiable, however, it is expected to result in less than 2 accidents per year.

Increased pavement damage would occur at these intersections due to the weight and frequency of the trucks. The amount of damage is unquantifiable; however, it is expected to be significant. Other impacts associated with this alternative would be increased: 1) noise (see Noise), 2) air pollution (see Air Quality), 3) animal road kills (see Wildlife), and 4) vegetative loss (see Vegetation).

Rail

During the fourth year of coal production, route A or B would require the coal to be transported by rail. The new rail spur would connect the mine to the D&RGW railroad west of Mack. The alignment would follow route A (see map 5, section 2). As a result of the new rail spur, 5 new at-grade crossings would be created. These at-grade crossings would be located on County Roads 10, 16, M.8 and R as well as on State Highway 139. Projected hazard ratings would vary from .13 accidents per 5 years on County Road 16 to .89 accidents per 5 years on State Highway 139.

At maximum production, one 100-car unit train per day would be required to transport the coal. This would result in a 3 minute delay in auto traffic at each grade crossing. The increase of 1 train per day on the D&RGW tracks would have no significant impact on the track's carrying capacity. No significant increases in grade crossing hazard ratings along the D&RGW railroad are expected.

Employee Transportation

Employees would be bussed from various park-and-ride areas to the mine over County Road 18. At maximum employment, 3 buses would transport 150 people per shift. Total bus traffic would be eighteen, one-way trip's per day. During the first 3 years only nine, one-way trips would be necessary.

No significant impacts are expected to occur as a result of employee busing. The addition of eighteen trips per day on County Roads 18 and 19 would represent an increase in the average daily traffic count of 7 percent. No increase in traffic accidents and maintenance costs are projected and the carrying capacity of the road would not be significantly altered.

NOISE

General noise levels in the area would remain at approximately 40 dB. However, noise would increase around the two transportation routes as a result of increased truck and train traffic caused by the coal production. Route B truck traffic would increase noise levels by 3 dB. Route A truck traffic would increase noise levels by 2 dB. Route A train traffic would increase noise levels by 1.5 dB.

The increased noise would affect those people who live or work within 500 feet of the transportation routes or those people seeking recreational opportunities near the mine. The impacts associated with noise are: minor physiological reactions; behavioral interference with activities such as speech, sleep, and work; and subjective effects such as annoyance. The increased noise may also affect animals living on or near the tract. Because the increase in noise levels is generally small, the significance of the noise impacts would be low.

NET ENERGY ANALYSIS

A net energy analysis was conducted for the proposed mine. However, because no markets for the coal have been firmly identified, two different analyses were completed for the coal transportation energy requirements. The first one indicates the energy necessary to mine and transport the coal to a nearby coal fired power plant. The second analysis shows the energy necessary to mine and transport the coal to the West coast. (Both of these have been identified by the company as possible market areas).

The analysis quantified the inputs and outputs of energy and materials of the production process. The scope of the study traced all energy, both the coal for end-use and the energy needed to provide end users with coal, back to resources in the ground.

Because specific equipment needs, productivity, and efficiencies are not available at this point, the study assumed a "generic" mine plan. All of the energy inputs were assigned values based on this plan. The analysis was done for the maximum production level and does not include the first years of production.

Tables 16 and 17 indicate the energy produced and consumed for the two potential markets. These tables also indicate the ratio of energy output to energy input.

The first market alternative would produce a net of approximately 8 million Btus of energy per year or the equivalent of 13.8 million barrels of oil. The second market alternative would produce a net of 77 billion Btus of energy per year or the equivalent of 12.7 million barrels of oil.

NO ACTION ALTERNATIVE--IMPACTS

The company would lose the development costs already expended (estimated by Dorchester at 5 million dollars) as the mine would be forced to shut down. Thirty-six jobs currently held by Mesa County residents would also be lost. No significant adverse effects would be encountered unless the denial of the lease application were part of a pattern of actions aimed at discouraging development. Governmental and service jurisdictions are currently incurring large capital debts for facility construction and expansion. Debt service will require population growth and economic expansion if current residents are to avoid significantly larger tax and service fee burden.

TABLE 16

Net Energy Worksheet

Energy Inputs	Amount (in Btus) Per Year	Mine life
1. Mining operation	a. 1.2×10^{10}	b. 4.2×10^{11}
1/2. Product transportation	a. 2.9×10^{12}	b. 1.0×10^{14}
3. Employee transportation	a. 5.4×10^{9}	b. 1.89×10^{11}
4. Infrastructure support	a. 9.3×10^{9}	b. 3.26×10^{11}
5. Total	a. 3.0×10^{12}	b. 1.0×10^{14}
Energy outputs	a. 8.0×10^{13}	b. 2.8×10^{15}
Ratio (output:input)	a. 26.6 : 1	b. 26.6 : 1

1/ Assumes 1,350-mile rail haul.

TABLE 17

NET ENERGY WORKSHEET

Energy Inputs	Amount (in btus) Per Year	Mine life
1. Mining operation	a. 1.2×10^{10}	b. 4.2×10^{11}
1/ 2. Product transportation	a. 6.8×10^{7}	b. 2.38×10^{9}
3. Employee transportation	a. 5.4×10^{9}	b. 1.89×10^{11}
4. Infrastructure support	a. 9.3×10^{9}	b. 3.26×10^{11}
5. Total	a. 2.68×10^{10}	b. 9.3×10^{11}
Energy outputs	a. 8×10^{13}	b. 2.8×10^{15}
Ratio (output:input)	a. 298.5 : 1	b. 298.5 : 1

1/ Assumes 17-mile rail haul.

SUMMARY OF ENVIRONMENTAL CONSEQUENCES

Unavoidable adverse impacts are discussed under environmental consequences; however, following all applicable mitigation measures, the following effects would be unavoidable:

1. Wildlife disturbance would occur during the 40-year mine life.
2. The scenic quality of the mine area would be unavoidably lost for mine life.
3. Soil and vegetative losses would occur.
4. The existing transportation systems would be utilized to a higher degree.
5. Due to current mining technologies more than half the estimated coal reserves would not be recovered.

In the short term (the projected 40-year life of the mine) approximately 150 million tons of coal would be extracted. The coal would most likely be used for power generation and other industrial uses. The mine site area would be committed to a single use for a 40-year period and would in turn impact other resource uses such as, hunting, sightseeing, and wildlife. Soil and vegetative losses would occur, topography would change, and the VRM class would change from Class II to Class V. Public transportation routes would experience increased traffic.

In the long term (40 years or more) approximately half the coal would not be recovered due to current mining technologies. Ground stability (shear strength) would be weakened somewhat but using proper mitigation measures would not be significant. Soil and vegetative productivity would be restored on the reclaimed areas to premining levels and some wildlife would reestablish to premining populations. VRM class would return to Class II and the area would again be managed for multiple uses.

A cultural inventory would be accomplished many years sooner than might otherwise be accomplished without the mine.

One hundred and fifty million tons of coal would be recovered and is considered an irretrievable commitment. The change from a natural and rural setting to one of a more developed and industrial character is considered irretrievable as once an area is developed it generally does not revert back. Cultural values, construction materials, energy expended, and any loss of human life and most wildlife would be irretrievable. Some natural features of the landscape would be irretrievable. Soil, water, vegetation, and other land uses would be irreversible for mine life.

Section 5

CONSULTATION AND COORDINATION

During the preparation of this environmental assessment the following agencies were contacted for information, advice, and coordination:

Office of Surface Mining
U.S. Geological Survey
U.S. Fish and Wildlife Service
Bureau of Land Management, Colorado State Office, Denver, CO
Advisory Council on Historic Preservation
Colorado Mined Land Reclamation Board
Colorado State Historic Preservation Officer

A public meeting was held on April 9, 1980, explaining the project and requesting that public comments, concerns, and issues be identified. People attending (approximately 20) did not express any concerns and seemed to be in favor of the proposal.

The draft Environmental Assessment was made available for public review on November 14, 1980. A notice of availability was published in the Federal Register on November 14, 1980. Public notices were also sent to the Grand Junction Daily Sentinel, The Palisade Tribune, The Citizen Newspaper, and The Fruita Times. A 30-day comment period ended on December 22, 1980.

A formal public hearing was held at 7:00 p.m., December 16, 1980, at the Grand Junction BLM District Office. Copies of the hearing panel transcript are available for public review at the Colorado BLM State Office and the Grand Junction BLM District Office.

All letters and testimony were reviewed and considered in preparation of the Final Environmental Assessment. Comments addressing the adequacy of the assessment were responded to separately. Each commentor was assigned an index number.

Comments were typed verbatim; an index number for each comment is given in parenthesis. The response for each comment either identifies that the text of the Environmental Assessment was changed or provides rationale for why the comment did not require a text change. Comments received in letters are printed following the comment and response section.

Dorchester Coal Company submitted comments (letter 10) suggesting both editorial and clarification comments. All of their comments were incorporated into the text. We chose not to identify each comment and our response in order to save space.

Comment Letters Received

Index No.	Agency, Organization or Individual
1	U.S. Fish & Wildlife Service
2	City-County Development Department
3	Colorado Division of Wildlife
4	C.W. Silver Co., Inc.
5	City-County Development Department
6	David L. Garrett
7	Beckner-Power Insurance
8	U.S. Fish & Wildlife Service
9	Grand Junction Area Chamber of Commerce
10	Dorchester Coal Co.
11	Colorado Division of Planning
12	Colorado Department of Highways
13	National Park Service
14	Colorado Division of Wildlife
15	Colorado Geological Survey

COMMENTS

1. COMMENT (1). "Criterion 9 - Federally Listed Endangered Species states: "Results: Three endangered animal species--bald eagle, peregrine falcon and whooping crane--are expected to appear on or over the area at some time of the year. No critical habitat has been designated for these species within the review area nor is any anticipated."

Regardless of critical habitat designations, BLM as the permitting agency is expected to make a determination of the impacts of the proposed action upon these species."

RESPONSE. Text changed.

2. COMMENT (1). "Criterion 11 - Bald and Golden Eagles Nests states: "The exception applies to the unsuitable zones to the extent that no surface activities will occur within the zones from December 15, to July 31."

Without further stipulation, it appears that any activity in any location would be allowed during the remainder of the year. Certain activities (i.e., construction near nest) could render the nests permanently inactive.

We believe that this stipulation should be rewritten to conform with the exception as applied in criterion 13: "The exception applies to the extent that no surface activities shall occur within the zone.

I am certain that neither BLM or FWS would object to specific activities in areas within the delineated buffer. Such exceptions, however, should be of a site specific nature with approval granted only when the specifics of the desired action are known."

RESPONSE. Text changed.

3. COMMENT (8). "From review of the topographical features existing on these routes, this decision appears to be unsubstantiated.

Additional information (grade profiles, etc.) or discussion may clarify the necessity for eliminating routes B & C as rail routes."

RESPONSE. The text has been rewritten to substantiate the elimination of routes B and C.

4. COMMENT (8). " Unsuitability Criteria. It is unclear whether the unsuitability criteria has as yet been applied to the transportation corridors. Any unsuitable areas may be of extreme importance in selecting viable transportation routes."

RESPONSE. The unsuitability criteria by definition are only applied to coal leasing areas. The transportation route and method will be analyzed when the right-of-way is applied for. This EA will be used as a base for that specific analysis.

5. COMMENT (8). "Page 3 Item 5 (Assumptions) and, Page 4 Introduction

We believe that the Final Environmental Assessment needs to address the "selected" routes and methods of coal transport to adequately assess environmental impacts. (See General Comments)"

RESPONSE. We analyzed the feasible routes and methods in a generalized manner. This analysis yielded major impacts and enabled readers to compare routes and methods. When the company applies for a right-of-way we will make a detailed site specific analysis.

6. COMMENT (8). "Page 21 Route A - Summary of Impacts. States: "Fifty-five percent of the route parallels intermittent and perennial stream channels."

An assessment of anticipated changes in sediment, salinity and water quality in general should be included here, or elsewhere. Although these factors are mentioned in brief on page 63 and 64, more detailed information is needed.

Substantial modification in water quality could impact the six endemic fish species in the Colorado River. (see also page 31)"

RESPONSE. The text has been changed. We cannot quantify water quality impacts without specific construction methods, timing, stream flows, etc. We don't anticipate any impacts to the six endemic fish species since the flows from the affected watersheds are a very minor portion of the entire flow of the Colorado River.

7. COMMENT (8). "Page 31 Other Birds. Comment: Both the golden eagle and the burrowing owls mentioned here are on the list of Migratory Birds of High Federal Interest - Uinta - Southwestern Utah Coal Production Area - Utah-Colorado. We can find no discussion on these species or habitats in the unsuitability report - Appendix 1. (See General Comments)"

RESPONSE. Appendix Text changed.

8. COMMENT (8). "Page 66 Paragraph 3. States: "The largest wildlife concern over route A is in East Salt Creek. This route could consume 30 percent of the greasewood/riparian type along the creek and reduce the value of the remainder."

It appears that application of the unsuitability criteria and/or other planning policies should guide the route of the transport corridors and prevent this impact to valuable riparian habitats.

RESPONSE. See response to comment 4.

9. COMMENT (12). "The Department has concerns with all of the alternatives being proposed and as a minimum will ask for intersection channelization, consideration of grade separations, roadway reconstruction and signalization depending on the alternative recommended for construction. All alternatives will have a severe impact on existing highways and roads. Therefore, we would like to meet with the proponent and BLM prior to approval of any plans for this mine facility to discuss transportation impacts and mitigation measures."

RESPONSE. Your Department, along with numerous other agencies, will be invited to assist in planning and analyzing the transportation system and methods.

10. COMMENT (13). "The assessment does not adequately respond to the potential problem of fugitive emissions from the mine site or from the railroad construction project. The National Park Service is concerned that there is potential for further degradation of air quality below limits established as National Ambient Air Quality Standards for Total Suspended Particulates within the Grand Valley. As you are probably aware, the Grand Junction area is already a non-attainment area for total suspended particulates. No substantive meteorological data was presented to address what would become of these fugitive emissions during those times when air movements in and out of the Grand Valley are restricted by temperature inversions."

RESPONSE. The fugitive dust from the mining activities and the railroad construction was included in the air quality analysis. The "second-worst" condition (24-hour concentration) included the meterological conditions during which a temperature inversion would be expected.

11. COMMENT (13). "The PEDCO site specific analysis uses a background level of 44 micrograms per cubic meter for the proposed lease site near Douglas Pass. That figure is the same background level PEDCO assigned to the Grand Junction area in a previous study. High-volume sampling at the headquarters area of Colorado National Monument indicates a background level of 17 micrograms per cubic meter. It appears that this figure would be more likely to represent the background level in the Douglas Pass area. Base line background air quality levels are essential to later determinations of the direct impact of this project on overall ambient air quality standards for the Grand Valley. The discrepancies in these figures regarding background levels seem to indicate that a closer examination of all air quality data is in order before this project is authorized."

RESPONSE. The background data used in the study were taken from a state monitoring site at Palisade, Colorado. This would represent a worst-case situation and was selected because onsite data has not been collected.

12. COMMENT (13). "The National Park Service is concerned that energy-related developments within the Grand Valley are not being analyzed from the standpoint of their combined impacts on air quality. The proposed Dorchester-Colomine PRLA lease is but one of several developments that will contribute to air quality degradation in the Grand Valley. Others include the Sheridan Mine, the Colorado-Ute proposals for coal-fired electric generating plants at Mack and Olathe (the Mack plant being a probable user of coal from the Dorchester-Colomine project), and the secondary impacts created by a rapid growth of the Grand Valley population. Realizing that these impacts are not all your direct responsibility, those actions directly controlled by the Bureau of Land Management should be addressed together for their total impact on air quality within the Grand Valley."

RESPONSE. The West-Central Colorado Coal Final Environmental Impact Statement has analyzed the cumulative impacts from all known and projected energy projects in the west-central area. The impacts to air quality analyzed in the high level scenario of that FEIS included impacts from production of 3.5 million tons per year from the Dorchester PRLAs.

13. COMMENT (14). "A major problem we do have with the proposal is the coal haulage corridor. We much prefer Alternative B over Alternative A. The reason given for the use of "A" is that grades are too steep for use of rail in "B". A quick check of the grades on a topographic map does not seem to support this contention. If Alternative A is used, we would appreciate being consulted during the actual route selection process."

RESPONSE. See responses to comments 5 and 9.

1

United States Department of the Interior
FISH AND WILDLIFE SERVICE
COLORADO FIELD OFFICE
330 S. GARRISON ST.
LAKEWOOD, COLORADO 80226

IN REPLY REFER TO:

October 7, 1980

Memorandum

To: Ron Lambeth, Resource Area Wildlife Biologist, Bureau of Land Management - Grand Junction Resource Area

From: Coal Coordinator, Colorado

Subject: Unsuitability Consultation, Dorchester Mine

I have reviewed the draft "Unsuitability Report - Dorchester Mine," which you provided 9/25/80 and offer the following comments.

General Comment

It appears that the Dorchester Mine, proposed as an underground operation, could be considered under the "general exception rule" with respect to unsuitability application. However, with all respect and fairness to both industry and the resources at hand, we believe your determination of areas unsuitable for surface disturbance to be a wise and timely action. Early determination of these sensitive areas should assist industry in detailed planning of the mine operation; thus, avoiding adverse impacts.

Specific Comments

Criterion 9 - Federally Listed Endangered Species states: "Results: Three endangered animal species--bald eagle, peregrine falcon and whooping crane--are expected to appear on or over the area at some time of the year. No critical habitat has been designated for these species within the review area nor is any anticipated."

Comment: Regardless of critical habitat designations, BLM as the permitting agency is expected to make a determination of the impacts of the proposed action upon these species.

Criterion 11 - Bald and Golden Eagles Nests states: "The exception applies to the unsuitable zones to the extent that no surface activities will occur within the zones from December 15, to July 31."

Comment: Without further stipulation, it appears that any activity in any location would be allowed during the remainder of the year. Certain activities (i.e., construction near nest) could render the nests permanently inactive.

1

We believe that this stipulation should be rewritten to conform with the exception as applied in criterion 13: "The exception applies to the extent that no surface activities shall occur within the zone.

I am certain that neither BLM or FWS would object to specific activities in areas within the delineated buffer. Such exceptions, however, should be of a site specific nature with approval granted only when the specifics of the desired action are known.

This modification would provide future latitude for applying exceptions and ensure protection to nest sites in the interim.

Thank you for the opportunity to review and comment on the draft.

L. RONEL FINLEY

CC: A.O., Salt Lake City

2

CITY AND COUNTY PLANNING & DEVELOPMENT PROCESSING—CITY AND COUNTY BUILDING PERMIT & INSPECTION

City County Development Department

CITY OF GRAND JUNCTION—MESA COUNTY—COLORADO

RECEIVED
NOV 21 1980
BUREAU OF LAND MGMT
GRAND JUNCTION

November 20, 1980

Mr. Robert Kline
Bureau of Land Managment
764 Horizon Drive
Grand Junction, Colorado 81501

Dear Mr. Kline,

We have received the Environmental Assessment Dorchester-Colomine PRLA and your request for comment. The use, as proposed, would require a Mesa County Conditional Use Permit and the following items will be considered when reviewing the application for this permit.

