de beque-grand valley
final environmental impact statement

colorado state division of highways
PROJECT I 70-1(19)&(36), DE BEQUE-GRAND VALLEY
MESA AND GARFIELD COUNTIES, COLORADO

ADMINISTRATIVE ACTION

FINAL ENVIRONMENTAL IMPACT STATEMENT

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
AND
COLORADO DIVISION OF HIGHWAYS

SUBMITTED PURSUANT TO
42 U.S.C. 4332(2)(C) and 23 U.S.C. 128(a)

4/29/75
Date

for
E. N. HAASE, CHIEF ENGINEER
COLORADO DIVISION OF HIGHWAYS

SEP 25 1975
Date

REGIONAL FEDERAL HIGHWAY ADMINISTRATOR
REGION VIII
SUMMARY

1- ADMINISTRATIVE ACTION

Final Environmental Impact Statement.

2- FOR MORE INFORMATION CONCERNING THIS PROPOSAL AND STATEMENT, THE FOLLOWING INDIVIDUALS CAN BE CONTACTED:

R. A. Prosence, District Engineer
Colorado Division of Highways
600 South Ninth Street
Grand Junction, Colorado 81501 Phone 242-2862

H. R. Atchison, Environmental Manager
Colorado Division of Highways
4201 East Arkansas Avenue
Denver, Colorado 80222 Phone 757-9011

A. J. Siccardi, Division Engineer
Federal Highway Administration
10488 West Sixth Place
Denver, Colorado 80215 Phone 234-4425

3- DESCRIPTION OF HIGHWAY IMPROVEMENT

The project will include construction of a 37 mile segment of Interstate 70 from one mile east of the Plateau Creek Interchange in DeBeque Canyon, to a point approximately four miles west of Rifle, Colorado. The project is located in both Garfield and Mesa Counties in west-central Colorado, and is identified as Project I 70-1(19)(36), DeBeque - Grand Valley.

4- ENVIRONMENTAL IMPACT

The construction of this segment of Interstate 70 will result in the temporary destruction and removal of vegetation within the existing and acquired right of way; require the relocation of approximately 18 households and nine businesses, largely in the Grand Valley area; generate increased dust, noise, congestion, and inconvenience during construction; require temporary disruption of local traffic patterns; require acquisition of approximately 820 acres of new highway right of way; temporarily affect the water quality of water courses in the area through installation of bridge structures and minor encroachment into the Colorado River in DeBeque Canyon; affect and stimulate economic activity in the area; temporarily damage esthetics in the project area; disturb wildlife populations; and greatly improve the transportation corridor and provide a much safer facility for the highway user.

5- ALTERNATIVES

Alternatives to highway improvement including the null alternative and other modes of transportation are discussed. Alternate freeway locations are discussed and evaluated. Due to the length of this project, it was necessary to divide the project into five sections in order to discuss the available alternatives. In Section 1, the alternatives available vary from either extensive river encroachment or rock cuts to separate split alignments north and south of the Colorado River, or a complete bypass of DeBeque Canyon through Plateau Creek Canyon. In Section 2, there are five alignments possible which involve variations along the existing alignment or a complete realignment of the transportation facility north of DeBeque. In Section 3, there are two alignments available which are largely deviations from the existing route. In Section 4, three alignments in and around Grand Valley are discussed from a north or south routing of I 70 near Grand Valley, to following U.S. 6 through town. In Section 5, the existing alignment is discussed. The alignments recommended for construction by the Division are depicted on Figure 13.

6- THE FOLLOWING LIST OF GROUPS, AGENCIES, AND INDIVIDUALS RECEIVED A COPY OF THE DRAFT ENVIRONMENTAL IMPACT STATEMENT OR NOTICE OF AVAILABILITY OF THE DRAFT ENVIRONMENTAL IMPACT STATEMENT AND NOTICE OF PUBLIC HEARINGS:

(*Indicates response to Draft Statement)

*Environmental Protection Agency
Denver, Colorado

U.S. Department of Agriculture
Washington, D.C.