Current information available to this department (U.S. EPA, Region 8, Action Handbook, Managing Growth in the Small Community, Denver, Colorado, July, 1978) indicates that a 4 million ton per year underground coal mine will employ approximately 550 persons during the construction phase and around 1,380 persons for the operations phase. These figures are over three times the work force estimates on pages 10, 18, and 49.

Using the same source as above, total added population (which includes construction, operations and service workers and their families) will be 2,691 for the construction phase and 11,368 for the operations phase. These figures are drastically higher than the suggested population increase delineated on page 50.

What is the justification of the applicant's population figures? Until more definitive and qualified work force and population projections associated with this project are forwarded to us from Dorchester-Colomine, this department will use the above figures in considering the socio-economic impacts of this project.

According to our reference cited above, the impacts associated with a population increase of 11,368 persons due to a single mine development would include: 130 new school classrooms with 330 additional employees, 2,274 acre ft./year of domestic water, 1,136,800 gallons of treated sewage, 5 additional police cars and 25 new police officers, 15 new fire fighters, 45 additional hospital beds with 21 new doctors and their staffs, and 725 acres of land containing 3,300 new dwelling units and their associated utility lines. Does the applicant have a strategy for equitably distributing these costs that are directly related to the proposed development?

2

Page 41 of the EA, makes reference to the availability of funds through the State Energy Impact Assistance program. Since 1978, less than $500,000 in Impact funds have been awarded to Mesa County. Obviously, the County cannot rely on State or Federal assistance to defray the front-end costs associated with energy development.

Based on projected work force figures, 1,320 new housing units will be required for operations workers and 490 housing units for construction workers. Where will these people locate? What assurance does Dorchester-Colomine make that current construction will adequately supply this housing need?

The people who will be impacted most directly from this proposed development are those living in proximity to the transportation corridor. Each alternative will have a negative impact on residents and roads in the area. There is no analysis of such impacts upon the local residents in relation to the transportation routes in the EA.

These comments are not "part of a pattern... aimed at discouraging development", as the report brings up. Development of Mesa County's mineral resources is important both to the nation's need of energy and the county's economic base, but not at the expense of local residents. Socio-economic impacts must be assessed in as much detail as environmental impacts. The cost and time in preparing detailed analysis for each municipality, county and special district represents an overly large commitment on local government. It is unfair for the burden of these studies to fall on local governmental entities. It is doubly difficult to complete this task when local officials do not have access to adequate information from the developers upon which to begin to implement plans and programs aimed at mitigating impacts caused by rapid population growth.

We would encourage Dorchester-Colomine to meet with this department to discuss the problems that may result from the development of this proposed project.

Sincerely,

Raymond J. Gronwell
Staff Planner

cc: Dorchester-Colomine
751 Horizon Court, G.J. CO. 81501
Mesa County Commissioners
Ted Ford, County Administrator

RJG/kms

3

STATE OF COLORADO
Richard D. Lamm, Governor
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF WILDLIFE
Jack R. Grieb, Director
6060 Broadway
Denver, Colorado 80216 (825-1192)
711 Independent Avenue
Grand Junction, Colorado 81501

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NOV 26 1980
BUREAU OF LAND MGMT.
GRAND JUNCTION

November 19, 1980

Mr. Dave Jones, District Manager
Grand Junction District
Bureau of Land Management
764 Horizon Drive
Grand Junction, Colorado 81501

RE: 3520.5, Dorchester-Colomine Proposal

Dear Dave:

Colorado Division of Wildlife (CDOW) biologists have reviewed the above proposal for PRLA's C-0127832, C-0127833, and C-0127834 jointly with members of your staff and personnel of Dorchester-Colomine Coal Company. CDOW biologists have also reviewed the unsuitability report as well as the environmental assessment to which it is appended.

We concur that most of the lease tracts are eligible for unsuitability because of wintering mule deer and cliff-nesting raptors but also agree that the exception would apply because of the nature of the proposal. Maintenance of coal mining features within the lease tracts for approval of this project and operation of the mine should not adversely affect wintering mule deer if access is limited to the absolute minimum. Additionally, buffer zones delineated for golden eagle and prairie falcon nests will prevent any adverse impact to those sites.

I appreciate the opportunity to work with you and your staff to ensure the future of Colorado's wildlife. Please contact me at your convenience if further analysis is deemed necessary. My staff is currently reviewing the environmental assessment and our comments are following.

Cordially,

Perry D. Olson
Regional Manager

WDC:PDO:cmf

xc: R. Evans
A. Whitaker
D. Hespe (Dorchester)
Dorchester Colomine Coal File

DEPARTMENT OF NATURAL RESOURCES, Monte Pascoe, Executive Director • WILDLIFE COMMISSION, Wilbur Redden, Chairman
Donald Fernandez, Vice Chairman • James Smith, Secretary • Jean K. Tool, Member • Vernon C. Williams, Member
Michael Higbee, Member • Sam Caudill, Member • Richard Divelbiss, Member

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4

C. W. SILVER CO., INC.

ELECTRICAL EQUIPMENT
TWIN FALLS • SALT LAKE • DENVER
GRAND JUNCTION

761 SOUTH 7th STREET • GRAND JUNCTION, COLORADO 81501 • PHONE (303) 242-7105

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DEC 12 1980
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GRAND JUNCTION

TO: Robert Kline
Environmental Co-ordinator
Bureau of Land Management
Grand Junction District

FROM: Lon Thompson
Sales Engineer
C. W. Silver Co., Inc.
761 South 7th Street
Grand Junction, Colorado 81501

REGARDING: Dorchester PRLA CO-070-GJO-113

DATE: December 12, 1980

Dear Sir:

C. W. Silver Co., Inc. has been involved with the mining industry on the Western Slope almost since its inception some 64 years ago. In working with the mines in the area we have seen many different types and styles of operation. With this experience, we feel qualified to make a statement concerning Dorchester's application.

First, we, in general, agree with Section 1 of the Environmental Assessment (October 80). This includes the general and site specific assumptions.

Of Section 2, we support the preferred alternative - that is the company's proposal. Further, we can see no real advantage (political, social or economic) to adopting the no action alternative.

Finally, of both Sections 3 and 4, it appears with the company's reclaimation plan and the evidence showing, in general, the environment affected; we see that the impact would be slight.

On an overall basis, the economic benefits to the area would be considerable. Although, the argument has been advanced that hiring locally will cause a shortage of man power for jobs already in the area. It has been our experience that not only will an encreased standard of living for the workers show in a much more viable tax

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4

Robert Kline
December 12, 1980
Page 2

base for a growing community; but also local business and educational facilities can be updated.

With all the practical considerations advanced, and the minimumisation of environmental impacts, we feel confident in supporting this permit as important and necessary to our area.

Thank you,

Lon J. Thompson
Sales Engineer

LJT/dp

5

CITY AND COUNTY PLANNING & DEVELOPMENT PROCESSING—CITY AND COUNTY BUILDING PERMIT & INSPECTION

City
County
Development
Department

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DEC 16 1980
BUREAU OF LAND MGMT.
GRAND JUNCTION

December 16, 1980

Mr. Robert Kline
Bureau of Land Management
764 Horizon Drive
Grand Junction, Colorado 81501

Re: Environmental Assessment, Dorchester-Colomine PRLA

Dear Mr. Kline,

Additional research and information has necessitated that this department revise it's estimated population figures as stated in our letter of 11/20/80.

A comparison of existing employment in ten operating underground coal mines in Mesa, Garfield, Delta and Gunnison Counties indicates that our previous estimated operations work force figures were too high. The above figures, combined with current technology in long wall mining methods, indicate a probable operations work force of 550 to 600 persons. The total population impact in Mesa County, based on the above work force projections, should therefore be approximately 2,000 to 2,500 people. This number of people will create a housing demand of approximately 1,000 new dwelling units. If dispersed throughout the valley, current and anticipated construction should adequately provide for this demand. Although, if the majority of this new construction were located in the vicinity of Fruita, the capacities of existing service systems would be severly strained.

A concern of this department is how to provide adequate housing and services to all the residents of Mesa County, now and in the future. Accurate population figures and projections are essential in this effort. Accordingly, the Dorchester-Colomine joint venture is urged to meet with Mesa County, if their actual or anticipated work force will exceed 600 persons, to discuss additional population impacts.

Dorchester-Colomine has a Mesa County Conditional Use Permit for a load-out facility and for the use of 18 Road to haul coal to this facility. They also intend to apply for a Mesa County Conditional Use Permit for the expansion of the mine and the railroad spur.

Mesa County has a continuing concern over socio-economic and public infrastructure impacts and these concerns should be addressed with a development of this magnitude. The impacts of population, housing, utilities, and services must be addressed by Dorchester-Colomine in their conditional use permit request.

Sincerely,

Raymond J. Gronwall
Staff Planner

6

DAVID L. GARRETT, C.L.U.

LIFE, HEALTH AND GROUP INSURANCE - PENSION PLANS - MUTUAL FUNDS

444 N. 1st [illegible] — POST OFFICE BOX 1329
GRAND JUNCTION, COLORADO 81502 81502
PHONE: (303) 242-6136

Mr. Robert Kline
Bureau of Land Management
764 Horizon Drive
Grand Junction, Colorado 81501

Re: Environmental Assessment, Dorchester-Colomioe PRLA

Dear Mr. Klioe:

It has been my privilege to study the Environmental Assessmeot, Dorchester-Colomine PRLA, for which you were the Team Leader.

After reviewing the comprehensive atidies mada by your team and weighiog the adverse coosequences to the terrain, flore, fauna end other aspects of the total environment, it is my judgment that such adverae reaults are reletively minor eod would be mora than offaet by the advantages of grenting the lease. The advaotages, of course, ere primarily ecooomic, end include utilization of an energy source which appears to be far more abuodeot than petroleum.

As a matter of personal preference, I would like as much as possible of the environment to ba left in its natural state. This is one of the reasons that I have for severel yeers been a member of, and am preaently ao officer of, the Colorado National Monument Association. Nevertheless, I recognize the necesaity of a certain trade-off because of ever-increasing population end dependence on fnreigo energy sources.

Minimal environmental damage will be far more than offset by the sconomic considerationa involved, in my opinino. Therefore I support the granting to Dorchester-Colomine of prefereoce right coal leases comprising 14,729 acres of land twelve miles North of Fruita, Coloreda.

Sincerely,
David L. Garrett
David L. Garrett

DLG/pw

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GRAND JUNCTION

7

BECKNER • POWER INSURANCE

December 17, 1980

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DEC 19 1980
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GRAND JUNCTION

Mr. Robert Kline
Bureau of Land Management
746 Horizon Drive
Grand Junction, CO 81501

Dear Mr. Kline:

I have reviewed the environmental assessment draft for the 14,729 acre lease to Dorchester-Colomine for mining of coal.

It appears that environmental damage is minimal and that the need to develop energy is far greater.

I recommend granting the lease.

Yours very truly,
Raymond C. Beckner
Raymond C. Beckner

RCB/jc

444 NORTH FIRST • GRAND JUNCTION, COLORADO 81501 • POST OFFICE BOX 1329 • TELEPHONE 303 242-6136

8

United States Department of the Interior
FISH AND WILDLIFE SERVICE
COLORADO FIELD OFFICE
529 S. GARRISON ST.
LAKEWOOD, COLORADO 80226

IN REPLY REFER TO:

December 17, 1980

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BUREAU OF LAND MGMT.
GRAND JUNCTION

Memorandum

To: Robert Kline, Team Leader - Dorchester Colomine PRLA, Bureau of Land Management, Grand Junction, Coloredo

From: Coal Coordinator - Colorado

Subject: Review of Dorchester Colomine draft environmental assessment (EA)

As requested, this office has reviewed the subject draft EA for the three preference right lease applications (PRLA's) submitted for the Dorchester Colomine Joint Venture.

To assist in the assessment process, the following comments are provided.

General Comments

1. Coal Transport

We believe that the route and methods of coal transport will significantly effect the environmentel impacts of the proposad action. Although it is noted that eny right-of-way necessary for transporting coal, etc., will be issued seperately from coal leases (page 1), such activities should be considered an inseperable part of the proposed activity.

Review of pages 56-72 indicates that environmentel consideretions (water resources, wildlife, vegetation, erosion control and revegetation potentiel) would be impacted least by selecting route B railroad rather than route A railroad.

It appears, however, that route B (railroad) has been deemed infeasible for rail transport due to grade constraints (page 23).

From review of the topographical features existing on these routes, this decision appears to be unsubstantiated.

Additional information (grade profiles, etc.) or discussion may clarify the necessity for eliminating routes B & C as rail routes.

8

Page 2, Review of Dorchester Colomine draft EA

2. Employee Transportation

The Fish and Wildlife Service (FWS) is very pleased to see the mass transit of employees discussed on page 19. This action should affectively reduce wildlife losses associated with mining activities; specifically, disturbance, road kills and poaching.

3. Unsuitability Criteria

It is unclear whether the unsuitability criteria has as yet been applied to the transporation corridors. Any unsuitable areas may be of extreme importance in selecting viable transportation routes.

Specific Comments

Page 3 Item 5 (Assumptions) and,
Page 4 Introduction

Comment: We believe that the Final Environmentel Assessment needs to address the "selected" routes and methods of coal transport to adequately assess environmental impacts. (See General Comments)

Page 21 Route A - Summary of Impacts

States: "Fifty-five percent of the route parellels intermittent and perennial stream channels."

Comment: An assessment of enticipated changes in sediment, salinity and water quality in general should be included here, or elsewhere. Although these factors are mentioned in brief on page 63 and 64, more detailed information is needed.

Substantial modification in water quality could impact the six endemic fish species in the Colorado River. (see also page 31)

Page 23 Route B - See General Comments

Page 31 Other Birds

Comment: Both the golden eagle and the burrowing owls mentioned here are on the list of Migratory Birds of High Federal Interest - Uinta - Southwestern Utah Coal Production Area - Utah-Colorado. We can find no discussion on these species or habitats in the unsuitability report - Appendix I. (See General Comments)

Page 32 Threatened and Endangered Species

(See comment concerning page 21)

8

Page 3, Review of Dorchester Colomine draft EA

Page 66 Paragraph 3

States: "The largest wildlife concern over route A is in East Salt Creek. This route could consume 30 percent of the greasewood/ riparian type along the creek and reduce the value of the remainder."

Comment: It appears that application of the unsuitability criteria and/or other planning policies should guide the route of the transport corridors and prevent this impact to valuable riparian habitats.

SUMMARY

In general, the FWS is pleased that both busing of employees and rail transport of coal are being considered. However, from the information presented, the rail route with the most adverse impacts (route A) appears to be the most probable route for construction.

Assuming that grade profiles are available and were used in the determination of rail route feasibility, they should be provided to substantiate this decision.

Further, the application of the unsuitability criteria to the transportation corridors should reduce wildlife impacts associated with these routes.

Thank you for the opportunity to review the draft environmental assessment and provide our comments.

CC: State BLM - Colorado

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GRAND JUNCTION AREA CHAMBER of COMMERCE

December 19, 1980

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DEC 22 1980
BUREAU OF LAND MGMT.
GRAND JUNCTION

Mr. Robert Kline
Environmental Coordinator
U. S. Bureau of Land Management
764 Horizon Drive
Grand Junction, Colorado 81501

Dear Mr. Kline:

We have reviewed the draft environmental assessment for three preference right coal lease applications by Dorchester Coal Company, and approve the leasing program.

The need for coal for energy today and in the future is so obvious it is difficult for us to understand the complicated, time-consuming, costly, process utilized by the Bureau of Land Management in the lease program.

We are not suggesting non-regulation for the Dorchester program, as they will be obligated by law according to your report, "to comply with all Federal, State and local laws and regulations and with decisions governing development, operation, abandonment, and reclamation of the mine and transportation routes."

We agree with your assessment of the community attitude toward development, which is not unsimilar with most communities in the west.

The Dorchester development should be granted BLM permits and the proper agencies involved in the details and regulation of their activities should utilize the numerous laws to make certain they are rigidly complied with.

Sincerely,

Dale J. Hollingsworth
Executive Vice President

DJH/kkl

131 north fourth street post office box 1330 grand junction, colorado 81501 telephone 303 242-3214

10

Dorchester Coal Company
Colorado Operations
2795 Skyline Court
Grand Junction, CO 81501
(303) 245-6370

RECEIVED
DEC 23 1980
BUREAU OF LAND MGMT.
GRAND JUNCTION

December 22, 1980

State Director
Colorado State Office
Bureau of Land Management
Colorado State Bank Building - Room 700
1600 Broadway
Denver, Colorado 80202

SUBJECT: Dorchester Coal Company Comments
8LM-Draft Environmental Assessment
PRLA Coal Lease Applications: C-0127832, C-0127833, C-0127834

Dear Mr. State Director:

On November 4, 1980 the BLM, Grand Junction District Office, issued for public comment its draft environmental assessment (EA). On December 16, 1980 a public hearing was conducted by the BLM at its Grand Junction District Office. Dorchester Coal Company (DCC) has extensively reviewed this EA and the public comments entered into the record at the public hearing on December 16, 1980. In addition, representatives of DCC have had extensive discussions with the Grand Junction District Office personnel who developed this EA. DCC respectfully offers these comments on the subject EA:

1. Page 1, 2nd Paragraph, Section 1, "Purpose of and need for"

COMMENT:

Since the writing of this EA, the BLM recently (on December 16, 1980) issued a decision approving (1) the assignment of these three PRLAs from Gerald T. Tresner to Dorchester-Colomine Joint Venture (70% to Dorchester Coal Company and 30% to Colomine Coal, Inc.) and (2) Colomine Coal, Inc. (30% interest) to Dorchester Coal Company. As a result of these BLM approved assignments, 100% of the record title of each of the above listed applications are now held by Dorchester Coal Company. This assignment approval is to be effective January 1, 1981.

RECOMMENDATION:

In light of the above BLM actions, we recommend that apart from historical references to Gerald T. Tresner, the Anchor-Tresner unit, the Dorchester-Colomine Joint Venture, that all references to these PRLA applications in the final EA refer to Dorchester Coal Company or "the Company" as the lease applicant and proposed operator of this property.

10

2. Page 3, 1st Paragraph, Section 1, "Legal and Regulatory Requirements"

COMMENT:

The sentence stating "Before the issuance of transportation and utility rights-of-way by the BLM, the Office of Surface Mining will review and approve all mining procedures" may be misleading as to the position of the BLM and the procedures to be utilized by the BLM and the Office of Surface Mining (OSM) in fulfilling their respective permitting functions. DCC currently operates The Fruita Mines on its fee controlled land under authority of a mining and reclamation permit (MRP) issued by the Colorado Mined Land Reclamation Board (Permit No. 79-60 ug/c). In addition, Mesa County is the holder of a 30-year Special Use Permit (C-28017, issued September 29, 1980) which acts as an access road and utility corridor to DCC's Fruita Mines. It is our understanding that, based on discussions with the BLM, upon demonstrated need to support the currently authorized Fruita Mines operations, additional utility rights-of-way may be authorized by the BLM prior to these PRLAs being issued and a federal mine plan for these PRLA properties being approved through the OSM by the Department of the Interior. DCC does understand that before the BLM would consider and approve the issuance of a right-of-way for a proposed and specific transportation system and alignment over BLM managed lands (including related utility rights-of-way), the OSM would have approved or indicated its pending approval of the proposed federal mine plan related to mining activities on these PRLA leaseholds.

RECOMMENDATION:

The above specified sentence should be modified to read as follows:

"Before the issuance of transportation and related utility rights-of-way by the BLM incident to mining activities on the referenced lease applications, the Office of Surface Mining must approve or indicate its pending approval of the federal mine plan related to mining activities on these PRLA leaseholds."

3. Page 3, Section 1, "General and Site-Specific Assumptions"

COMMENT:

Based on discussions with the BLM, the following editorial comments and recommendations (underlined) are made:

RECOMMENDATION:

"1. Development (new authorized construction) would begin in 1981 upon approval of these leases."

"2. Full scale mining on these federal leases would begin in 1983."

"3. Life of the mine on these federal leases pursuant to current regulatory requirements is projected to be 40 years."

"6. Final reclamation, on these federal leases, pursuant to current regulatory requirements, are projected to be completed in the year 2033."

"7. Approximately 10 years is required, based on BLM technical assessments and current regulatory requirements, to establish vegetation that would support small animals and birds."

4. Page 9, 1st Paragraph, Section 2, "Description of the Mining Areas"

COMMENT:

Total coal reserves, projected by DCC, are estimated at 320 million tons, while recoverable reserves are estimated at 150 million tons at a recovery rate of 45 percent. The calculations were computed by OCC with reference to USGS Bulletin 1450-B.

The sentence stating "This mixing of coal will insure that the sulfur content is below the Federal Standards" may be misleading. There are no federal standards for sulfur in coal. There are, however, federal (USEPA) and state air emissions standards for sulfur dioxide (SO_2) related to power plants utilizing fossil fuels.

RECOMMENDATION:

(a) In the 1st sentence, substitute the numbers 320 for 344, 150 for 172 and 45 for 44 as noted above.

(b) Modify the 4th sentence to read "This mixing of Anchor and Cameo seam coals will insure that the sulfur content meets currently applicable federal and state air emission standards for sulfur dioxide."

5. Page 11, 2nd Paragraph, Section 2, "Refuse and Spoil Oisposal Procedures"

COMMENT:

The 2nd and 3rd sentences in the 2nd paragraph under this subtitle appear confusing as to the sequence of the procedures to be utilized.

RECOMMENDATION:

(a) The 2nd sentence should be modified to read "It would be placed in excavated areas with the previously excavated and stockpiled material redistributed over it and the separately stockpiled topsoil redistributed on top."

(b) The 3rd sentence should be modified to read "This topsoil would then be fertilized and seeded to obtain the required revegetation cover."

6. Page 12, Section 2, "Pollution Controls"-"Water" and "Pollution of Air"

COMMENT:

Based on conversations with the BLM, several editorial changes are suggested for purposes of clarity.

RECOMMENOATION:

(a) Under the subtitle of "Water", the 2nd sentence should be modified to read "Some of these water requirements for mining operations will be derived from water developed and pumped from the mine." Under this same subtitle, the 5th sentence should be deleted as this has neither been proposed by OCC nor affirmatively required by any state or federal reclamation authority.

(b) Under the subtitle "Pollution of Air", the 2nd paragraph should be modified to read "Roads may be surfaced or sprayed with water supplements to prevent dust emissions caused by vehicular traffic pursuant to projected dust emissions and applicable regulatory requirements.

7. Page 13, Section 2

COMMENT:

Based on conversations with the BLM, several editorial changes are suggested for the purposes of clarity.

RECOMMENDATION:

(a) Under the subtitle "Surface Restoration", the 1st sentence should be modified to read "The post-mining use of this area has not been specifically designated by the BLM as the management agency for the public lands contained in these federal leases."

(b) Under the subtitle "Top Soil", the 1st and 2nd sentences should be modified to read "Prior to any surface disturbance, topsoil, where available, will be salvaged, stockpiled and eventually redistributed for reclamation purposes. Very little surface area would be disturbed on an annual basis."

(c) Under this same subtitle, the 1st sentence in the 2nd paragraph, the reference to the "Anchor-Tresner" unit should be deleted.

8. Page 18, Section 2, "Work Force Requirements"

COMMENT:

Based on discussions with the BLM, an editorial change is recommended for the purposes of clarity.

RECOMMENOATION:

The 3rd sentence under this subtitle should be modified to read "A small percentage of employees with skills then not available in the local area may necessarily have to be recruited from other areas."

9. Page 19, Section 2, "Abandonment"

COMMENT:

Based on discussion with the BLM, an editorial change is recommended for the purpose of clarity.

RECOMMENDATION:

The 1st sentence on page 19 should be modified to read "All of the waste and spoil dumps or plots will have to be reclaimed on a continuing progressive basis; only the final plot will remain, but would be reclaimed within one year upon final abandonment of the mining operation."

10. Page 20, Section 2, "Coal Transportation"

COMMENT:

Consistent with the previous comments and recommendation relative to the term "joint venture", an editorial change is recommended. In addition, because the jurisdictional authority of OSM over non-adjacent loadout facilities is unclear at this time, it is recommended that the reference to OSM be deleted.

RECOMMENDATION:

The 2nd paragraph under the subtitle "Methods" should be amended to read "If the PRLAs are issued, the BLM will work with the Company and any appropriate regulatory authority to analyze the specific transportation proposal.

11. Page 21, Section 2, "Coal Transportation"

COMMENT:

Based on discussions with the BLM, several editorial changes are recommended for the purpose of clarity.

RECOMMENDATION:

(a) In the textual coverage of the Coal Transportation proposals, which have not been finalized as to method or site specific alignment, and therefore not been definitively assessed for potential impacts, it is recommended that where deemed appropriate, the word "could" be substituted for the word "would" where describing such possible impacts.

(b) On page 21, the 2nd sentence in the 2nd paragraph under subtitle "Routes" should be modified or expanded to identify the BLM's source of information relative to the possible alignment of a railroad line to be used by Sheridan Enterprises.

12. Page 23, Section 2, "Coal Transportation"

COMMENT:

As there are gas wells and roads observable from the general Route A proposal, aesthetics would be only further disrupted by construction of the route proposal.

RECOMMENOATION:

The 1st sentence in the 3rd paragraph on page 23 should be modified to read "Aesthetics could be further disrupted by the construction of this route."

13. Page 24, Section 2

COMMENT:

The reference in the 5th paragraph on page 24 to "prime farmland" is not clear as to the criteria against which such a classification was made. "Prime farmland" is defined by the OSM in 30CFR701.5 by referencing a definition of the Secretary of Agriculture found in 7CFR657.

It is our understanding that the Soil Conservation Service (SCS) of the USDA has had responsibility for conducting soil surveys in this area which are used generally to classify prime farmlands. If such a soil survey were utilized by the BLM in this classification referenced in this EA, we feel such source should be identified.

It is not known by DCC or any other party reviewing this EA whether the BLM made such a classification by reference to the OSM, the USDA or some BLM criteria for definition of this term.

RECOMMENOATION:

BLM should review its use of this phrase "prime farmland" in this section and other parts of this EA and clarify the source or authority for such a classification designation. It may be useful to provide some identification as where such prime farmlands are located relative to this and other references in this EA.

14. Page 24, Section 2, "Other Leasing Alternatives"

COMMENT:

Based on discussions with the BLM, it is recommended that the legal authority for lease exchanges be cited.

RECOMMENOATION:

The 4th paragraph on page 24 under subtitle "Other Leasing Alternatives" should be modified to read " If a particular tract is not offered for lease, it may be exchanged for another tract that is acceptable for leasing or other federal coal leasing rights under authority of 43CFR3430.5-3 and 3430.5-4.

15. Table S, "Impact Summary" between pages 24 and 25

COMMENT:

This Table S uses a notation "N/A" whose meaning is not clearly identified. Based on discussions with the BLM, it is our understanding that "N/A" does not mean either "not available" (i.e. information not provided by the applicant or some other source) or "not assessed" (i.e. information not reviewed and assessed by the BLM). It is our understanding that "N/A" was meant to indicate that the information reviewed by the BLM was "not applicable" in either the sense as not required to be assessed or information assessed but determined not to have any significant impact so as to require quantitative or qualitative description in this table summary.

RECOMMENDATION:

It is recommended that the reference to "N/A" found in Table S "Impact Summary" be explained or described in a footnote to this Table S.

16. Page 26, Section 3, "Affected Environment"

COMMENT:

Based on discussions with the BLM, several editorial changes are recommended for purposes of clarity.

RECOMMENDATION:

(a) The 2nd sentence in the 2nd paragraph under subtitle "Geology/Minerals" should be modified to read "The Garmesa anticline is a northwest treading feature along the western boundary of the proposed lease area.

(b) The 1st sentence of the 3rd paragraph under this same subtitle should be modified to read "The proposed lease area includes three known geologic structures (KGS); Unknown, Hunter Canyon, and Coal Gulch.

17. Page 27, Section 2, "Affected Environment"

COMMENT:

Based on discussions with the BLM, several editorial changes are recommended for purposes of clarity.

RECOMMENDATION:

(a) The 2nd paragraph on page 27 under subtitle "Geology/Minerals" should be modified to read "The Cameo coal zone, located approximately 350 feet above the Anchor coal zone, contains an economical coal seam which ranges from 12 to 18 feet thick.

The Anchor coal zone, located approximately 350 feet below the Cameo coal zone, contains a probably economic coal seam (depending on blending with lower sulfur coals) which ranges from 1.4 to 6 feet thick.

The Carbonera coal zone, located approximately 60 to 160 feet above the Cameo seam, contains an uneconomical coal seam which has an average thickness of 3 feet. This Carbonera seam is a highly split, carbonaceous shale-coal sequence which is considered to be non-economical in the lease areas.

thickness of 3 feet. This Carbonera seam is a highly split, carbonaceous shale-coal sequence which is considered to be non-economical in the lease areas.

(b) The 3rd sentence in the 1st paragraph under subtitle "Water Resources" should be modified to describe where, in relationship to the proposed lease areas and transportation proposals, the Big Salt Wash becomes a perennial stream as distinguished from the emphemeral tributories of Big Salt Wash described in the 1st sentence.

(c) The 2nd sentence in the 2nd paragraph under the same subtitle should be modified to describe the source and date of the water rights described in this sentence.

(d) The 2nd sentence in the 3rd paragraph under the same subtitle should he modified to read "To supplement the existing data base, and to comply with OSM and Colorado Mined Land Reclamation Board regulations, the company has completed the drilling of 5 of a proposed 9 groundwater monitoring holes of sufficient depth to penetrate both the Cameo and Anchor coal seams."

18. Page 30, Section 2, "Affected Environment"

COMMENT:

Under the suhtitle "Elk", a statement is made as to "recent" observations of a "few bands of elk" wintering in the area, one band littering just north of Highline Canal". In addition, a statement attributed to "Schaeffer, Oivision of Wildlife, personal communication 1980" is made that " ... perhaps 5 years hence this will become an important winter range." It would be helpful to clarify more fully the source and time of these observatinns, as well as more fully describe the location of these observations and presnmptions of future wildlife use relative to the proposed lease areas and transportation proposal areas.

RECOMMENDATION:

Under the subtitle "Elk" the statements should be modified to describe the source, time and location of these observations and presumptions relative to the proposed lease areas and transportation proposed areas.

19. Page 31, Section 3, "Affected Environment"

COMMENT:

Based on discussions with the BLM, several editorial changes are recommended for purposes of accuracy and clarity.

RECOMMENDATION:

(a) The 1st sentence in the 1st paragraph under subtitle "Aquatic Life" on page 31 should be modified to delineate where Big Salt Wash and East Salt Creek are deemed perennial streams in relationship to the

proposed lease areas. It should be noted that perennial streams are defined by OSM regulation (30CFR701.5) as a stream or part of a stream that flows continuously during all of the calendar year and does not include parts of streams which have intermittent flow periods.

(b) The 2nd sentence in the 1st paragraph under the same subtitle on page 31 should be modified to clarify that the term "persistent aquatic life" refers to certain types or species of aquatic life and does not imply a broad range of variety of types or species of aquatic life.

(c) The 3rd sentence in the 1st paragraph under the same subtitle on page 31 should be modified either to delete the words "and source of mine water" or to clarify that the Colorado River is the source of some water for which the company is seeking water rights for use in its mining operations.

20. Page 32, Section 2, "Affected Environment"

COMMENT:

Based on discussions with the BLM, several editorial changes are recommended for purposes of clarity.

RECOMMENDATION:

(a) The 2nd sentence in the 1st paragraph under subtitle "Threatened and Endangered Species" on page 32 should be modified to describe in plain English the phrases "ungulate carrion" and "lagomorphs" consistent with recent Executive Orders and BLM internal directives.

(b) In general, consideration should be given to clarifying the statements in this subtitle to distinqnish what are general BLM management objectives or general area observations from site specific commentary on threatened and endangered species which might be impacted by the proposed leases, transportation prnposals and the resulting mining activities.

21. Page 36, Section 3, Table 8, "Cultural Resource Sites"

COMMENT:

The reference to site MS-OS-07-212 as being considered eligible for inclusion in the National Register of Historic Places may be misleading. This site is in the general area of the proposed Route A transportation proposal which has not been specifically selected or aligned. In addition, it is our understanding that this site is on privately owned land and no proposals are currently pending for inclusion in the National Register.

RECOMMENDATION:

The reference to site MS-OS-07-212 on page 36 should be further considered for clarifying language as noted abnve.

10

22. Page 37, Section 2, "Affected Environment"

COMMENT:

Based on discussions with the BLM, it has been recently determined by the BLM that the Garvey Canyon Wilderness Study Area (WS, CO-070-0158) will be deleted from further wilderness study. No protests were filed by December 15, 1980 to the BLM's proposed deletion of this Garvey Canyon area from further wilderness study.

RECOMMENDATION:

(a) The 3rd sentence in paragraph 1 under subtitle "Wilderness" on page 37 should be modified to clarify the BLM's recent final decision to delete the Garvey Canyon area from further wilderness study.

(b) The 4th sentence in paragraph 1 under the same subtitle on page 37 should be deleted as no longer necessary in light of the aforementioned BLM final action.

23. Page 38, Section 3, "Affected Environment"

COMMENT:

Based on discussions with the BLM, an editorial change is recommended for the purpose of clarity.

RECOMMENDATION:

The 4th paragraph on page 38 under subtitle "Recreation" should be modified to clarify this statement's applicability to the proposed lease area and/or transportation proposals.

24. Page 40, Section 3, "Affected Environment"

COMMENT:

The 2nd and 3rd sentences on page 40, under subtitle "Community Services" make reference to a school bond issue which was to to be voted upon on November 4, 1980. As this bond issue ballot passed on November 4, it would appear appropriate to so note and reconsider any pre-November 4th assessment.

RECOMMENDATION:

The 2nd and 3rd sentences on page 40, under subtitle "Community Services" should be modified to reflect the passage on November 4, 1980 of the noted school bond issue and its resulting potential mitigation of the pre-November 4th assessment of potential impacts.

25. Page 41, Section 3, "Affected Environment"

10

COMMENT:

The 3rd paragraph on page 41 under subtitle "The Local Economy" may be misleading and not adequately discuss other sources of state and federal impact assistance related to energy development as are described on pages S1 through S3 of this EA.

RECOMMENDATION:

The 3rd paragraph on page 41 under subtitle "The Local Economy" be further reviewed for clarification and expansion to include the current sources of state and federal impact assistance for energy related development. Representatives of OCC will attempt to provide to the BLM further citations of authorities for such impact assistance.

26. Page 42, Section 4, "Environmental Consequences"

COMMENT:

Based on discussions with the BLM, several editorial changes are recommended for purposes of clarity.

RECOMMENDATION:

(a) The 3rd sentence in the 1st paragraph under subtitle "Air Quality" on page 42 should be modified to read "The predicted increase from the Company's proposed mining activities is 17 mg/m^3 which is a 28 percent increase and is well below the federal and state standard of 75 mg/m^3."

(b) The 8th sentence in the 1st paragraph under the same subtitle on page 42 should be modified to clarify that the referenced 1980 PEDCO study was a site specific study on the proposed leased area pursuant to a BLM contract.

(c) The 1st sentence in the 1st paragraph under subtitle "Geology and Minerals" on page 42 should be modified to subsitute the numbers 45 for 44 perecent recovery rate and 150 for 178 million tons of coal removed from the Cameo seam.

27. Page 43, Section 4, "Environmental Consequences"

COMMENT:

The 5th sentence in the 3rd paragraph under subtitle "Soils" on page 43 may be misleading. As more fully described on page 11 of this EA, the maximum exposure of excavated soils for the refuse disposal site is projected to be 24 acres. As simultaneous reclamation will be occurring on previously disturbed and utilized refuse disposal sites, the reference to 600 acres in this sentence appears to be misleading.

10

RECOMMENDATION:

The 5th sentence in the 3rd paragraph under subtitle "Soils" on page 43 should be modified consistent with the comment noted above and the description of the reclamation procedures for the refuse disposal site described on page 11 of this EA.

28. Page 44, Section 4, "Environmental Consequences"

COMMENT:

The 2nd sentence in the 2nd paragraph under subtitle "Vegetation - Mine Site and Surface Facilities" on page 44 is unclear and confusing as to its meaning.

RECOMMENDATION:

The 2nd sentence in the 2nd paragraph under subtitle "Vegetation - Mine Site and Surface Facilities" on page 44 should be reconsidered and modified to clarify its meaning.

29. Page 45, Section 4, "Environmental Consequences"

COMMENT:

(a) The 1st sentence in the 34d paragraph under subtitle "Spoil Disposal" on page 45 is misleading and lacking clarity in describing the proposed reclamation procedure.

(b) An editorial change is recommended for the 6th sentence in the 1st paragraph under subtitle "Reclamation Success Potential" on page 45.

RECOMMENDATION:

(a) The 1st sentence in the 3rd paragraph under subtitle "Spoil Disposal" on page 45 should be modified to clarify the proposed reclamation procedure for the spoil disposal area. Basically, the disposal site will be constructed by salvaging first the "A" and then the "B" horizon topsoils from the excavation site. Separate topsoil stockiples for the segregated "A" and "B" horizon topsoil will be located at the end of the proposed disposal site. Subsequently, the salvage of "A" and "B" topsoils on the next to be excavated disposal site will be conducted on a continuous "take and put" schedule. That is, topsoil will be salvaged from the new excavation site and put down in proper and continuous sequence on the to be reclaimed disposal site. The initial topsoil salvage stockpiles will be stabilized and be available for the final reclamation of the last utilized idsposal site. The phrasing "moved from area to another" does not appear to accurately describe this procedure.