Soil Conservation Service
Glenwood Springs, Colorado

Soil Conservation Service
Grand Junction, Colorado

Soil Conservation Service
Rifle, Colorado

*Soil Conservation Service
Denver, Colorado

U.S. Forest Service
Denver, Colorado

*Department of Health, Education, & Welfare
Denver, Colorado
Division of Commerce & Development
Denver, Colorado

Department of Natural Resources
Denver, Colorado

Public Health Department
Denver, Colorado

Rifle Chamber of Commerce
Rifle, Colorado

Glenwood Springs Chamber of Commerce
Glenwood Springs, Colorado

Grand Valley Chamber of Commerce
Grand Valley, Colorado

Mayor of Grand Valley
Grand Valley, Colorado

City Manager
Grand Junction, Colorado

Mayor of Grand Junction
Grand Junction, Colorado

City Manager
Glenwood Springs, Colorado

Mayor of Glenwood Springs
Glenwood Springs, Colorado

*Utah State Department of Highways
Salt Lake City, Utah

Mayor of Rifle
Rifle, Colorado

Mayor of DeBeque
DeBeque, Colorado

Town Council
DeBeque, Colorado

Public Service Company of Colorado
Denver, Colorado

Grand Valley Rural Power Lines
Grand Junction, Colorado

Grand Valley Planning Commission
Grand Valley, Colorado

Rocky Mountain Natural Gas Company
Glenwood Springs, Colorado

Western Slope Gas Company
Grand Junction, Colorado

El Paso Natural Gas Company
El Paso, Texas

Cascade Natural Gas Corporation
Rifle, Colorado

Mountain Bell Telephone
Grand Junction, Colorado

Ute Water Conservancy District
Grand Junction, Colorado

Denver & Rio Grande Western Railroad
Denver, Colorado

Cromtronics Cable Television
Grand Junction, Colorado

Mountain Microwave, Incorporated
Grand Junction, Colorado

Rocky Mountain Center on Environment
Denver, Colorado

Sierra Club
Tucson, Arizona

Colorado Open Space Council, Incorporated
Denver, Colorado

Denver Audubon Society
Denver, Colorado

Colorado River Council
Aspen, Colorado

Summit Citizens Association
Breckenridge, Colorado

Colorado Motor Carriers Association
Denver, Colorado

Colony Development Operation
Denver, Colorado

Club 20
Grand Junction, Colorado

Keep Colorado Beautiful, Incorporated
Denver, Colorado

Audubon Society of Western Colorado
Grand Junction, Colorado

Mr. Wayne L. Conrady
Highland, California

Mr. C. B. Beardsley
Denver, Colorado

Mr. Samuel J. Caudill
Aspen, Colorado

Mr. Chriss G. Maritz
Denver, Colorado

Mr. Don Walter
Glenwood Springs, Colorado

Mr. Jared B. Morse
Denver, Colorado

Mr. Dwight K. Snelman, Jr.
Aspen, Colorado

Mr. Jim Clark
Vail, Colorado

N. P. Dodge Company
Omaha, Nebraska

Rifle's Greenbelt, Incorporated
Rifle, Colorado

KREX T.V. Station
Grand Junction, Colorado

KOIL Radio Station
Grand Junction, Colorado

KSTN Radio Station
Grand Junction, Colorado

KHSR Radio Station
Rifle, Colorado

KREX Radio Station
Grand Junction, Colorado
Division of Commerce & Development
Denver, Colorado