(b) The 6th sentence in the 1st paragraph under subtitle "Reclamation Success Potential" on page 45 should be modified to substitue the word "re-distributing" for "replacing" topsoil.

10

30. Page 46, Section 4, "Environmental Consequences"

COMMENT:

Based on discussions with the BLM, editorial changes are recommended for clarity.

RECOMMENDATION:

(a) The 1st sentence in the 3rd paragraph under subtitle "Wildlife" on page 46 should be modified to delete the phrase "50 percent" and replace it with "2:1".

(b) The 3rd sentence in the same paragraph and subtitle should be modified to substitute the name "Big Salt Wash" for "Big Salt Creek".

31. Page 47, Section 4, "Environmental Consequences"

COMMENT:

Based on discussions with the BLM, an editorial change is recommended for clarity.

RECOMMENDATION:

The 1st sentence in the 1st paragraph on page 47 under subtitle "Employee Transportation" should be modified to read "an ADT of 88 means that on an average a vehicle theoretically passes over the road every 15.5 minutes"- NOTE A similar word change is recommended on page 67 in the 2nd sentence in the 1st paragraph under subtitle "Truck".

32. Page 48, Section 4, "Environmental Consequences"

COMMENT:

Based on discussions with the BLM, an editorial change is recommended for clarity.

RECOMMENDATION:

The 1st sentence under subtitle "Paleontological Resources" on page 48 should be modified to read "No estimate can be made regarding the possible impacts from mining to paleontological resources because no actual mining has occurred in the proposed lease areas.

33. Page S3, Section 4, "Environmental Consequences"

COMMENT:

The assumption of a 6 percent royalty to the BLM referenced in the paragraph under subtitle "Mineral Lease Royalties" on page S3 is in error. Pursuant to the regulatory requirement set forth in 43CFR3473.3-2(a)(3), it is OCC's understanding that the USGS will recommend and the BLM may only offer a coal lease which shall require payment of a royalty of not less than 8 percent

of the value of the total removed from an underground mine (emphasis added). Only based on historic mining costs from a producing federal coal lease may a lessee petition the Secretary of the Interior through the USGS, pursuant to 43CFR3473.3-2(d)(1) and (2), for a reduction of the initial 8 percent royalty lease requirement. DCC feels that this assumption should be charged to an 8 percent royalty and the projected revenues to the BLM and the State of Colorado be recalculated.

RECOMMENDATION:

The 1st paragraph under subtitle "Mineral Lease Royalties" on page S3 should be reconsidered and an 8 percent royalty should be assumed in re-calculating the revenues projected to be payable to the BLM and the State of Colorado. In addition DCC will attempt to supply the BLM with citations of other authorities for impact assistance from state and federal sources.

33. Page S5, Section 4, "Environmental Consequences"

COMMENT:

The 4th and 5th sentences under subtitle "Summary" on page S5 should be reconsidered in light of the aforementioned comments relative to the recent successful school bond issue for School District S1.

34. Page 68, Section 4, "Environmental Consequences"

COMMENT:

Based on discussions with the BLM, an editorial change is recommended for clarity.

RECOMMENDATION:

The 1st sentence in the 4th paragraph on page 68 under subtitle "Cultural Resources" should be modified to read "Route A (from the mine to Mack via Salt Creek) has not been field examined."

35. Page 72, Section 4, "Environmental Consequences"

COMMENT:

As noted in Comment No. 13, clarification of the source and authority for the desgination of "prime farmland" as noted in the 1st sentence under subtitle "Prime and Unique Farmland" on page 72 should be provided.

36. Page 75, Section 4, "Environmental Consequences"

COMMENT:

The 1st sentence in the 1st paragraph on page 75 under subtitle "Net Energy Analysis" appears to be misleading. A proposed mining plan was submitted to the BLM on March 15, 1977 and was supplemental information requested

by the BLM was submitted to the BLM in May 1980. It appears that to calculate the net energy analysis, actual equipment needs, productivity, and efficiencies are required. As this information was apparently not requested from DCC and because there is no significant historical mining experience available to the BLM or to DCC site specific to these proposed lease areas, it may be misleading to say "no mining plans were available at this point".

RECOMMENDATION:

The 1st sentence in the 1st paragraph on page 75 under subtitle "Net Energy Analysis" should delete the phrase "Because no mining plans were available at this point" or make a clarification consistant with the comments noted above.

37. Page 78, Section 4, "Environmental Consequences"

COMMENT:

Based on discussions with the BLM, an editorial change is recommended for accuracy and clarity.

RECOMMENDATION:

(a) The 1st sentence in the 2nd paragraph on page 78 under subtitle "Summary of Environmental Consequences" should be modified to read "In the short term (the projected 40 year life of the mine) approximately 150 million tons of coal would be extracted.

(b) The 1st sentence in the 5th paragraph on page 78 of the same subtitle should be modified to read "One hundred and fifty million tons of coal would be recovered and is considered an unretrievable commitment."

38. Page 6, Appendix 6, "Unsuitability Report"

COMMENT:

Consistent with Comment No. 22, the paragraph under "Criteria 4: Wilderness Study Areas - Results" should be reconsidered in light of the BLM's recent decision to delete the Garvey Canyon area from further wilderness study. Similarly, the last sentence in this paragraph should be deleted.

39. USGS Report entitled "Maximum Economic Recovery and Mining Methods" dated December 15, 1980.

COMMENT:

The above captioned report was first seenby DCC when it was presented to the BLM public hearing on December 16, 1980 in Grand Junction, Colorado. Our initial review of this document and based on some subsequent discussions with the USGS indicate that some coal reserve calculations and coal classifications contained in this report may be in error. DCC will be in further discussion with the USGS on this matter and reserves its right to comment further on this USGS report. Under the terms of BLM Instruction Memorandum No. 79-646, as amended, DCC understands that it will have a further

opportunity to consider and comment upon the USGS report on maximum economic recovery.

Dorchester Coal Company appreciates the assistance provided to it by representatives of the BLM and the USGS in the development and review of this draft EA. We trust that our comments will be fully considered by these respective agencies. We particularly appreciate Mr. Robert Kline's cooperation in this matter.

If we may clarify our comments or answer any further questions, please contact Darrel Hespe of our staff.

Because of certain confusion contained in the different public notices published by the BLM and the short time between the public hearing on December 16 and the published due dates for these comments (December 22, 1980), we have submitted these comments directly to the BLM - Grand Junction District Office with the understanding that the BLM - Colorado State Office and USGS copies will be transmitted by the BLM's Grand Junction District Office. This procedure was approved by the local BLM office and the acting State Director's office on December 22, 1980.

Sincerely,

Leland H. Acre
Manger of Operations

by Darrel Hespe, Environmental Coordinator
Darrel Hespe
LHA:sh

CC: Mr. Robert Kline
Bureau of Land Management
764 Horizon Drive
Grand Junction, Colorado 81501

Deputy Conservation Manager (RE)
C/R USGS Conservation Div. (MS 609)
Box 25046
Denver Federal Center
Denver, Colorado 80225

D. Hespe
Central File
D. Sturges
A. Vitale

Department of Local Affairs
Colorado Division of Planning

Philip H. Schmuck, Director

Richard D. Lamm, Governor

State Clearinghouse
State Cartographer
State Demographer
Land Use Commission
208 Water Quality

December 5, 1980

Mr. Charles W. Luscher
Acting State Director
Bureau of Land Management
Colorado State Office
700 Colorado State Bank Building
1600 Broadway
Denver, Colorado 80202

SUBJECT: Dorcheater-Columbine Preference Right Lease Applications
Draft Environmental Assessment

Dear Mr. Luscher:

The Colorado Clearinghouse has received the above-referenced Draft Environmental Assessment and has distributed it to interested state agencies. No comments have been received as of this date. However, should there be any late comments, we will forward them to you for your information.

Sincerely,

Stephen O. Ellis
Chief Planner

SE/FN/vt

DEC 9 '80

520 State Centennial Building, 1313 Sherman Street, Denver, Colorado 80203 (303) 839-2351

11

Department of Local Affairs
Colorado Division of Planning

Philip H. Schmuck, Director

Richard D. Lamm, Governor

'81 JA -7 A7:35

MEMORANDUM

TO: BUREAU OF LAND MANAGEMENT
Attn: Charlee W. Luscher

FROM: Stephen O. Ellis
State Clearinghouse

SUBJECT: ADDITIONAL COMMENTS
Dorchester-Columbine Preference Right Lease
Applications, Draft Environmental Assessment

DATE: January 5, 1981

The enclosed comments on the above-referenced proposal have just been received from the following:

Colorado Division of Wildlife

Please consider this transmittal as an official addition to the comments which I sent to you earlier. We regret this late transmittal, and hope that these comments can still be given consideration.

Thank you for your attention.

SE/MK/vt
Enclosure

320 State Centennial Building, 1313 Sherman Street, Denver, Colorado 80203 (303) 892-2251

11

STATE OF COLORADO
Richard D. Lamm, Governor
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF WILDLIFE
Jack R. Grieb, Director
6060 Broadway
Denver, Colorado 80216 (825-1192)

December 31, 1980

TO: Stepheo O. Ellis
Colorado Clearinghouse

FROM: Al Whitaker
Wildlife Program Specialist

JAN 5 1981

SUBJECT: Dorchester - Colomins PRLA Application
SR #80-41

Appropriate personnel from this agency heve reviewed the above referenced spplication. We feel it ie eccurate and complete but does not quantify wildlife impacts due to the proposal.

Dorchester officials heve verbally agreed to several measures, with this agency which will decrease impacts on the States' wildlife resources. We expect their cooperation in this regard.

A major problem we do have with the proposal is the coal haulage corridor. We much prefer Alternative B over Alternative A. The reason given for the use of "A" is that gradea are too steep for use of rail in "B". A quick check of the grades oo a topographic map does oot seem to support this contention. If Alterntive A is used, we would appreciate being consulted duriog the actual route aelection process.

AFW:jb
ec: file

DEPARTMENT OF NATURAL RESOURCES, Monte Pascoe, Executive Director • WILDLIFE COMMISSION, Wilbur Redden, Chairman
Donald Fernandez, Vice Chairman • James Smith, Secretary • Jean K. Tool, Member • Vernon C. Williams, Member
Michael Higbee, Member • Sam Coudill, Member • Richard Dvelbiss, Member

12

COLORADO STATE DEPARTMENT OF HIGHWAYS

December 10, 1980

'80 DEC 18 A7:45

DEC 15 1980

DIV. OF PLANNING

Mr. Philip H. Schmuck
Director
Colorado Division of Planning
520 State Centennial Building
1313 Sherman Street
Denver, Colorado 80203

Deer Mr. Schmuck:

The Colorado Department of Highways has completed its review of the Environmental Assessment for the Dorcester - Colomine Preference Right Leese Applications and has the following comments.

The impacts from this project on State Highways 139, 6 and 50 could be significant unless mitigation measures are included in the plan. A lerge amount of truck traffic will be generated by the project and will require upgrading these roadways as well as major safety improvements to intersections.

The Department has concerns with all of the alternatives being proposed and as a minimum will ask for intersection channelization, consideration of grade separations, roadway reconstruction and signalization depending on the alternative recommended for construction. All alternatives will have a severe impact on existing highways and roads. Therefore, we would like to meet with the proponent and BLM prior to approval of any plans for this mine facility to discuss transportation impacts and mitigation measures. Mr. Larry Abbott, District 3 Environmental Manager, can be contacted to errenge this meeting. His address is 606 So. 9th St. Grand Junction, 81501, phone number 242-2862.

Thank you for the opportunity to review this document.

Very truly yours,

Harvey R. Atchison
Director
Division of Transportation Planning

By Barbara L.S. Chocol
Manager
Impact Evaluation Branch

REG/rg

4201 EAST ARKANSAS AVENUE DENVER, CO 80222 (303) 757-9525

13

United States Department of the Interior
NATIONAL PARK SERVICE
Colorado National Monument
Fruita, Colorado 81521

IN REPLY REFER TO:

December 19, 1980

RECEIVED
JAN - 6 1981
BUREAU OF LAND MGMT.
GRAND JUNCTION

State Director
Colorado State Office
Bureau of Land Management
Room 700
Colorado State Bank Building
1600 Broadway
Denver, CO 80202

Gentlemen:

The National Park Service has examined the Dorchester-Colomins PRLA Environmental Assessment and has definite concerns regarding air quality degradation as it would affect Colorado National Monument. Specifically, we have several questions that we feel oeed to be addressed more fully:

1. The sasessment does not adequately respond to the potential problem of fugitive emissions from the mine site or from the railroad construction project. The National Park Service is concerned that there is potential for further degradation of air quality below limits established as National Ambient Air Quality Standards for Total Suspended Particulates within the Grand Valley. As you are probably aware, the Grand Junction area is already a non-attainment area for total suspended particulates. No substantive meteorological data was presented to address what would become of these fugitive emissions during those times when air movements in and out of the Grand Valley are restricted by temperature inversions.

2. The PEDCO site specific analysis usea a background level of 44 micrograms per cubic meter for the proposed lease site near Douglas Pass. That figure is the same background level PEOCO assigned to the Grand Junction area in a previous study. High-volume sampling at the headquarters area of Colorado National Monument indicates a background level of 17 micrograms per cubic meter. It appears that this figure would be more likely to represent the background level in the Douglas Pass area. Base line background air quality levels are essential to later determinations of the direct impact of this project on overall ambient air quality standards for the Grand Valley. The discrepancies in these figures regarding background levels seem to indicate that a closer examination of all air quality data is in order before this project is authorized.

13

3. The National Park Service is concerned that energy-related developments within the Grand Valley are not being analyzed from the standpoint of their combined impacts on air quality. The proposed Dorchester-Colomine PRLA lease is but one of several developments that will contribute to air quality degradation in the Grand Valley. Others include the Sheridan Mine, the Colorado-Ute proposals for coal-fired electric generating plants at Mack and Olathe (the Mack plant being a probable user of coal from the Dorchester-Colomine project), and the secondary impacts created by a rapid growth of the Grand Valley population. Realizing that these impacts are not all your direct responsibility, those actions directly controlled by the Bureau of Land Management should be addressed together for their total impact on air quality within the Grand Valley.

We appreciate the opportunity to comment on this environmental document.

Sincerely yours,

Dennis K. Huffman
Superintendent

14

STATE OF COLORADO
Richard D. Lamm, Governor
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF WILDLIFE
Jack R. Grieb, Director
6060 Broadway
Denver, Colorado 80216 (825-1192)

December 31, 1980

TO: Stephen O. Ellis
Colorado Clearinghouse

FROM: Al Whitaker
Wildlife Program Specialist

SUBJECT: Dorchester - Colomine PRLA Application
SR #80-41

Appropriate personnel from this agency have reviewed the above referenced application. We feel it is accurate and complete but does not quantify wildlife impacts due to the proposal.

Dorchester officials have verbally agreed to several measures, with this agency which will decrease impacts on the States' wildlife resources. We expect their cooperation in this regard.

A major problem we do have with the proposal is the coal haulage corridor. We much prefer Alternative B over Alternative A. The reason given for the use of "A" is that grades are too steep for use of rail in "B". A quick check of the grades on a topographic map does not seem to support this contention. If Alternative A is used, we would appreciate being consulted during the actual route selection process.

AFW:jb
cc: file

RECEIVED
JAN 14 1981
BUREAU OF LAND MGMT
GRAND JUNCTION

DEPARTMENT OF NATURAL RESOURCES, Monte Pascoe, Executive Director • WILDLIFE COMMISSION, Wilbur Redden, Chairman
Donald Fernandez, Vice Chairman • James Smith, Secretary • Jean K. Tool, Member • Vernon C. Williams, Member
Michael Hughes, Member • Sam Caudill, Member • [illegible], Member

15

Department of Local Affairs
Colorado Division of Planning
Philip H. Schmuck, Director

Richard D. Lamm, Governor

MEMORANDUM

TO: BUREAU OF LAND MANAGEMENT
Attn: Charlea W. Luscher

FROM: Stephen O. Ellis
State Clearinghouse

SUBJECT: ADDITIONAL COMMENTS
Dorchester-Columbine Preference Right Lease
Applications, Draft Environmental Assessment

DATE: December 19, 1980

The enclosed comments on the above-referenced proposal have just been received from the following:

Colorado Geological Survey

Please consider this transmittal as an official addition to the comments which I sent to you earlier. We regret this late transmittal, and hope that these comments can still be given consideration.

Thank you for your attention.

SE/MK/vt
Enclosure

RECEIVED
JAN 16 1981
BUREAU OF LAND MGMT
GRAND JUNCTION

520 State Centennial Building, 1313 Sherman Street, Denver, Colorado 80203 (303) 892-2351

15

STATE OF COLORADO

RICHARD D. LAMM
Governor

JOHN W. ROED
Director

COLORADO GEOLOGICAL SURVEY
DEPARTMENT OF NATURAL RESOURCES
715 STATE CENTENNIAL BUILDING – 1313 SHERMAN STREET
DENVER, COLORADO 80203 PHONE (303) 839-2611

December 11, 1980

Department of Local Affairs
Colorado Division of Planning
1313 Sherman Street, Room 520
Denver, CO 80203

RE: A95 REVIEW
DORCESTER COLUMBINE
PREFERENCE RIGHT LEASE
APPLICATIONS SR #80-81

The leasing of these coals to the applicant will have no adverse effect on the area and will afford the development of these coal resources.

L. R. Ladwig
Chief, Mineral Fuels

gp

DEC 15 1980
DIV. OF PLANNING

GEOLOGY
STATE OF THE [illegible]

DISTRIBUTION

Office of Surface Mining (OSM)
USGS, Area Mining Supervisor
Colorado State Clearing House
U.S. Fish & Wildlife Service
Mayor, Grand Junction
Mayor, Fruita
Mesa County Commissioners
Mesa County Planning Commission
Garfield County Commissioners
Garfield County Planning Commission
Dorchester Coal Company
Colorado National Monument
Interested Citizens

LIST OF PREPARERS

Name and Title	Education	Experience	Assignment
Robert Kline, Team Leader	B.S. Range Management	25 years District Environmental Coordinator. Team Leader on G.J.R.A. Grazing ES Colony Oil Shale EIS.	Environmental Coordination. Air quality resources
Jim Wilkinson, Geologist	B.S. Geology	7 years geologist	Geologic/topographic resources, Assist. Team Leader
Steve Moore, Economist	M.S. Agriculture Economics	1 year (BLM), 4 years U.S. Department of Agriculture; 1 year Senate Aid.	Social and Economic
John Kornfeld, Soil Scientist	B.S. Watershed Science	7 years soil scientist. BLM and Forest Service	Soil resources
James Scheidt, Hydrologist	B.S. Agriculture	2 years soil scientist, 3 years hydrologist (BLM); 1 year Geological Survey	Water quality and quantity
John Crouch, Archaeologist	M.A. Anthropology	8 years archaeologist, (BLM)	Cultural and paleo resources
Rob Cleary, Landscape Architect	A.B. Fine Arts, M.L.A. Landscape Architect Diploma, Urban Design	6 years	Visual resources

Ron Lambeth, Wildlife Biologist	B.A. Biology, M.A. Range Resources	4 years (BLM), 16 years (other)	Wildlife resources
Carlos Sauvage, Recreation Planner	B.S. Outdoor Recreation Planner	7 years BLM	Recreation resources
Orvin Logan, Realty Specialist	B.S. Wildife and M.S. Avian Ecology	19 years realty (BLM), 3 years soil conservationist	Land and utilities
Dave Trappett, Range Conservationist	B.S. Forest Range Management	2 years range conservation (BLM) 3 years surface protection	Vegetative resources
Gregg Graff	M.S. Urban and Regional Planning	2 years planning local govt.	Transportation, net energy and noise
Nancy Brooks, Editor		7 years editorial; BLM and Geological Survey	Document management

APPENDIX

APPENDIX 1
UNSUITABILITY REPORT

DORCHESTER COAL COMPANY LEASES--0127833, 0127833, 0127834

Results and Exceptions of Unsuitability Criteria for the Proposed Coal Lease Area

As part of the federal coal management program, the Bureau of Land Management (BLM) has initiated a series of steps toward the lease of coal mining sites. Coal lease applications are limited by multiple use management decisions that consider other resource values, resource demands, and public social and economic concerns. This section assesses land within the Dorchester Preference Right Lease Application area in accordance with unsuitability criteria (Fed. Reg. July 19, 1979, v.44, No. 140). Criteria applicable to the lease area are discussed in the following paragraphs and summarized in table 1. Map 1 gives the general location of the lease area.

The BLM has made a final determination that all of the land within the PRLA boundaries appears to be suitable for coal leasing as long as the stipulations are followed. The BLM did consult with other federal and state agencies on an informal basis. Formal consultation has been completed and BLM is able to make a final determination that the area is suitable for coal leasing.

Results of Individual Criterion and Exceptions

Criterion 1: Federal Land Systems

All federal lands included in the following land systems or categories shall be considered unsuitable for coal mining:

> National Park System, National Wildlife Refuge System, National System of Trails, National Wilderness Preservation System, National Wild and Scenic Rivers System, National Recreation Areas, and other federally purchased recreation lands, Custer National Forest, and Federal lands in incorporated cites, towns, and villages.

All federal lands that are recommended for inclusion in such systems or categories by the Administration in legislative proposals submitted to the Congress or that are required by statute to be studied for inclusion in such systems or categories shall be considered unsuitable. A lease may, however, be issued for underground coal mining within the Custer National Forest, with the consent of the Department of Agriculture. In applying this criterion, the authorizied officer shall consult with the appropriate managing agencies of these land systems or categories.

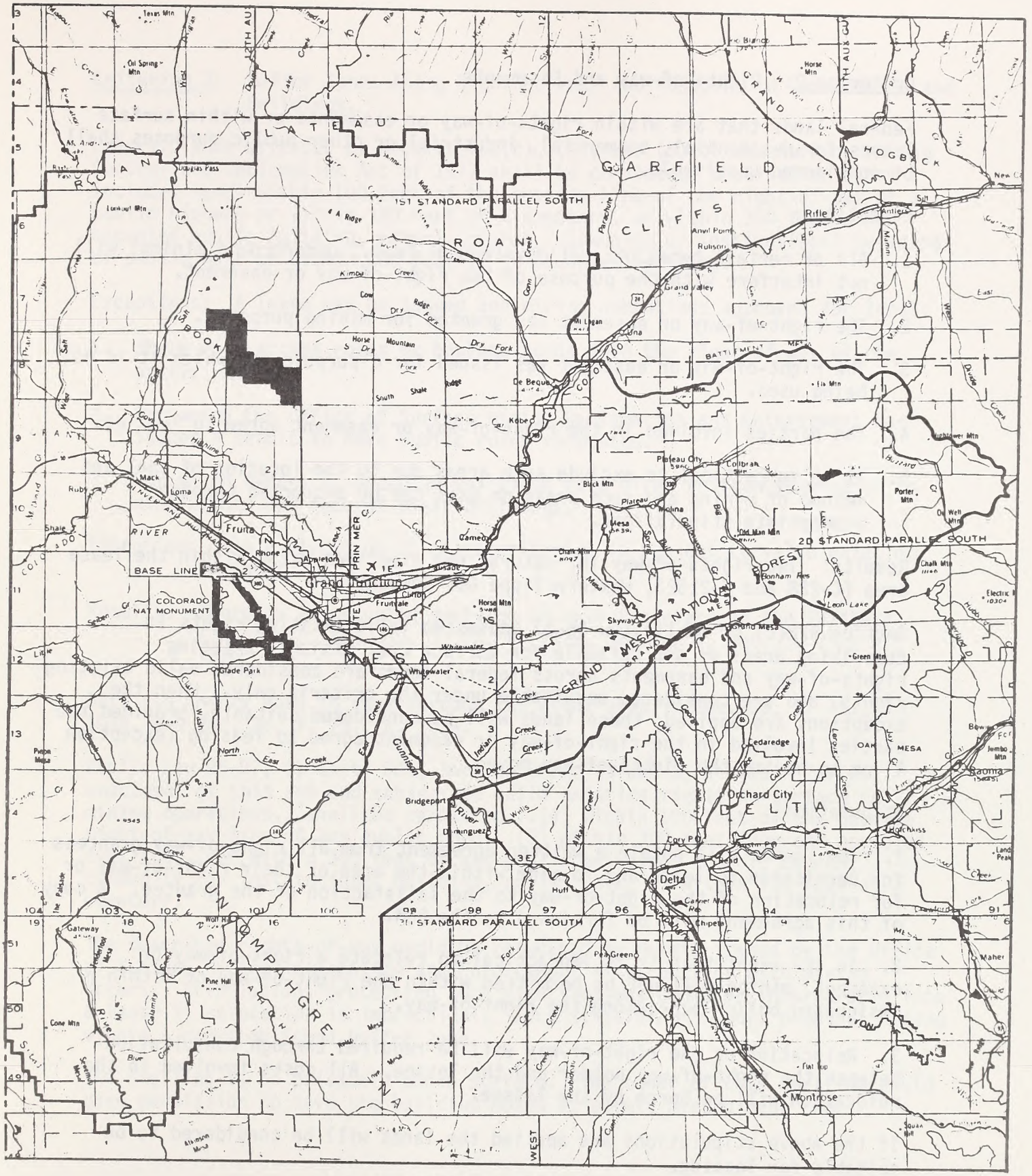
Exemptions: The application of this criterion to lands within the listed land systems and categories is subject to valid existing rights.

Results: The areas under study do not contain lands that are included in, or being recommended for, inclusion (by the Administration in legislative proposals to Congress) in the indicated land systems or categories. None of the areas under review are considered unsuitable.

TABLE 1
CRITERIA AND EXCEPTIONS APPLICABLE TO STUDY AREA

Criterion Number	Criterion Title	Applicable to Study Area
1	Federal land systems	No
2	Rights-of-way and easements	Yes
3	Buffer zones along rights-of-way	No 1/
4	Wilderness study areas	No 2/
5	Scenic areas	No
6	Lands used for scientific studies	No
7	Historic lands and sites	Yes
8	Natural areas	No
9	Federally listed endangered species	No 3/
10	State listed endangered species	No 4/
11	Bald and golden eagle nests	Yes 5/
12	Bald and golden eagle roost and concentration areas	No
13	Falcon cliff nesting sites	Yes 6/
14	Migratory birds	No
15	State resident fish and wildlife	No 7/
16	Floodplains	No
17	Municipal watersheds	No
18	National resource waters	No
19	Alluvial valley floors	No
20	State proposed criteria	No

1/ No, with exceptions applied.
2/ Final decision on wilderness study area has not been made.
3/ No known threatened or endangered plant species exist in the area; but three endangered animal species occur.
4/ No known threatened or endangered plant species exist; four endangered animal species occur.
5/ Nests were found within the lease area.
6/ One nest found just outside lease area and buffer zone has been outlined.
7/ Critical habitat but no long-term impacts.



MAP 1 GENERAL LOCATION

0 5 10 15 miles

Scale

Grand Junction Resource Area - ☐

Lease Area - ■

Criterion 2: Rights-of-way and Easements

Federal lands that are within rights-of-way or easements or within surface leases for residential, commercial, industrial or other public purposes shall be considered unsuitable.

Exceptions:

1. All or certain types of coal development (e.g., underground mining) will not interfere with the purpose of the right-of-way or easement.

2. The right-of-way or easement was granted for mining purposes.

3. The right-of-way or easement was issued for a purpose for which it is not being used.

4. The parties involved in the right-of-way or easement agree to leasing.

5. It is impractical to exclude such areas due to the location of coal and method of mining and such areas or uses can be protected through appropriate stipulations.

Results: Two rights-of-way for natural gas pipelines exist within the lease area (C-228 and C-21523, Western Slope Gas Company).

Section 522(c) of Public Law 95-87 addresses valid existing rights in describing areas as not suitable for surface coal mining. Existing rights-of-way and easements across federal lands are considered valid existing rights, and are considered unsuitable under the criteria only. When the exceptions are applied, these lands will be considered suitable, provided the parties involved in the right-of-way or easement agree to leasing (exception 4) or to having the rights-of-way moved.

Stipulations:

1. The lessee will obtain a written agreement from all right-of-way grantees for permission to lease and to mine within the area of their right-of-way or for relocation of the right-of-way to the satisfaction of the grantee. A copy of this agreement will be furnished to the BLM.

2. In the event that it is impractical to relocate a right-of-way or easement, mining will not be permitted within the right-of-way or within a designated buffer zone along the right-of-way.

3. Relocation of the right-of-way will be required through consultation between the right-of-way holder and the lessee. All costs involved in the relocation will be borne by the lessee.

If the above stipulations are applied the lands will be considered to be suitable for leasing.

Criterion 3: Buffer Zones Along Rights-of-way and Adjacent to Communities and Buildings.

Federal lands affected by Section 522(c), (4), and (5) of the Surface Mining Control and Reclamation Act of 1977 shall be considered unsuitable. This includes lands within 100 feet of the outside line of the right-of-way of a public highway or within 100 feet of a cemetery, or within 300 feet of an occupied public building, school, church, community or institutional building or public park or within 300 feet of an occupied dwelling.

Exceptions: A lease may be issued and mining operations approved for lands:

1. Where mine access roads or haulage roads join the right-of-way of the public road.

2. For which the Office of Surface Mining Reclamation and Enforcement has issued a permit to have public roads relocated.

3. For which owners of occupied buildings have given written permission to mine within 300 feet of their buildings.

Exception: The application of theis criterion is subject to valid existing rights.

Results: There is an occupied dwelling on privat surface in the SW/4SW/4 (Tract 44), Sec. 30, T. 7S, R. 101W. and Lot 2, Sec. T. 7S., R. 102W.

Garfield County Road 16 runs through the study area in Sec. 30, T. 7S., R. 101W. and Sec. 36, T. 7S., R. 102W.

Public Law 95-87, 91 Stat. 509, Section 522(c)(4 and 5) states: "After enactment of this act and subject to valid existing rights no surface coal mining operations...shall be permitted...(4) within 100 feet of the outside right-of-way line of any public road...(5) within 300 feet from any occupied dwelling...nor within 300 feet of any public building, school, church, community, or institutional building, public park, or within 100 feet of a cemetery."

The described rights-of-way could be relocated by permit issued by the Office of Surface Mining Reclamation and Enforcement if a conflict with mining occurs. Stipulations protecting such rights-of-way could be incorporated into a lease if relocation is impractical. Such stipulations could prohibit mining within a preestablished buffer zone.

The dwelling is on privately owned surface. The owner of this dwelling could give permission to have the building moved or permit mining near them.

Stipulations:

1. The leassee will obtain a written agreement from the owner of the private dwelling to maintain or adjust the 300-foot buffer zone or to give permission to have the building moved. A copy of the agreement will be furnished to the BLM. If an agreement is not obtained, mining will not be allowed within the 300-foot buffer zone.

   The lessee will obtain a written agreement from Garfield County for relocation of County Road 16 if deemed necessary. A copy of the agreement will be furnished to the BLM. If relocation of the road is impracticable, mining will be prohibited within the right-of-way for County Road 16 and within a 100-foot buffer zone from the outside of the right-of-way.

Criterion 4: Wilderness Study Areas

Recommended criterion:

Federal lands designated as wilderness study areas shall be considered unsuitable for coal mining while under review by the Administration and the Congress for possible wilderness designation. For any federal land which may be leased or mine prior to completion of the wilderness inventory by the surface management agency, the environmental impact statement (or analysis) of the lease sale or mine plan must consider whether the land possesses the characteristics of a wilderness study area. If the finding is affirmative, the land shall be considered unsuitable, unless issuance of noncompetitive coal leases and mining on leases is authorized under the Wilderness Act and the Federal Land Policy and Management Act of 1976.

Exemption: The application of this criterion to lands for which the Bureau of Land Management is the surface management agency is subject to valid existing rights.

Results: There are no wilderness study areas that would be affected by the proposed action.

Criterion 5: Scenic Areas

Scenic federal lands designated by visual resource management analysis on Class 1 (an area of outstanding scenic quality or high visual sensitivity) but not currently on the National Register of Natural Landmarks shall be considered unsuitable.

A lease may be issued and mining operations approved if the surface management agency determines that mining operations will not significantly diminish or adversely affect the scenic quality of the designated area.

Exemptions: This criterion does not apply to lands: to which the operator made substantial financial and legal commitments prior to January 4, 1977; on which operations were being conducted on August 3, 1977; or which include operations on which a permit has been issued.

Results: Class 1 delineation applies only to existing wilderness areas, some natural areas, wild portions of wild and scenic rivers, and other similar situations where management activities are to be restricted. No such areas have been identified in the lease area.

Criterion 6: Lands Used For Scientific Studies

Federal lands under permit by the surface management agency, and being used, for scientific studies involving food and fiber production, natural resources or technology demonstrations and experiments shall be considered unsuitable for the duration of the study, demonstration, or experiment, except where mining could be conducted in such a way as to enhance, or not jeopardize the original purposes of the study, as determined by the surface management agency, or where the principal scientific user or agency gives written concurrence to all or certain methods of mining.

Exemptions: This criterion does not apply to lands: to which the operator made substantial financial and legal commitments prior to January 4, 1977; on which operations were being conducted on August 3, 1977; or which include operations on which a permit has been issued.

Results: No federal lands under permit for scientific studies have been identified within the lease area.

Criterion 7: Historic Lands and Sites

All districts, sites, buildings, structures, and objects of historic, architectural, archaeological, or cultural significance which are included in or eligible for inclusion in the National Register of Historic Places, and an appropriate buffer zone around the outside boundary of the designated property (to protect the inherent values of the property that made it eligible for listing in the National Register) as determined by the surface management agency in consultation with the Advisory Council on Historic Preservation and the State Historic Preservation Office shall be considered unsuitable.

Exception: All or certain types of stipulated mining may be allowed if the surface management agency determines after consultation with the Advisory Council on Historic Preservation and State Historic Preservation Officer that the direct and indirect effects of mining, as stipulated, on a property in or eligible for the National Register of Historic Places will not result in signficant adverse impacts to the property.

Exemptions: The application of this criterion to a property listed in the National Register is subject to valid existing rights and does not apply to surface coal mining operations existing on August 3, 1977. The application of the criterion to buffer zones and properties eligible for the National Register does not apply to lands to which the operator made substantial legal and financial commitments prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977; or which include operations on which a permit has been issued.

Results: Two cultural resource surveys were performed for this proposed undertaking. One survey encompassed 1,970 acres or 10% of the proposed lease area and the other covered 680 acres of the area proposed for the haulage road.

One historical site (5ME242) was recorded near the haulage road. No archaeological sites were located. There were no sites recorded which are considered eligible for inclusion to The National Register of Historic Places (36CFR800).

The entire area is considered suitable for mining although no inventories other than those mentioned above have been done.

The majority of historic resources in the study area represent broad patterns of settlement associated with ranching, mining, and agriculture. Gar Mesa, an early 20th century farm, represents a unique attempt by the Quaker Oats Company to expand and diversify.

Recorded archaeological resources appear limited in this area. One reason is thought to be associated with the recent increases in soil deposition near County Road 16. The suspected archaeological sites are assumed to be buried. One site located near the project area (5ME1064) was observed eroding out of a soil layer cut by a jeep trail. This region is known to have been utilized in prehistoric times. F.V. Hayden reported in 1881 that Big Salt Wash was being utilized as a travel route by the Ute Indians. Cultural resource sites associated with prehistoric cultures are known to exist both north and south of the study area.

For further information see:

1. Conner, C. 1979. Cultural resources inventory report of the Dorchester-Colomine Coal Company, Fruita project and haulage route. Grand River Institute, Grand Junction, Colorado.

2. Hibbets, B.N., et al 1978. Final report of an archaeological survey of the West Central Colorado coal leases, volume 1--settlement analysis. Archaeological Associates, Boulder, Colorado.

Consultation procedures with the Advisory Council on Historic Preservation were initiated on December 4, 1979, and are contnuing.

Stipulations:

Cultural and Paleontological Resources:

1. All procedures detailed in the "Programatic Memorandum of Agreement among the Department of the Interior, Bureau of Land Management, Office of Surface Mining Reclamation and Enforcement, and United States Geological Survey, and The Advisory Council on Historic Preservation Regarding the Federal Coal Management Program" will be followed. This is shown as attachment 1.

2. Before the approval of a mining plan, the authorized officer may require a survey of all or part of the leased land to provide an inventory of any historical, cultural, paleontological, and archaeological values. The survey shall be conducted by a qualified professional archaeologist, approved by the authorized officer, and a report of the survey shall be submitted to the authorized officer. The approval of an exploration or mining plan or the continuation of lease operations may be conditioned on the approval of the survey report and the approval of measures to protect the historical, cultural, paleontological, and archaeological values. The cost of any survey or measures to protect such values discovered as a result of the survey shall be borne by the lessee and items and features of historical, cultural, paleontological, or archaeological value shall remain under the jurisdiction of the United States.

3. If any items or features of historical, cultural, paleontological, or archaeological value are discovered during lease operations, the lessee shall immediately notify the mining supervisor and shall not disturb such items or features until the mining supervisor issues instructions. If the lessee is ordered to take measures to protect any items or features of historical, cultural, paleontological, or archaeological value discovered during lease operations, the cost of the measures shall be borne by the lessor and such items and features shall remain under the jurisdiction of the United States.

Criterion 8: Natural Areas

Federal lands designated as natural areas or as national natural landmarks shall be considered unsuitable.

Exceptions: A lease may be issued and mining operations approved in an area or site if the surface management agency determines that:

1. With the concurrence of the state, the area or site is of regional or local significance only.

2. The use of appropriate stipulated mining technology will result in no significant adverse impact to the area or site.

3. The mining of the coal resource under appropriate stipulations will enhance information recovery (e.g., paleontological sites).