Department of Natural Resources
Denver, Colorado

Public Health Department
Denver, Colorado

Rifle Chamber of Commerce
Rifle, Colorado

Glenwood Springs Chamber of Commerce
Glenwood Springs, Colorado

Grand Valley Chamber of Commerce
Grand Valley, Colorado

Mayor of Grand Valley
Grand Valley, Colorado

City Manager
Grand Junction, Colorado

Mayor of Grand Junction
Grand Junction, Colorado

City Manager
Glenwood Springs, Colorado

Mayor of Glenwood Springs
Glenwood Springs, Colorado

*Utah State Department of Highways
Salt Lake City, Utah

Mayor of Rifle
Rifle, Colorado

Mayor of DeBeque
DeBeque, Colorado

Town Council
DeBeque, Colorado

Public Service Company of Colorado
Denver, Colorado

Grand Valley Rural Power Lines
Grand Junction, Colorado

Grand Valley Planning Commission
Grand Valley, Colorado

Rocky Mountain Natural Gas Company
Glenwood Springs, Colorado

Western Slope Gas Company
Grand Junction, Colorado

El Paso Natural Gas Company
El Paso, Texas

Cascade Natural Gas Corporation
Rifle, Colorado

Mountain Bell Telephone
Grand Junction, Colorado

Ute Water Conservancy District
Grand Junction, Colorado

Denver & Rio Grande Western Railroad
Denver, Colorado

Comtronics Cable Television
Grand Junction, Colorado

Mountain Microwave, Incorporated
Grand Junction, Colorado

Rocky Mountain Center on Environment
Denver, Colorado

Sierra Club
Tucson, Arizona

Colorado Open Space Council, Incorporated
Denver, Colorado

Denver Audubon Society
Denver, Colorado

Colorado Rivers Council
Aspen, Colorado

Summit Citizens Association
Breckenridge, Colorado

Colorado Motor Carriers Association
Denver, Colorado

Colony Development Operation
Denver, Colorado

Club 20
Grand Junction, Colorado

Keep Colorado Beautiful, Incorporated
Denver, Colorado

Audubon Society of Western Colorado
Grand Junction, Colorado

Mr. Wayne L. Conrado
Highland, California

Mr. C. B. Beardsley
Denver, Colorado

Mr. Samuel J. Caudill
Aspen, Colorado

Mr. Chris G. Maritz
Denver, Colorado

Mr. Don Walter
Glenwood Springs, Colorado

Mr. Jared B. Morse
Denver, Colorado

Mr. Dwight K. Shellman, Jr.
Aspen, Colorado

Mr. Jim Clark
Vail, Colorado

N. P. Dodge Company
Omaha, Nebraska

Rifle's Greenbelt, Incorporated
Rifle, Colorado

KREX T.V. Station
Grand Junction, Colorado

KQIL Radio Station
Grand Junction, Colorado

ASTR Radio Station
Grand Junction, Colorado

KWSR Radio Station
Rifle, Colorado

KREX Radio Station
Grand Junction, Colorado
TABLE OF CONTENTS

1 - INTRODUCTION .................................................. 1

2 - A DESCRIPTION OF THE PROPOSED IMPROVEMENT AND ITS SURROUNDINGS
   A. History .................................................. 3
   B. Project Description ...................................... 4

3 - PROBABLE IMPACT OF THE PROPOSED DEVELOPMENT OR IMPROVEMENT ON THE ENVIRONMENT
   A. Social ...................................................... 9
   B. Economic ................................................... 18
   C. Land Use .................................................... 23
   D. Transportation ............................................. 25
   E. Esthetics .................................................... 27
   F. Noise, Air, and Water ..................................... 30
   G. Geologic ...................................................... 32
   H. Earth Resource .............................................. 36

4 - ANY PROBABLE ADVERSE ENVIRONMENTAL EFFECTS WHICH CANNOT BE AVOIDED SHOULD THE PROPOSED IMPROVEMENT BE IMPLEMENTED .................. 49

5 - ALTERNATIVES
   A. "Null" or "Do Nothing" ..................................... 51
   B. Other Modes of Transportation .......................... 52
   C. Alternate Freeway Locations
      Section 1 .................................................. 53
      Section 2 .................................................. 54
      Section 3 .................................................. 51
      Section 4 .................................................. 52
      Section 5 .................................................. 66
   D. Summary of Recommended Alignments .................. 67

6 - THE RELATIONSHIP BETWEEN LOCAL SHORT-TERM USES OF MAN'S ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY ........................................... 69

7 - IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES .......................... 71

8 - PROBLEMS AND OBJECTIONS ........................................ 73

9 - MINIMIZATION OF HARM ............................................ 139
### APPENDIX

#### REFERENCES

<table>
<thead>
<tr>
<th>Number</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>24</td>
<td>Cameron Engineers, <em>Oil Shale Mineral Right Ownership - Piceance Creek Basin,</em> September 1973. (Map)</td>
</tr>
</tbody>
</table>
## List of Illustrations

<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Area Location Map</td>
</tr>
<tr>
<td>2</td>
<td>Interstate Highway Typical Sections</td>
</tr>
<tr>
<td>3</td>
<td>Present Land Use</td>
</tr>
<tr>
<td>4</td>
<td>Future Land Use</td>
</tr>
<tr>
<td>5</td>
<td>Geology Map</td>
</tr>
<tr>
<td>6</td>
<td>Vegetation Map</td>
</tr>
<tr>
<td>7</td>
<td>Wildlife Photograph Pages</td>
</tr>
<tr>
<td>8</td>
<td>Big Game, Small Game, Non-Game, and Varmit Concentration Areas</td>
</tr>
<tr>
<td>9</td>
<td>Waterfowl, Passerine and Game Bird Concentration Areas</td>
</tr>
<tr>
<td>10</td>
<td>Raptors Map</td>
</tr>
<tr>
<td>11</td>
<td>Auto/Deer Collision Map</td>
</tr>
<tr>
<td>12</td>
<td>Fishery Resource Map</td>
</tr>
<tr>
<td>13</td>
<td>Interstate Alternates Alignment Map, Depicting the Colorado Division of Highways' Recommended Alignment</td>
</tr>
<tr>
<td>14 thru 19</td>
<td>Photographs Depicting Possible Alignments Throughout the Project Area</td>
</tr>
<tr>
<td>20</td>
<td>Alternates 2-A and 2-B with Mapping and Photos Comparing the Available Options</td>
</tr>
<tr>
<td>21</td>
<td>Una Area</td>
</tr>
<tr>
<td>22</td>
<td>Grand Valley Area</td>
</tr>
<tr>
<td>1 thru 16</td>
<td>Alignment Sheets Through De Beque Canyon, Depicting Roadway Cut and Fill and Encroachment Areas</td>
</tr>
</tbody>
</table>
This proposed improvement would upgrade and modernize the presently hazardous two-lane highway to a four-lane freeway built to interstate standards. The project area extends from one mile east of the Plateau Creek Interchange (State Highway 65) in DeBeque Canyon to a point four miles west of Rifle, Colorado, a total of approximately 37 highway miles.

U.S. 6 is the main all-weather, east-west transportation facility across west-central Colorado and has been the designated Interstate 70 corridor since the early 1960's (Pavlo Report, 1960). Interstate 70 enters eastern Colorado near Burlington and travels westerly across the eastern plains of Colorado to Denver. In Denver it passes through the northern part of the city, then begins climbing through the foothills of the Front Range at Georgetown and eventually reaches an elevation of 11,000 feet where it passes through the Eisenhower Tunnel under the Continental Divide. Traversing the western side of the Continental Divide, it winds its way down the Eagle and Colorado River Valleys until finally exiting western Colorado through the semi-arid land west of Grand Junction. All sections of Interstate 70 have either been completed or are nearing the construction phase on the eastern slope of Colorado. Interstate 70 has taken leapfrog form across western Colorado with all sections complete or under construction except for four segments: Dotsero - West, Frisco-Wheeler Junction, second bore of the Eisenhower Tunnel, and the 37 mile section presently being studied and covered by this Final Environmental Impact Statement. The section of I 70 between Mack and the Utah State Line was dedicated and opened to transcontinental traffic on September 27, 1973.

As previously stated, the segment of proposed Interstate 70 discussed in this Final Environmental Impact Statement extends from one mile east of the Plateau Creek Interchange to a point four miles west of Rifle, Colorado, a distance of approximately 37 miles. This area can be characterized as rural in nature with the population of DeBeque being 155 and 270 for Grand Valley (1970 census). The nearest and largest service and supply center is Grand Junction which lies 30 miles west of DeBeque and 46 miles west of Grand Valley. Rifle (population 2150, 1970 census) lies 11 miles east of Grand Valley and 27 miles east of DeBeque.

Little commercial or industrial development has taken place to date, mainly confined to Anvil Points and Union Carbide at Rifle. The small communities of DeBeque and Grand Valley can be described as relatively stable, but have been slowly declining in population since the early 1900's. This seven decade characteristic is presently changing due to the oil shale development activity during the past two years. The recent developments within the oil shale and energy related industries will have considerable impact on the study area, forcing expansion and growth of this relatively undeveloped region. The completion of Interstate 70 within this region will provide improved access throughout the area which is necessary to provide an efficient means of transporting people, goods, and services required to support an expanding oil shale, coal, or gas industry in the northwest and north-central portions of Colorado as well as serve the residents and visitors of western Colorado. Growth directly related to oil shale development activity is presently beginning to become apparent with housing shortages and escalated real estate prices being prevalent throughout the region.