Exemptions: This criterion does not apply to lands: to which the operator made substantial financial and legal commitments prior to January 4, 1977; on which operations were being conducted on August 3, 1977; or which include operations on which a permit has been issued.

Results: No lands have been designated or proposed for designation as natural areas or national natural landmarks within the lease area.

Criterion 9: Federally Listed Endangered Species

Federally designated critical habitat for threatened or endangered plant and animal species and habitat for federal threatened or endangered species which is determined by the Fish and Wildlife Service and the surface management agency to be of essential value and where the presence of threatened or endangered species has been scientifically documented, shall be considered unsuitability.

Exception: A lease may be issued and mining operations approved if, after consultation with the Fish and Wildlife Service, the surface management agency determines the species and its habitat will not be adversely affected by all or certain stipulated methods of coal mining operations.

Results: Three endangered animal species--bald eagle, peregrine falcon and whooping crane--are expected to appear on or over the area at some time of the year. No critical habitat has been designated for these species within the review area nor is any anticipated. No impact to these species will occur from the proposed action (see also Sec. 7 opinion, appendix 2).

No species of threatened or endangered plants are known to exist in or around the surface facilities of the Dorchester lease area nor has any critical habitat been identified for that location.

Criterion 10: State Listed Endangered Species

Land containing habitat determined critical or essential for plant or animal species listed by a state pursuant to state law as endangered or threatened shall be considered unsuitable.

Exception: A lease may be issued and mining operations approved if, after consultation with the state, the surface management agency determines that the species will not be adversely affected by all or certain stipulated methods of coal mining.

Exemptions: This criterion does not apply to lands: to which the operator made substantial financial and legal commitments prior to January 4, 1977; on which operations were being conducted on August 3, 1977; or which include operations on which a permit has been issued.

Results: Four endangered animal species--bald eagle, peregrine falcon, whooping crane, and greater sandhill crane--are expected to appear seasonally on or over the lease area. No essential habitat designations have been identified in any portion of the review area. The late March or early April and late September-October migration route of the two cranes passes over the lease area. No designated feeding or resting locations exist in the lease area. No impact to state listed species is predicted.

There are no state-listed plant species known to occur in the area, therefore no areas are unsuitable under this criteria.

Criterion 11: Bald and Golden Eagle Nests

A bald or golden eagle nest that is determined to be active and an appropriate buffer zone of land around the nest area shall be considered unsuitable. Consideration of availability of habitat for prey species and of terrain shall be included in the determination of buffer zones. Buffer zones shall be determined in consultation with the U.S. Fish and Wildlife Service.

Exceptions: A lease may be issued and mining operations approved if:

1. They can be conditioned in such a way, either in manner or period of operation, that eagles will not be disturbed during breeding season.

2. Golden eagle nest sites will be moved with the concurrence of the Fish and Wildlife Service.

Results: Three golden eagle nests were found within the lease area and a fourth nest is within a quarter of a mile of the boundaries of the lease area (Enderson, James H. 1977. Raptor Inventory, Grand Junction Resource Area. Sikes Act Studies, Contract YA-512-CT6-138). BLM visited the area in the summer of 1979 and found juvenile birds exhibiting post-season loyalty to the fledging sites. Areas unsuitable by this criteria are delineated on map 2. Surface activities are not planned within the buffer zones.

Stipulation: No surface activities will occur within the three golden eagle nest buffer zones from December 15 to July 31. The mine surface features within the buffer zones must not impair the site for nesting golden eagles and must be approved by the BLM.

Criterion 12: Bald and Golden Eagle Roost and Concentration Areas

Bald and golden eagle roost and concentration areas used during migration and wintering shall be considered unsuitable.

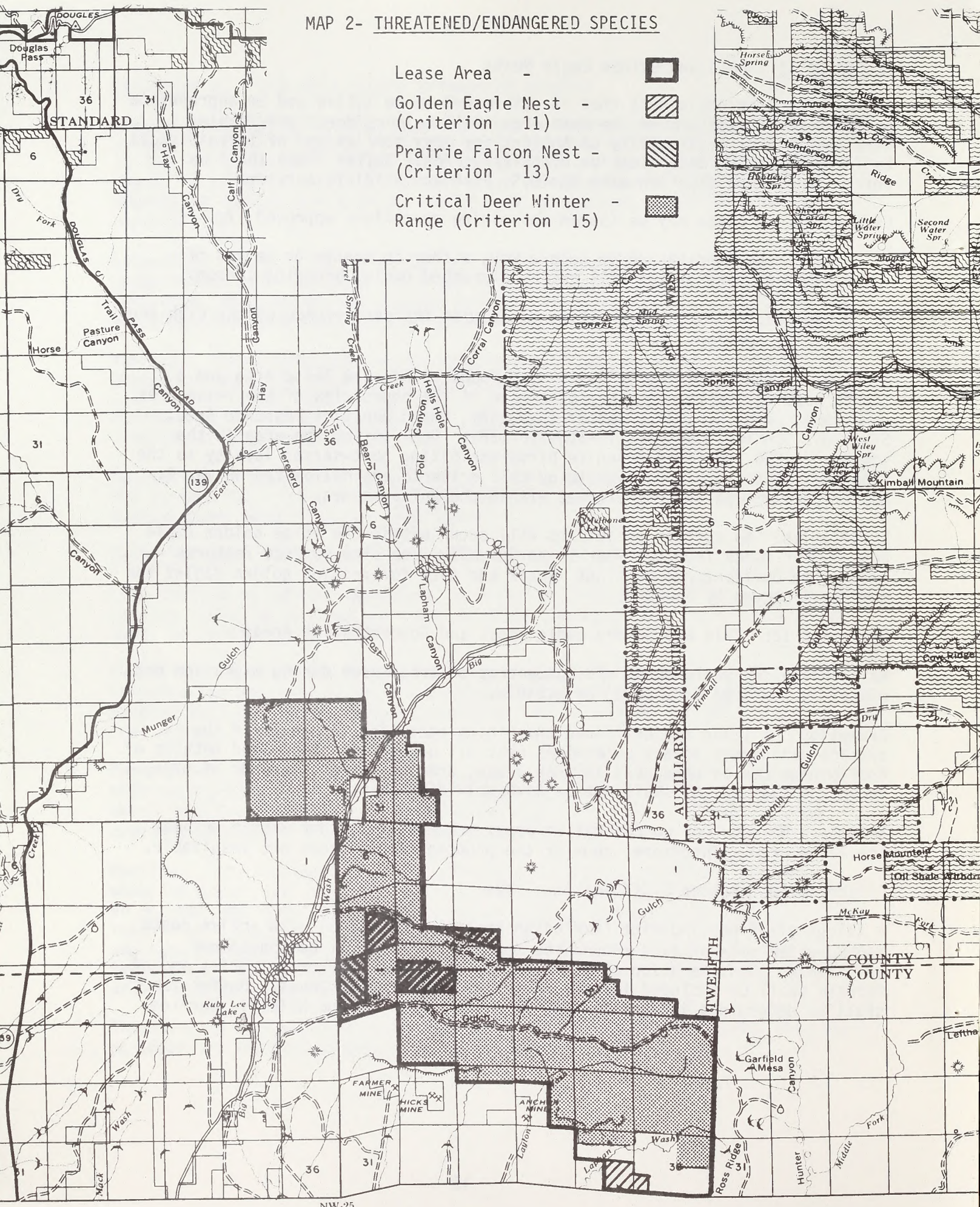
Exception: A lease may be issued and mining operations approved if the surface management agency determines that all or certain stipulated methods of coal mining can be conducted in such a way, and during such periods of time, to ensure that eagles shall not be adversely disturbed.

Results: No roost or concentration areas are known to occur within or near the lease area. Therefore, none of the proposed lease areas are unsuitable.

Criterion 13: Falcon Cliff Nesting Sites

A falcon cliff nesting site (excluding kestrel nest sites) with active nests and a buffer zone of land around the nest site area shall be considered unsuitable. Consideration of availability of habitat for prey species and of terrain shall be included in the determination of buffer zones. Buffer zones shall be determined in consultation with the U.S. Fish and Wildlife Service.

MAP 2- THREATENED/ENDANGERED SPECIES



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Exception: A lease may be issued and mining operations approved where the surface management agency, after consultation with the Fish and Wildlife Service, determines that all or certain stipulated methods of coal mining will not adversely affect the migratory bird habitat during the periods when such habitat is used by the species.

Results: One buffer zone is outlined for a prairie falcon nest southwest of, but close to the lease area (map 2).

Stipulation: No surface activities shall occur within the falcon cliff nesting site buffer zone.

Criterion 14: Migratory Birds

Federal lands which are priority habitat for migratory bird species of high federal interest on a regional or national basis, as determined jointly by the surface management agency and the Fish and Wildlife Service, shall be considered unsuitable.

Exception: A lease may be issued and mining operations approved where the surface management agency, after consultation with the Fish and Wildlife Service, determines that all or certain methods of coal mining will not adversely affect the migratory bird habitat during the periods when such habitat is used by the species.

Results: No high priority habitat for migratory bird species of high federal interest on a regional or national basis has been determined to exist in the lease area (see table 2). Therefore this criteria does not apply to the lease areas.

Criterion 15: State Resident Fish and Wildlife

Federal lands which the surface management agency and the State jointly agree are fish and wildlife habitat for resident species of high interest to the State and which are essential for maintaining these priority wildlife species shall be considered unsuitable. Examples of such lands which serve a critical function for the species involved include:

1. Active dancing and strutting grounds for sage grouse, sharp-tailed grouse, and prairie chicken.

2. Most-critical winter ranges for deer, antelope, and elk.

Exception: A lease may be issued and mining operation approved if, following consultation between the state and the land management agency, it is determined that the coal mining will not have a significant long-term impact on the species being protected.

Exemptions: This criterion does not apply to lands: to which the operator made substantial financial and legal commitments prior to January 4, 1977; on which operations were being conducted on August 3, 1977; or which include operations on which a permit has been issued.

TABLE 2

MIGRATORY BIRDS OF HIGH FEDERAL INTEREST

Name	Presence	Impact
Sandhill crane	Feeds outside of lease area	None likely
Bald eagle	Winter resident	None likely
Golden eagle	Common resident	See Criteria 11
Peregrine falcon	None reported	None likely
Prairie falcon	Common, breeding area	None likely. See Criteria 13
Cooper's hawk	Nesting in pinon-juniper	None likely
Ferruginous hawk	Scarce migrant	None likely
Merlin falcon	Uncommon winter resident	None likely
Western bluebird	No nesting evident	None likely

Results: All of the proposed lease area except a few acres below the Book Cliffs is within identified critical winter range for mule deer (map 2). Coincidental with critical deer winter range is important mountain lion habitat. The exception does apply because surface mining activities only include air vent holes and no increase in public access is planned.

Criterion 16: Floodplains

Riverine, coastal, and special floodplains (100-year recurrence interval) shall be considered unsuitable unless the surface management agency determines, after consultation with the U.S. Geological Survey, that all or stipulated methods of coal mining can be undertaken without substantial threat of loss to people or property, and to the natural and beneficial values of the floodplain on the lease tract and downstream.

Exemptions: This criterion does not apply to lands: to which the operator made substantial legal and financial commitments prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977; or which include operations on which a permit has been issued.

Results: The U.S. Army Corps of Engineers published 100-year floodplain delineations for the Colorado River and its tributaries in 1976. Although the report was limited to an area south of the proposed lease area, extrapolation indicates the lease area is not a riverine, coastal, or special floodplain.

Criterion 17: Municipal Watersheds

Federal lands which have been commited by the surface management agency to use as municipal watersheds shall be considered unsuitable.

Exception: A lease may be issued and mining operations approved where:

1. The surface management agency determines, as a result of studies, that all or certain stipulated methods of coal mining will not adversely affect the watershed to any significant degree.

2. The municipality (incorporated entity) or the responsible governmental unit concurs in the issuance of the lease.

Exemption: This criterion does not apply to lands: to which the operator made substantial financial and legal commitments prior to January 4, 1977; on which operations were being conducted on August 3, 1977; or which include operations on which a permit has been issued.

Results: The proposed lease area has not been committed to use as a municipal watershed.

Criterion 18: National Resource Waters

Federal lands with National Resource Waters, as identified by States in their water quality management plans, and a buffer zone of federal lands 1/4 mile from the outer edge of the far banks of the water, shall be unsuitable.

Exception: The buffer zone may be eliminated or reduced in size where the surface management determines that it is not necessary to protect the National Resource Waters.

Exemption: This criterion does not apply to lands: to which the operator made substantial legal and financial commitments prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977; or which include operations on which a permit has been issued.

Results: The State of Colorado is currently working on identification and designation of National Resource Waters. By definition, National Resource Waters include streams with perennial or contnuous flow that are of high quality capable of supporting trout fisheries. No streams of sufficient flow or water quality exist within the proposed lease area.

Criterion 19: Alluvial Valley Floors

Federal lands identified by the surface management agency, in consultation with the State in which they are located, as alluvial valley floors acording to the definition and standards in the permanent regulations under the Surface Mining Control and Reclamation Act of 1977, and the final alluvial valley floor guidelines of the Office of Surface Mining Reclamation and Enforcement, and approved State programs under the Surface Mining Control Reclamation Act of 1977, where mining would interrupt, discontinue, or preclude farming, shall be considered unsuitable. Additionally, when mining federal land outside an alluvial floor would materially damage the quantity or quality of water in surface or underground water systems that would supply alluvial valley floors, the land shall be considered unsuitable.

Exemptions: This criterion does not apply to surface coal mining operations which produced coal in commercial quantities in the year preceding August 3, 1977, or which had obtained a permit to conduct surface coal mining operations.

Results: Alluvial valley floors are defined as unconsolidated stream laid deposits holding streams where water availability is sufficient for subirrigation or flood irrigation, agricultural activities, but does not include upland areas which are generally overlain by a thin veneer of colluvial deposits composed chiefly of debris from sheet erosion deposits by unconcentrated run-off or slope wash, together with talus, other mass movement accumulation and windblown deposits. By applying the requirements of water availability (amount needed for subirrigation or flood irrigation), exclusion of upland areas, and size limitations (isolated areas larger than 10 acres); no alluvial valley floors have been identified in the proposed lease area. Mining on the proposed lease tracts would not materially damage the quality or quantity of surface or underground water systems that supply alluvial valley floors.

Criterion 20: State Proposed Criteria

Federal lands in a state to which is applicable a criterion (1) proposed by the State, and (2) adopted by rule making by the Secretary of the Interior, shall be considered unsuitable.

Exception: A lease may be issued and mining operations approved when:

1. Such criterion is adopted by the Secretary less than 6 months prior to the publication of the draft land use plan, or supplement to a land use plan, for the area in which such land is included; or

2. After consultation with the State, the surface management agency determines mining will not adversely affect the value which the criterion would protect.

Exceptions: This criterion does not apply to lands: to which the operator made substantial legal and financial commitments prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977; or which include operations on which a permit has been issued.

Results: The State of Colorado was contacted regarding the proposed lease area (see Attachment 2). To date the State has not developed further unsuitability criteria, and although rulemaking is in progress, they have given approval to bypass Criterion 20 for the proposed lease area.

Advisory
Council On
Historic
Preservation

1522 K Street NW
Washington D.C.
20005

PROGRAMMATIC MEMORANDUM OF AGREEMENT
AMONG THE
DEPARTMENT OF THE INTERIOR, BUREAU OF LAND MANAGEMENT,
OFFICE OF SURFACE MINING RECLAMATION AND ENFORCEMENT, AND
UNITED STATES GEOLOGICAL SURVEY,
AND
THE ADVISORY COUNCIL ON HISTORIC PRESERVATION
REGARDING THE FEDERAL COAL MANAGEMENT PROGRAM

WHEREAS, the United States Department of the Interior has a program to manage federally owned coal through leasing or exchange under the Mineral Leasing Act of 1920, as amended (30 U.S.C. 181, et seq.); the Mineral Leasing Act for Acquired Lands of 1947, as amended (30 U.S.C. 351, et seq.); the Federal Land Policy and Management Act of 1976 (43 U.S.C. 1701, et seq.), which also charges the Bureau of Land Management with the management and protection of historic and cultural properties, the Surface Mining Control and Reclamation Act of 1977 (30 U.S.C. 1201, et seq.), which charges the Office of Surface Mining with the obligation to ensure that surface coal mining operations are conducted so as to protect the environment; and the Federal Coal Leasing Amendments Act of 1976, as amended (30 U.S.C., Chapters 3A and 7); and

WHEREAS, the United States Department of the Interior, Bureau of Land Management, administers public lands, including Federal mineral ownership, under concepts of multiple use and sustained yield and, among other responsibilities, the Bureau of Land Management is charged with assessing the suitability of Federal lands for coal leasing, with issuing leases for mining of federally owned coal, and with including terms in each lease to protect nonmineral resources, under the above authorities; and

WHEREAS, the United States Department of the Interior, Office of Surface Mining Reclamation and Enforcement (hereinafter Office of Surface Mining), is charged, among other responsibilities, with reviewing coal mine plans (which include an exploration plan covering exploration activities within a permit area) and recommending to the Secretary approval, disapproval, or conditional approval, with reviewing and approving minor modifications to mining and reclamation plans, with designating lands

unsuitable for surface coal mining operations or terminating such designations under a petition process, and with ensuring that surface coal mining and reclamation operations comply with certain lease terms and conditions, with approved permits, and with the provisions of the Surface Mining Control and Reclamation Act of 1977, which provides for the protection of historic and cultural properties on Federal lands (see 30 CFR 700.5 for definition of Federal lands); and

WHEREAS, the United States Department of the Interior, Geological Survey, is charged, among other responsibilities, with reviewing and approving coal exploration plans, with supervising exploration activities on Federal lands outside of a permit area, with reviewing the mining and operations portion of proposed mine plans, and with recommending mine plan approval, disapproval, or conditional approval to the Secretary; and

WHEREAS, the United States Department of the Interior, Bureau of Land Management, Geological Survey, and Office of Surface Mining have executed a memorandum of understanding implementing the division of functions and responsibilities regarding the Federal coal management program of the Department of the Interior; and

WHEREAS, Section 106 of the National Historic Preservation Act of 1966, as amended (16 U.S.C. 470f), requires that the head of any Federal Agency having direct or indirect jurisdiction over a proposed Federal or federally assisted or licensed undertaking affecting properties included in, or eligible for inclusion in, the National Register of Historic Places shall afford the Advisory Council on Historic Preservation (hereinafter Council) a reasonable opportunity for comment; and

WHEREAS, coal leasing, mining, and exploration activities on Federal lands undertaken or regulated by the Bureau of Land Management, Office of Surface Mining, and Geological Survey may have an effect on properties included in, or eligible for inclusion in, the National Register of Historic Places and will require compliance with Section 106 of the National Historic Preservation Act; Section 2 of Executive Order 11593, May 13, 1971, "Protection and Enhancement of the Cultural Environment"; and the Council's regulations, "Protection of Historic and Cultural Properties" (36 CFR Part 800); and

WHEREAS, the Council has reviewed the Federal coal management program of the Department of the Interior; and

WHEREAS, Office of Surface Mining responsibilities for regulation of coal mines on non-Federal lands, including its relationships with State Regulatory Authorities under approved State programs, will be treated in separate agreements with the Council; and

WHEREAS, the Council and the Bureau of Land Management, Office of Surface Mining, and Geological Survey have met and reviewed their respective responsibilities under the Federal coal management program of the Department of the Interior and the relation of this program to compliance with Section 106 of the National Historic Preservation Act of 1966, as amended, including required integration with the National Environmental Policy Act of 1969 (36 CFR 800.9), Executive Order 11593, as implemented by the Council's regulations (36 CFR Part 800); and the responsibilities for historic and cultural resources under the National Environmental Policy Act of 1969 (42 U.S.C. 4321), as implemented by the Council on Environmental Quality in the "National Environmental Policy Act Regulations" (40 CFR Parts 1500-1508); and

WHEREAS, the Council's regulations, 36 CFR 800.8, provide for the development of Programmatic Memoranda of Agreement on a program or class of undertakings which would otherwise require numerous individual requests for comments;

NOW, THEREFORE, all parties mutually agree that the Bureau of Land Management, Office of Surface Mining, and Geological Survey will ensure, through the stipulations outlined in this Programmatic Memorandum of Agreement, that historic and cultural properties will be given adequate consideration in Federal coal management program decisions and implementation, which include, but are not limited to, the preparation of coal leasing environmental impact statements or environmental assessments, issuance of new leases, issuance of permits, inspection and enforcement activities, approval of exploration, and review and recommendations to the Secretary regarding plans for surface coal mining operations on either new or existing leases, thereby meeting the responsibilities of all parties under Section 106 of the National Historic Preservation Act.