However, with Colony Development Corporation's announcement last October that they were temporarily postponing the start of construction this spring (1975) of the commercial oil shale plant, oil shale is expected to slow down in the area.
Colony was the leader in plant development operations, and gave economic and political considerations as the reasons for their postponement. Colony has indicated that they are continuing with all other phases of study, evaluation, preparation, and construction in order to facilitate and expedite their later decision to extract oil shale.

Individuals closely involved with oil shale development feel oil shale is here to stay, and development will come, just not as soon as had been predicted. Thirteen oil and development firms besides Colony Development are continuing with their plans for oil shale development. (Garfield County Planning Director, Channel 9 Television interview, November 19, 1974.)
A description of the proposed improvement and its surroundings

Chapter 2

Photo by Leonard Lee Rue III
A. History

This section began with planning studies for this project back in 1965. At that time, it was divided into two segments. The easterly 19 miles were subjected to early study, resulting in a Route Location Study Report being issued on January 26, 1966, followed by a field view attended by various governmental agencies on February 9, 1966. On June 1, 1966, a formal public hearing on this section of the project was held in Grand Valley.

A field view on the remaining westerly 18 miles was attended by the various governmental agencies on October 27, 1966. Following a formal public hearing held in DeBeque on December 15, 1966, a Route Location Study Report was issued on April 10, 1967.

These early study reports recommended an alignment that generally followed the existing location of U.S. Highway 6. Through several long stretches, the present highway was to become the east-bound lanes of I-70. Minor deviations were recommended at the Beavertail tunnel site in DeBeque Canyon, and east of the Town of DeBeque.

During 1967, Dr. Charles Robinson was hired to study the geology of the Beavertail tunnel site, and his report was issued on January 24, 1968. Then in 1968, Lyle W. Talbott was authorized to use the large landslide a mile east of Beavertail as a subject for a Master of Science Thesis which was issued during June 1969. (See Reference No. 16, page vii.)

During early years, the project had a low priority. Funds for right of way were not appropriated, and progress was slow. In 1972, the project was reactivated. Because of the many regulation and procedure changes, primarily due to passage of the National Environmental Policy Act, a decision was made to make a fresh start on the project, with complete restudy of feasible alternatives, and a thorough assessment of social, economic, and environmental impacts. Colorado Division of Wildlife personnel became active participants in study efforts. (See Reference No. 1, page vii.)

Many informal sessions were held over the next two year period in order to update and solicit new data on the project area. Then on June 16, 1973, a day-long field view of the project area was conducted by this Division with representatives of the Bureau of Land Management, Environmental Protection Agency, Federal Highway Administration, Garfield County Commissioners, Division of Wildlife, Sierra Club, Audubon Society, Western Colorado Regional Planning Commission and the Daily Sentinel newspaper on hand for the tour. Much valuable input came as a result of this field tour. (Note Figure 19, Photo 2.)

Throughout the course of the environmental evaluation of this proposed improvement, interdisciplinary expertise was used and directed at analyzing the social, economic, and environmental effects of this proposal on the area and region. Available data and reports were secured and researched for information relating to the specific project area. A questionnaire was circulated in DeBeque and Grand Valley in December 1971 to solicit citizen input on the proposed interstate freeway. This provided valuable social data on the character of DeBeque and Grand Valley, but was later updated during the 1973 analysis and evaluation because of changes in citizens’ views as a result of potential oil shale development in the area.

In preparation for the Corridor Public Hearing, a public display containing all pertinent data assembled to that date was open to the public in Grand Valley from September 23 through October 4, 1974. Then on October 7, 1974, the Colorado Division of Highways conducted a Corridor Public...
interstate highway typical sections

**Depressed Median**

- Bituminous Pavement
- Centerline Median
- Shoulder
- Driving Lanes

**Non-depressed Median**

- Bituminous Pavement
- Centerline Median
- Shoulder
- Driving Lanes

**Cut slopes not steeper than 3:1 except in special cases.**

**Point of slope selection**

- Maximum
- Minimum

**Median width**

- MEDIAN SLOPES
  - MEDIAN width
  - Cut: Up to 60°
    - 6:1
  - Fill: Over 60°
    - 6:1 up to \( H = 10' \)
    - 4:1 when \( H \) is over 10' a

**FILL SLOPES**

- "H" Slopes
  - 10' or less: 6:1
  - 10' to 25': 4:1
  - Over 25': 3:1

**Figure 2**
Hearing in the Grand Valley School to formally present this proposed interstate freeway construction project to the public. There were in excess of 200 citizens attending this hearing which depicted the tremendous local interest generated in the project area during its planning and development stages. After an introduction by moderator Dick Martin, Chairman of the Garfield County Planning Commission, and formal presentations by several Division of Highways personnel, the meeting was opened to a question, comment, and answer session involving several of the attending citizens. Questions during the course of the public hearing were related to many topics which included: placing the interstate through this area in a location which would do the least damage to agricultural lands, individual home owners, and wildlife; the need for care in the construction phase in DeBeque Canyon to maintain esthetics; the need to keep the proposed interstate as near as possible to the existing U.S. 6 alignment; the separation over the railroad crossing at Una Junction; the need to keep median width to a safe minimum, thus reducing deer winter range losses; the need to provide stock and game underpasses for existing uses; the need for deer fencing in critical deer/auto accident areas; the need for the best alignment in the Grand Valley area which would do the least amount of social, economic, and environmental damage to the town; the need for a bicycle trail through the DeBeque Canyon; and how the alignments would affect the tax base of Grand Valley through loss of taxable land within the city limits of Grand Valley.

Mr. Harry Blue made a presentation for an alignment farther north of Grand Valley than the one shown by the Division (Alternate 4-B). He also submitted a petition containing 122 signatures in support of this northern alignment. The Division did not attempt to validate the petition or the signatures, but made it part of the official transcript. All questions and comments were considered and answered during the course of this public hearing, and all letters submitted at the public hearing were entered into the Official Public Hearing Transcript, as were all letters received within ten days after the hearing. All letters containing specific questions or comments have also been included and answered within the text of this Final Environmental Impact Statement. Answers to comments can be reviewed in Chapter 8, as can the individual comment letters.

B. Project Description

The proposed improvement would involve the upgrading of an inadequate two-lane highway to a four-lane freeway built to interstate standards. The combined sections begin at a point one mile east of the Plateau Creek Interchange and extend easterly to a point four miles west of Rifle, Colorado. The proposed project is approximately 37 miles long and is identified as I 70-1(19)A(36), DeBeque Grand Valley. (Note Area Location Map, Figure 1 and Figure 13.)

The present highway is two-lane and in relatively poor condition. It has two 12 foot driving lanes with three to four foot graveled shoulders. It is potentially dangerous because of poor sight distances, deteriorated surfacing, and heavy traffic. Present traffic volume on this section of existing U.S. 6 is approximately 3500 ADT (Average Daily Traffic). Estimated volumes by 1993 exceed 10,000 ADT. If extensive oil shale development takes place, these future estimated volumes will be on the conservative side.

The new interstate facility would be a four-lane controlled access highway. It would have four 12 foot driving lanes, four foot inside shoulders, ten foot outside shoulders to serve as emergency
parking lanes, and a variable median width from eight feet wide with concrete barriers to 100 or more feet wide as a depressed type. (See Figure 2.) The width of the median will vary, depending upon the terrain restrictions, i.e. median width in DeBeque Canyon would be much less than outside the Canyon where widths would be more generous (36 to 150 feet). Present right of way widths are wide, 100 to 250 feet, and vary throughout the project length. These widths would have to be widened to a total of 300 to 500 feet in certain areas to accommodate frontage roads and interchanges provided to maintain existing access. Frontage roads would be constructed in more populated areas (west of Rifle, DeBeque, and Grand Valley) for the residents of these areas. Four interchanges are presently under consideration in the Rulison, Grand Valley, Una, and DeBeque areas, and a grade separation structure is presently planned for Anvil Points.

To help evaluate the present condition and need for improvement, a four year traffic accident history (July 1, 1970, to July 1, 1974) was conducted by the Planning and Research Division, Colorado Division of Highways. The results have been summarized for clarity and simplicity. There were a total of 364 accidents during this period. In these accidents, 16 persons were killed and 199 nonfatal injuries were reported. The greatest number of collision type accidents were made up of collision with animal (86), sideswipe - both directions (32), rear-end (25), and head-on (14). In the noncollision type accidents, the majority occurred when the motorist ran off the road (150). Of the 364 accidents, 207 occurred during adverse weather conditions (raining, snowing) and 74 occurred on adverse road conditions (wet, snowy, icy). The total economic loss as a result of these accidents was estimated to be $1,769,950.