STIPULATIONS

I. Preleasing

A. Land Use Planning

1. Prior to preparation of land use plans for areas of potential Federal coal leasing, the Bureau of Land Management will ensure that a Class I (existing data cultural resource inventory) and an appropriate level of Class II (land use planning sampling field cultural resource inventory) are conducted, as defined in procedures in BLM Manual Section 8111. Inventory results will be evaluated by the Bureau of Land Management, in consultation with the appropriate State Historic Preservation Officer, to identify properties included in, or eligible for inclusion in, the National Register of Historic Places. Documentation for properties which appear to meet National Register criteria will be forwarded to the Keeper of the National Register for a determination of eligibility pursuant to 36 CFR Part 63.

2. The Bureau of Land Management will apply coal leasing unsuitability criterion 7 (43 CFR 3461.1(g)) before completion of a land use plan. Pursuant to criterion 7, all properties included in, or eligible for inclusion in, the National Register of Historic Places (under paragraph 1 above), and an appropriate buffer zone, will not be considered further for coal leasing unless the Surface Management Agency determines, after consulting with the Council and the appropriate State Historic Preservation Officer, that the direct and indirect effects of mining would not result in significant adverse effects on such a property. At the land use planning stage, this consultation with the Council and the State Historic Preservation Officer shall consist of written notification of the area of potential Federal coal leasing and of the inventory results.

B. Activity Planning

1. At an appropriate time between tract delineation and completion of a regional coal leasing final environmental impact statement, the Bureau of Land Management will conduct, or have conducted, a special project Class II (project specific) inventory or Class III (hereinafter referred to as intensive field) inventory, as defined in procedures in BLM Manual Section 8111, as the Bureau of Land Management deems necessary on a case-by-case basis. The scope of the inventories conducted for activity planning will be determined through use

of completed land use planning Class II inventories and in consultation with the appropriate State Historic Preservation Officer. The Bureau of Land Management will evaluate, or have evaluated, the inventory results, in consultation with the appropriate State Historic Preservation Officer, to identify properties included in, or eligible for inclusion in, the National Register of Historic Places. The Bureau of Land Management will ensure that documentation for properties which appear to meet National Register criteria will be forwarded to the Keeper of the National Register with a request for a determination of eligibility pursuant to 36 CFR Part 63.

2. At an appropriate time between tract delineation and completion of a regional coal leasing final environmental impact statement, the Bureau of Land Management will apply coal leasing unsuitability criterion 7 (43 CFR 3461.1(g)) to additional properties which were identified during inventories conducted for activity planning as being included in, or eligible for inclusion in, the National Register of Historic Places. At the activity planning stage, consultation with the Council and the State Historic Preservation Officer under criterion 7 shall consist of written notification of the results of the inventories conducted for activity planning.

C. Lease Terms and Stipulations

Lease terms and special stipulations, at a minimum, will address the following concerns:

1. A lessee or designated representative will be required, as determined by the Bureau of Land Management with the concurrence of the appropriate State Historic Preservation Officer, to complete intensive field inventories of those portions of the lease tract, or portions of the mine plan area and adjacent areas, that may be affected by lease-related activities, and which were not previously inventoried at such a level of intensity. The inventory shall be conducted by a qualified cultural resource specialist approved by the Bureau of Land Management, in accordance with standards set forth in the appendix to this agreement. A report of the cultural resource inventory will be submitted to the Office of Surface Mining and the Bureau of Land Management.

2. A lessee or designated representative will be required to protect all properties included in, or eligible for inclusion in, the National Register of Historic Places from

lease-related activities until cultural resource mitigation measures (see 3 below) can be implemented as part of an approved plan for surface coal mining operations or exploration.

3. A lessee or designated representative will be required to develop cultural resource mitigation measures which will be included as part of a mine plan submittal. The mitigation measures will provide for appropriate levels of protection from adverse effects for specific properties. The mitigation measures will include, as appropriate, provisions for data recovery, curation, detailed recordation, stabilization, and relocation.

4. If any items or features of historic, cultural, or archeological value are discovered during surface coal mining and reclamation operations, the lessee or designated representative shall immediately notify the appropriate official, as set forth in the Cooperative Procedures between the Bureau of Land Management and the Office of Surface Mining (see paragraph IV.A.).

D. Program Start-Up Considerations

Because planning is currently under way for initial lease sales to be conducted in FY 1981 and FY 1982 and because inventories may be under way or already completed, the inventory requirement may be modified by the appropriate Bureau of Land Management State Director, in consultation with the Washington Office of the Bureau of Land Management, on a case-by-case (e.g., planning unit by planning unit or delineated tract by delineated tract) basis, substituting the best information obtainable within FY 1980 and FY 1981 budget constraints and within the time available before lease issuance.

II. Mine Plan Submission, Review, and Approval

A. The Office of Surface Mining will ensure that a lessee/permittee complies with all cultural resource protection lease terms, special stipulations, and conditions of plan approval for surface coal mining operations within those areas of the lease which are included in a mine plan and adjacent areas, should a mine plan be approved. In addition, for all leases issued or readjusted after the effective date of this agreement, the Office of Surface Mining, the Geological Survey, and the Bureau of Land Management, as appropriate, will ensure compliance with cultural resource related lease terms and stipulations. After review of the more specific and complete

findings submitted in a mine plan, the Office of Surface Mining may require more stringent protection and mitigation measures than required by 30 CFR, Chapter VII.

B. Prior to taking any Federal action on a mine plan, the Office of Surface Mining, in consultation with the Bureau of Land Management and the appropriate State Historic Preservation Officer, will identify areas within a proposed mine plan and adjacent areas which have a potential for receiving direct or indirect impacts on historic and cultural properties (determined pursuant to 36 CFR 800.3). The Office of Surface Mining, with concurrence of the appropriate State Historic Preservation Officer, will ensure that intensive field inventories have been, or will be, completed on the mine plan and adjacent areas before it recommends approval of a mine plan (see paragraph II.H.). A report of the cultural resource inventory will be submitted to the Bureau of Land Management and the Geological Survey. In the event of a failure to reach an agreement with the appropriate State Historic Preservation Officer regarding the appropriate inventory, the Office of Surface Mining will request Council review in accordance with 30 CFR 800.6.

C. If any historic or cultural properties are identified as a result of an inventory conducted pursuant to II.B., the Office of Surface Mining will consult with the Bureau of Land Management or the Surface Management Agency (if different), and then the appropriate State Historic Preservation Officer to determine if such properties are included in, or eligible for inclusion in, the National Register of Historic Places. If appropriate, documentation will be forwarded to the Keeper of the National Register with a request for a determination of eligibility in accordance with 36 CFR Part 63. Steps will be taken to preclude adverse effects on such properties until a determination of eligibility has been made. Copies of such determinations of eligibility will be submitted to the Geological Survey and the Bureau of Land Management or the Surface Management Agency (if different).

D. Before recommending approval of a mine plan, the Office of Surface Mining, in consultation with the Bureau of Land Management or the Surface Management Agency (if different), will review the applicant's proposed measures to minimize or prevent adverse effects (see 36 CFR 800.6 and 30 CFR 780.31) to historic and cultural properties and will ensure that:

1. Inventory results have been evaluated, in consultation with the appropriate State Historic Preservation Officer, to identify properties included in, or eligible for inclusion in, the National Register of Historic Places. Documentation for properties which appear to meet National Register criteria will be forwarded to the Keeper of the National Register with a request for determination of eligibility pursuant to 36 CFR Part 63.

2. The Criteria of Effect (36 CFR 800.3(a)) have been applied in consultation with the appropriate State Historic Preservation Officer.

3. The Criteria of Adverse Effect (36 CFR 800.3(b)) have been applied, as appropriate, in accordance with the requirements of 36 CFR 800.4(b) and in consultation with the appropriate State Historic Preservation Officer.

4. Alternatives to a proposed course of action that would avoid or mitigate any adverse effect on properties included in, or eligible for inclusion in, the National Register of Historic Places have been analyzed. Documentation, including, as appropriate, photographs, maps, drawings and specifications, and other information sufficient to constitute a preliminary case report (36 CFR 800.13(b)) enabling the consultation process to begin, shall be submitted to the appropriate State Historic Preservation Officer for review and comment. The State Historic Preservation Officer shall have 15 calendar days after receipt of documentation to inform the Office of Surface Mining and the Bureau of Land Management or the Surface Management Agency (if different) if the information provided is inadequate.

E. Avoidance/mitigation requirements, including concurrence of the appropriate State Historic Preservation Officer, will be included as part of an approved mine plan. The Office of Surface Mining will notify the Council, in writing, of agreed upon avoidance/mitigation requirements. Information shall substantially conform to the requirements of 36 CFR 800.13(b)(4), (5), (6), and (11) relating to the content of preliminary case reports. Where agreement on avoidance/mitigation requirements cannot be reached between the State Historic Preservation Officer and the Office of Surface Mining, or where a National Historic Landmark, National Historic Park, National Historic Monument, or National Historic Site will be affected, the matter will be referred to the Council, requesting the Council's involvement pursuant to 36 CFR 800.6.

F. Mine plan approvals will contain a condition or requirement providing that, if any previously unidentified historic and cultural properties are discovered during surface coal mining operations, the operator will cease work in the immediate vicinity of the property and notify the Office of Surface Mining and shall not disturb such properties until the Office of Surface Mining issues instructions. Where there is a State/Federal cooperative agreement in effect, pursuant to section 523(c) of the Surface Mining Control and Reclamation Act of 1977, the contact point will be either the State Regulatory Authority or the Office of Surface Mining in accordance with the provisions of such a cooperative agreement.

G. Upon receiving a complete petition to designate an area as unsuitable for surface coal mining operations or to terminate a designation, the Office of Surface Mining will forward a copy of the petition for comment to the Bureau of Land Management or the Surface Management Agency (if different). The Office of Surface Mining will issue a decision on a petition pursuant to sections 522(c) and (d) of the Surface Mining Control and Reclamation Act of 1977 and 30 CFR Part 769. If the Office of Surface Mining determines that an area where a cultural resource is located should be designated as unsuitable for all or certain types of surface coal mining operations, appropriate protection measures will be developed. Decisions not to designate areas unsuitable or to terminate designations will not convey the right to conduct coal mining. Before surface coal mining operations can be conducted, a mine plan must be approved by the Secretary of the Interior, and a permit must be issued which includes compliance with 36 CFR Part 800, as outlined in this agreement.

H. During program start-up, not to exceed 6 months from the effective date of this agreement, the Office of Surface Mining will follow the procedures outlined in II.D. of this agreement, using the best information currently available, prior to recommending approval of a mine plan. The existence of resources that are of unusual significance (e.g., National Historic Landmark, National Natural Landmark) may affect recommendations for mine plan approval. Recommendations will contain the provision that surface disturbance may only occur in those portions of the area of operations which have been adequately inventoried (e.g., intensive field inventory) and any identified cultural and historic properties processed in accordance with the procedures of II.D. of this agreement. Surface disturbance in those portions of the area of operations which

have not been adequately inventoried will not be permitted until after any additional cultural and historic inventories, as determined by the Office of Surface Mining, in consultation with the appropriate State Historic Preservation Officer, have been completed and the Office of Surface Mining has complied with all the provisions of II.D. of this agreement.

III. Exploration

A. The Geological Survey or the Bureau of Land Management, as appropriate, will require that, prior to approval of coal exploration, lessees, permittees, and licensees shall conduct, or have conducted, intensive field inventories in areas of potential environmental impact (e.g., drill holes, access routes, other surface disturbances) in a proposed exploration area, unless the area has been previously inventoried at that level of intensity. Inventory results will be evaluated, in consultation with the appropriate State Historic Preservation Officer, to identify properties included in, or eligible for inclusion in, the National Register of Historic Places. Documentation for properties which appear to meet the National Register criteria will be forwarded through the appropriate Agency to the Keeper of the National Register with a request for determination of eligibility pursuant to 36 CFR Part 63. The responsible Agency will take steps to preclude adverse effects until such a determination has been made.

B. Where there would be an adverse effect (determined pursuant to 36 CFR 800.4) on a property included in, or eligible for inclusion in, the National Register of Historic Places, the Geological Survey will consult with the Bureau of Land Management or the Surface Management Agency (if different), and the appropriate State Historic Preservation Officer and will:

1. Ensure that mutually acceptable measures to avoid or mitigate the impacts of coal exploration are developed, and

2. Notify the Council, in writing, of agreements reached under the provisions of 1 above and provide the Council with a copy of such agreements. The Council need not be afforded further opportunity for review and comment.

C. When it is determined during B above that an affected property is a National Historic Landmark, National Historic Park, National Historic Monument, or National Historic Site, or when agreement cannot be reached between the Geological Survey or the Bureau of Land Management and the appropriate State Historic Preservation Officer on satisfactory mitigation measures, the comments of the Council will be requested in accordance with 36 CFR 800.6.

D. When approving exploration plans, licenses or permits, the Geological Survey or the Bureau of Land Management, as appropriate, will stipulate that, if any previously unidentified historic or cultural properties are discovered during exploration operations, the lessee, permittee, licensee, or operator will cease work in the immediate vicinity of the property, notify the appropriate Agency, and shall not disturb such properties until so authorized by that Agency.

E. For coal program exploration activities initiated by the Department of the Interior, with the exception of the leasing and development of lands or coal deposits held in trust for Indians by the United States, the same standards for compliance as presented in A through D above will be adhered to.

IV. Administration

A. The Bureau of Land Management will develop separate cooperative procedures with the Geological Survey and the Office of Surface Mining. These procedures, which will integrate cultural resource protection into the Federal coal management program of the Department of the Interior, will be completed no later than October 1, 1980. The Council will be requested to review these procedures to insure continuity and consistency with this Programmatic Memorandum of Agreement.

B. This Programmatic Memorandum of Agreement and the appropriate inventory reports identifying properties included in, or eligible for inclusion in, the National Register of Historic Places will be referenced in each environmental impact statement and environmental assessment involving a Federal coal action covered by this agreement.

C. The Bureau of Land Management, Office of Surface Mining, and/or Geological Survey will provide the appropriate

State Historic Preservation Officer with copies of the reports of Class I, II, and III inventories for use in the comprehensive Statewide historic preservation inventory conducted pursuant to 36 CFR Part 61.

D. At the request of the President or a Member of Congress, the Council may advise the Bureau of Land Management, Office of Surface Mining, and/or Geological Survey that a particular action, authorized by a mining or exploration permit or lease, will require individual review and comment pursuant to 36 CFR 800.6. In that event, the above Agencies will comply with the provisions of the Council's regulations.

E. This agreement is not binding on any Federal Agency which is not party to this agreement. In cases where the surface is managed by other Federal Agencies or by a private surface owner not party to this agreement, all Bureau of Land Management, Office of Surface Mining, and Geological Survey actions related to the Federal coal management program of the Department of the Interior will be conducted in accordance with 43 CFR 3400.3-1, 3400.3-3, 3461.1 criterion 1, and Subpart 3427, and with any subsequent agreements between an Agency or private surface owner and the Department of the Interior.

F. The cultural resource inventory provisions in sections I.A. and I.B. of this agreement do not apply to areas for which the Bureau of Land Management receives an application to lease coal in accordance with 43 CFR Subpart 3425 (Leasing on Application) or in accordance with 43 CFR Subpart 3430 (Preference Right Lease). For such cases, the Bureau of Land Management, in consultation with the appropriate State Historic Preservation Officer, will determine the level of cultural resource inventory to be conducted. The cultural resource inventory and mitigation requirements related to surface coal mine operation or exploration plans submitted pursuant to 43 CFR Subpart 3425 will be the same as those specified in sections I.C., I.D., II, and III of this agreement.

G. The Bureau of Land Management, Office of Surface Mining, and Geological Survey will notify the Council regarding any changes to their regulations, guidelines, or directives relative to the administration of this agreement or which may affect their authority to implement this agreement.

H. In addition to the consideration of National Register of Historic Places and Register-eligible properties covered by this agreement and 36 CFR Part 800, the Bureau of Land Management, Office of Surface Mining, and Geological Survey

will continue to consider the full range of cultural resources as provided for in other authorities.

I. This agreement does not apply to the leasing and development of lands or coal deposits held in trust for Indians by the United States.

J. The Advisory Council on Historic Preservation, Bureau of Land Management, Office of Surface Mining, and Geological Survey will review the provisions of this agreement in 1982 and on a biennial basis thereafter to determine whether modification or termination is appropriate. Should the Federal coal management program of the Department of the Interior be revised or superseded or the regulations of the Council revised, the ratifying parties will mutually determine whether the provisions of the agreement will continue to apply.

K. This agreement is effective on the date of the last signature. The agreement may be revised or amended by mutual agreement of the signers. This agreement may be terminated by any of the undersigned parties, provided that the party initiating such termination provides a 90-day notice and reasons therefore to the other parties.

Executive Director, Advisory Council on Historic Preservation — (Date) Feb 6, 1980

Director, Geological Survey — (Date) 27 March 80

Director, Bureau of Land Management — (Date) 3/27/80

Chairman, Advisory Council on Historic Preservation — (Date) 3/20/80

Director, Office of Surface Mining Reclamation and Enforcement — (Date) 4/7/80

Concurrence:

President, National Conference of State Historic Preservation Officers — (Date) 5/1/80

APPENDIX
PROFESSIONAL QUALIFICATIONS

A variety of specialists may be appropriate for work in particular kinds of cultural resource studies. Geologists, geographers, ethnographers, ethnohistorians, and folklorists are among the specialists occasionally employed in such studies. In general, however, the core disciplines represented are archeology, history, or architecture. The following recommended minimum professional qualifications apply to the professionals with supervisory or direct responsibility for specific studies related to a cultural resource program. The recommended professional qualifications do not apply to the various cultural resource technicians working under the supervision of qualified professionals who have the responsibility for the quality of the work performed.

1. Archeology

The recommended minimum professional qualifications in archeology are a graduate degree in archeology, anthropology, or a closely related field, from an accreoited college or university, plus:

a. At least 1 year of full-time professional experience or equivalent specialized training in archeological research, administration, or management,

b. At least 4 months of supervised field and analytic experience in general North American archeology, and

c. Demonstrated ability to carry research to comoletion.

In addition to these recommended minimum qualifications, a professional in prehistoric archeology shall have at least 1 year of full-time professional experience at a supervisory level in the study of archeological resources of the prehistoric period. A professional in historic archeology shall have at least 1 year of full-time professional experience at a supervisory level in the study of archeological resources of the historic period.

2. History

The recommended minimum professional qualifications in history are a graduate degree in American history, or a closely

related field, from an accredited college or university; or a bachelor's degree, or its equivalent, in history, or a closely related field, from an accredited college or university, plus one of the following:

a. At least 2 years of full-time experience in research, writing, teaching interpretation, or other demonstrable professional activity with an academic institution, historical organization or agency, museum, or other professional institution; or

b. Substantial contribution to the body of scholarly knowledge through research and publication in the field of history.

3. Historical Architecture

The recommended minimum professional qualifications for individuals practicing historical architecture are a professional degree in architecture from an accredited college or university or a State license to practice architecture, plus one of the following:

a. At least 1 year of graduate study in architectural preservation, American architectural history, preservation planning, or closely related field, and at least 1 year of full-time professional experience on preservation and restoration projects; or

b. At least 2 years of full-time professional experience on preservation and restoration projects. Experience on preservation and restoration projects shall include detailed investigations of historic structures, preparation of historic structures research reports, and preparation of plans and specifications for preservation projects.

STATE OF COLORADO RICHARD D. LAMM, Governor
DEPARTMENT OF NATURAL RESOURCES
Harris D. Sherman, Executive Director

MINED LAND RECLAMATION

723 Centennial Building, 1313 Sherman Street
Denver, Colorado 80203 Tel. (303) 892-3567

Hamlet J. Barry, III,
Director

November 26, 1979

Lee Lauritzen
Acting District Manager
Bureau of Land Management
Grand Junction District
764 Horizon Drive
Grand Junction, Colorado

Dear Mr. Lauritzen:

Thank you for your letter of November 7, 1979 concerning the PRLA(s) in the ~~book~~ area.

At this time the State has not adopted any additional criteria not otherwise incorporated in the BLM unsuitability criteria. We will have our own unsuitability program under a state law passed during the last session of the State Legislature. However, it will probably be sometime before our own criteria are drafted, established, and finalized. Therefore, I believe that you are perfectly safe in bypassing Criteria No. 20, as listed in your letter.

Sincerely yours,

Hamlet J. Barry
Director

HJB/co

United States Department of the Interior
FISH AND WILDLIFE SERVICE

MAILING ADDRESS:
Post Office Box 25486
Denver Federal Center
Denver, Colorado 80225

STREET LOCATION:
134 Union Blvd.
Lakewood, Colorado 80228

IN REPLY REFER TO:
FA/SE/BLM--Dorchester-
Colomine, CO (PRLA) (6-5-80-F-11)

DEC 27 1979

MEMORANDUM

To: State Director, Colorado State Office
Bureau of Land Management, Denver, Colorado

From: Regional Director, Region 6
U.S. Fish and Wildlife Service, Denver, Colorado

Subject: Biological Opinion--Dorchester-Colomine Preference Right Lease Application, Colorado

This is our biological opinion pursuant to Section 7 of the Endangered Species Act prepared in response to your memorandum of October 10, 1979. Your memorandum requested formal consultation regarding the impacts on listed species of a proposed coal lease site north of Grand Junction, Colorado.

Opinion

It is our biological opinion that the proposed action is not likely to jeopardize the continued existence of the endangered bald eagle (Haliaeetus leucocephalus).

Project Description

The Dorchester-Colomine Company submitted a preference right lease application to the Bureau of Land Management (BLM) for a coal lease site in the Bookcliff Mountains near Fruita, Colorado. The proposed underground mine would extract coal from two seams. The Cameo seam would be mined first and the Anchor seam second.

Basis of Opinion

An estimated 500 bald eagles winter in Colorado during winter. The species is adaptable and occupies a wide range of habitats. The occurrence of bald eagles in the proposed project area is questionable. No known

roost sites exist in the area that would be impacted. Bald eagles may intermittently hunt over the lease area; however, the species will probably not be adversely impacted by the project.

If construction plans change appreciably or a new species is listed in the project area, Section 7 consultation should be reinitiated. I appreciate your interest in conserving endangered species.

Don W. Minnich

DON W. MINNICH

APPENDIX 3

Cultural Resource Laws, Policies, and Procedures

Antiquities Act of 1906 (P.L. 59_290; 34 Stat. 225; 16 USC 432, 433) is the basic legislation for the preservation and protection of antiquities on all Federal land. It provides penalties for those who excavate or appropriate the values without Secretarial permit; provides for the establishment by Presidential proclamation of national monuments from the public lands; and provides for permits for investigation of cultural and scientific resources to be issued to public, scientific, and educational institutions.

Uniform Rules and Regulations (43 CFR Part 3 and DM Part 310.7.6) have been issued by the Secretaries of the Interior, Agriculture, and War (now defense) to carry out the provisions of the Antiquities Act.

Historic Sites Act of 1935 (P.L. 74-292; 49 Stat. 666; 16 USC 461 et seq) declares it a national policy to identify and preserve for public use historic sites, buildings, objects, and antiquities of national significance for the inspiration and benefit of the people.

National Historic Preservation Act of October 15, 1966 (P.L. 89-665; 80 Stat. 915; 16 USC 470), as amended (P.L. 94-422; 90 Stat. 1313; and P.L. 94-458; 90 Stat. 1939) expands the national policy toward cultural resources to include those of State and local as well as national significance. These resources should be preserved as a living part of our community life and development in order to give a sense of orientation to the American people. It also establishes the National Register of Historic Places, the Advisory Council on Historic Places, the Advisory

Council on Historic Preservation Officers, and a matching grants-in-aid program for the National Trust. Section 106 directs all Federal agencies to take into account the effects of their actions on properties included in or eligible for inclusion in the National Register and affords opportunities for the Advisory Council on Historic Preservation to comment on the proposed actions and their effects. The Act has also been amended to provide for the withholding from disclosure to the public of information relating to the location of sites or objects listed on the National Register if the disclosure of specific information would create a risk of destruction or harm to such sites or objects.

National Environmental Policy Act of 1969 (P.L. 91-190; 83 Stat. 852; 42 USC 4321) establishes national policy for protection and enhancement of the environment. Part of the function of the Federal Government in protecting the environment is to "preserve important historic, cultural, and natural aspects of our national heritage."

Council on Environmental Quality Guidelines (40 CFR Part 1500) provides directions for compliance with the National Environmental Policy Act and directs Federal agencies to comply with consultation and compliance requirements of the National Historic Preservation Act of 1966. Combining these requirements with those of the National Environmental Policy Act present a single document "which meets all applicable requirements."

Executive Order 11593 ("Protection and Enhancement of the Cultural Environment", 36 F.R. 8921, May 13, 1971) directs all federal agencies to inventory their cultural resources, to submit to the National Register of Historic Places all qualified sites meeting the criteria, and to protect

all nominated sites. It also directs the federal agencies to use due caution with all cultural resources until the inventory, evaluation, and nomination processes are completed. A leadership posture for the federal government in cultural resource protection is made policy in this order.

Procedures of the Advisory Council on Historic Preservation (36 CFR Part 800) establishes procedures for compliance with Sec. 106 of the National Historic Preservation Act of 1966, and Sec. 1 (3) and (2) (b) of Executive Order 11593.

Federal Land Policy and Management Act of 1976 (P.L. 94-579; 90 Stat. 2743; 43 USC 1701) directs the Bureau of Land Management to manage public lands on the basis of multiple use, and in a manner that will "...protect the quality of scientific,...historical,...environmental...resources, and archeological values," and that, where appropriate, will preserve and protect certain public lands in their natural condition. The Act authorizes the disposition, exchange, and acquisition of land; requires the inventory of public land; provides for long-range, comprehensive resource planning, authorizes the Secretary of the Interior to make rules and regulations pertaining to the public lands; and provides for the enforcement of public land laws and regulations.

Archeological Resources Protection Act of 1979 (P.L. 96-95) describes permit procedures for cultural resource inventories of excavations and penalties for damaging or removing archeological resources without a permit.

The National Register Program (36 CFR Part 60 - "National Register of Historic Places.") (36 CFR Part 63 - "Determinations of Eligibility for Inclusion to the National Register of Historic PLaces.")

Appendix 3

Cultural Resource Site Significance

Cultural resource sites are catagorized to allow a reader to know the subjective value of any one site. The classifications are:

Cultural Resource Evaluation System

S-1 In general, S-1 sites show a clear potential for yielding, or have yielded, highly significant scientific/educational information, and are clearly important in terms of national, state, and local known use. Normally, the S-1 rating is assigned to those sites that are in relatively good condition, are unique or representative and/or have important associations, and display some of the qualities expressed in other criteria.

S-2 S-2 sites are usually not unique, representative, nor do they have important associations. The condition of the site usually is only fair. Such sites are commonly large, but do not have great antiquity and have only limited depth potential. Many abandoned aboriginal camps and villages, abandoned homesteads, small mining campsites, cemeteries, railbed roads, and trails will be classed S-2. Contemporary sites may become highly significant from standpoints of national, state, and local history and culture, but they cannot be clearly and immediately assessed as such. More historical perspective is needed.

S-3 The S-3 rating indicates that the main worth of the state is its potential for contributing data toward solving larger problems, such as reconstruction of paleo-environments and human use patterns. Such sites commonly show little (if any) depth and very few features; they may have great antiquity but be very small, or they may be very large but show no great concentration of materials. Many seasonal aboriginal camps, hunting and gathering activity areas, isolated finds, etc. will be S-3. Dumps, isolated domestic and nondomestic buildings and materials, and small mining operations often fall into this category.

S-4 The S-4 rating is assigned only to properties that have minimal information-retrieval possibilities.

Site Impact Probability

The number of sites for potential impacts was determined in the following manner:

1. The number of acres affected by the mine was determined by adding together the acres of the proposed lease area for mining (x), the acres in the disposal area (y), and the acres for the access routes (z). There are three possible tracts to be leased for mining (x_1, x_2, x_3), and three possible access routes (z_1, z_2, z_3) which means that there are nine different possible acreages.

2. The nine possible acreages are converted to square miles.

3. Using a density factor of 2.14 sites per square mile (the density of sites in the Grand Junction Resource Area as determined in the West Central Colorado Coal Report (page 183) the probable density of sites involved in each possible acreage of use was determined.

x: Mine, leasing 3 tracts C-0127832, 33, 34 = 14,729 acres

x_1: Mine, leasing 2 tracts (C-0127833, 34) = 10,207 acres
x_2: Mine, leasing 2 tracts (C-0127832, 33) = 9,609 acres
x_3: Mine, leasing 1 tract (C-0127833) = 5,087 acres
Y: Disposal area = 600 acres z1: Route A - 17.2 miles = 60.2 acres
z_2: Route B - 14.7 miles = 51.45 acres
z_3: Route C = 16.8 miles = 58.8 acres
x_1yz_1 = 10,867.2 acres = 16.98 sq. miles
x_1yz_2 = 10,858.45 acres = 16.96 sq. miles
x_1yz_3 = 10,865.8 acres = 16.97 sq. miles
x_2yz_1 = 10,269.2 acres = 16.05 sq. miles
x_2yz_2 = 10,260.45 acres = 16.03 sq. miles
x_2yz_3 = 10, 267.8 acres = 16.04 sq. miles
x_3yz_1 = 5,747.2 acres = 8.98 sq. miles
x_3yz_2 = 5,738.45 acres = 8.966 sq. miles
x_3yz_3 = 5,745.8 acres = 8.977 sq. miles

Using a density factor of 2.14 sites per square mile for the Grand Junction District (West Central Colorado Coal Report, leases p. 183) the potential for impact exist for the following combinations of acreage:

x_1yz_1 = 36 sites	x_2yz_1 = 34 sites	x_3yz_1 = 19 sites
x_1yz_2 = 36 sites	x_2yz_2 = 34 sites	x_3yz_2 = 19 sites
x_1yz_3 = 36 sites	x_2yz_3 = 34 sites	x_3yz_3 = 19 sites

Sites already located using this method include:

xyz_1 = 26
xyz_2 = 5
xyz_3 = 26

The potential for impacting cultural resources is significant; however, with proper mitigation measures the significance of impacts from the proposed undertaking will diminish.

APPENDIX 4

VISUAL RESOURCE MANAGEMENT

The visual resources of the public lands that are managed by the Bureau of Land Management are controlled by a three phase process: (1) visual resource inventory and evaluation, (2) visual resource contrast rating, and (3) visual resource project planning and design. The objective is to provide a systematic approach for identifying scenic quality and setting minimum quality standards for management of the visual resource values by a process which classifies public lands into one of five visual resource management (VRM) classes.

Visual Resource Inventory and Evaluation

The identification of scenery units is the first step in the inventory phase. Landscapes are organized by defining areas which have similar scenery and landscape attributes. These landscape scenery units are evaluated and categorized according to seven criteria: landform, vegetation, water, color, influence of adjacent scenery, scarcity, and cultural modifications. Gradations within each criterion (see table 1) are represented by numerical values; the sum of the numerical values for all seven criteria would identify the subject landscape as outstanding, characteristic, or common, and would establish the landscape's visual character. The general impression that a person receives from a view would be the visual character of a landscape and would be the prime image of that view that the person would remember.

The second step in the inventory phase is to assign a "sensitivity" rating to an area. The high, medium, or low rating would represent the public sensitivity or projected reaction to various levels of change in the landscape's character. User volume--both vehicular and pedestrian --and expressed user attitudes are the bases for the sensitivity rating. The identification of key observation points and of foreground, midground, and background zones establishes a hierarchy of viewing points and scene areas. By combining the scene area analysis, key observation points, corridors, and areas, and user attitudes, land areas are rated for their visual importance to the public and for sensitivity to change in those land areas.

The third step in the visual resource inventory and evaluation phase is to analyze the scenic quality map and the sensitivity map in order to allocate the landscapes to visual resource management classes. These five classes outline the degrees of modification allowed in the basic elements of the landscape; form, line, color, and texture of land and water bodies, vegetation, and structures would also be the basic elements to establish landscape character. The VRM classes are the basis for establishing VRM planning objectives for resource lands and the limits for accommodating future cultural alternations.

Class I

This class provides primarily for natural ecological changes; management activities are to be restricted and are not to attract attention.

Class II

Changes in the basic elements caused by management activities should not be evident in the characteristic landscape.

Class III

Contrasts to the basic elements may be evident and begin to attract attention, but they should remain subordinate to the existing characteristic landscape.

Class IV

Alterations may attract attention but should repeat the form, line, color, and texture elements of the characteristic landscape.

Class V

Rehabilitation is needed to restore the landscape to the character of the surrounding landscape.

Visual Resource Contrast Rating

The degree to which a management activity adversely impacts the visual quality of a landscape depends on the extent of visual contrast that is created between the activity and the existing landscape character. Contrast is measured by separating the landscape into land and water surfaces, vegetation, and structures, and then predicting the magnitude of change in contrast with the basic elements (form, line, color, and texture for each of the three major features). Assessment of the degree of contrast will indicate the severity of impact and would guide the determinations for reducing the contrasts to meet the requirements of the VRM classes. Contrasts are considered from the most critical viewpoints for distance, angle of observation, length of time, relative size of the project, season of the year, light, and the effects of time on the healing process.

Visual Resource Project Planning and Design

The identification of specific contrasts in form, line, color, and texture indicate the problems which could allow design mitigation. By applying design procedures to proposed action, visual contrasts can be eliminated or reduced to potentially meet the visual planning objectives that are stipulated in the VRM class designations. Once a project has been designed to reduce visual contrasts, it is reassessed by the visual contrast system to determine if the project can meet the area's visual goals and, if not to what degree the landscape's visual resource would be impacted.

TABLE 1

SCENIC QUALITY
INVENTORY AND EVALUATION CHART

Key Factors	Rating Criteria and Score		
Landform	High vertical relief as expressed in prominent cliffs, spires or massive rock outcrops; or severe surface variation or highly eroded formations including major badlands or dune systems; or detail features dominant and exceptionally striking and intriguing such as glaciers. 5	Steep canyons, mesas, buttes, cinder cones and drumlins; or interesting erosional patterns or variety in size and shape of landforms; or detail features present and interesting though not dominant or exceptional. 3	Low, rolling hills, foothills or flat valley bottoms. Interesting detail landscape features few or lacking. 1
Vegetation	A variety of vegetative types as expressed in interesting forms, textures, and patterns. 5	Some variety of vegetation, but only one or two major types. 3	Little or no variety or contrast in vegetation. 1
Water	Clear and clean appearing, still, cascading white water, any of which are a dominant factor in the landscape. 5	Flowing, or still, but not dominant in the landscape. 3	Absent or present, but not noticeable. 0
Color	Rich color combinations, variety or vivid color, or pleasing contrasts in the soil, rock, vegetation, water, or snow fields. 5	Some intensity or variety in colors and contrast of the soil, rock, and vegetation, but not a dominant scenic element. 3	Subtle color variations, contrast or interest; generally mute tones. 1
Influence of Adjacent Scenery	Adjacent scenery greatly enhances visual quality. 5	Adjacent scenery moderately enhances overall visual quality. 3	Adjacent scenery has little or no influence on overall visual quality. 0
Scarcity	One of a kind; or unusually memorable, or very rare within region. Consistent chance for exceptional wildlife or wildflower viewing, etc. 6	Distinctive, though somewhat similar to others within the region. 2	Interesting within its setting, but fairly common within the region. 1
Cultural Modifications	Free from aesthetically undesirable or discordant sights and influences; or modifications add favorably to visual variety. 2	Scenic quality is somewhat depreciated by inharmonious intrusions, but not so extensive that the scenic qualities are entirely negated or modifications add little or no visual variety to the area. 0	Modifications are so extensive that scenic qualities are for the most part nullified or substantially reduced. -4