In reviewing this accident history, it is very evident that safety of the highway user is of prime importance in this area, and the freeway or interstate facility is designed to eliminate or reduce the majority of the type accidents occurring on this highway section.

Grand Valley, population 270, in Garfield County; and DeBeque, population 155, in Mesa County, are very small western Colorado towns. They are located on the main east-west transportation corridor, U.S. 6, across west-central Colorado. These areas have remained relatively unchanged in the past 50 years after a beginning tied with agriculture, mining, and the Denver and Rio Grande Western Railroad. Presently the entire area is being overshadowed by extensive oil shale and natural resource exploration and their related activities. This action will pressure the area into change through new community, residential, commercial, industrial, and recreational development.

The topography of the DeBeque - Grand Valley area is one of varied forms, from level valley floors and mesas to irregular plateaus and benches, and steep, rugged mountains. The proposed project is located in the relatively flat Colorado River Valley, situated between extensive mountainous terrain to both the north and south of the valley. The climate of this area is moderately semi-arid, with temperatures high during the summer months and relatively mild during the winter months. Precipitation in the area varies from 8.94 inches in Grand Junction to 10.93 inches in Rifle, Colorado. The annual mean temperature in Garfield County is 48.1° and 53.2° in Mesa County, with a growing season of 188 days in Grand Junction and an average of 138 days in Garfield County.

The economy of the DeBeque - Grand Valley area has historically been supported by agriculture and mining. In the last few years, tourist trade has
contributed heavily to the economy of this area and of western Colorado. For the past 30 years, there have been various degrees of activity and speculation on oil shale development. Within the past year, there has been renewed and increased oil shale activity, and some form of industry development is eminent within the next two years. Also, presently there is activity in the development of new winter-summer recreational areas proposed such as: Rifle Ski Corporation's Buffalo Basin Complex located five miles southwest of Rifle on Battlement Mountain, the Bureau of Reclamation's Una Reservoir located three miles east of DeBeque, or Paradise Dam located two and one-half miles east of DeBeque. Development of subdivisions and industrial parks is anticipated in the Una railroad crossing area. These areas are discussed further under Chapter Three, pages 15 through 17. All of these developments will create a need for more support and service facilities which will necessitate the construction industry contributing substantially to the economic stability and employment situation of the entire area.

The 1960 population of Garfield County was 12,017, and the 1970 census showed a population of 14,821, or an increase of 23.3 percent, with most of the growth occurring in the Rifle and Glenwood Springs areas. This is the largest population increase in Garfield County during the past sixty years.

The 1974 estimated population for the three county region (Mesa, Garfield, Rio Blanco) is 82,300. In future years, growth predictions for the three-county area are varied. Colorado West Area Council of Governments, or Planning and Management Region 11, supports the following future population projections for a 1989 population of 129,300 individuals with a three percent projected annual increase and a population of 162,700 individuals with a five percent projected annual increase. These two projections reflect growth of the region without oil shale development. In projecting the population resulting from a moderate oil shale development after the 14 years of development, shows an increase to the region of an additional 61,200 individuals. The projected population resulting from an intensive oil shale development shows an increase of 160,988 individuals after the 14 years of development. These last two projections with a moderate or intensive development would bring these new individuals into the region in addition to the figures projected for the region without oil shale development. Therefore, assuming a 750,000 barrel a day production in Colorado within 15 years, 161,000 additional people would have been added to the three county region by an oil shale industry . . . . in addition to the 162,700 already estimated for 1989. (Oil Shale and the Future of a Region, A Summary Report, Colorado West Area Council of Governments, September 1974, pages 23 - 25.) Growth of this magnitude would put severe strains on trades and services, support personnel, public utilities, health, education, and welfare services of the area. This unprecedented growth will also exert further pressures on the existing highway and road systems of the region which presently require modernizing and upgrading to meet current highway specifications for safety and design.

Recreation in the area is important and will become more important in the near future as the area develops. Activities vary from skiing and snowmobiling in winter to fishing, camping, picnicking, sightseeing, and hunting in the summer and fall. Skiing facilities are available to the west at Powderhorn Ski Area on the north slope of Grand Mesa. Facilities are also available to the east near Glenwood Springs at Sunlight Ski Area, and further south on State Highway 82 at Snowmass and Aspen. The Bureau of Reclamation's Vega Reservoir is also located in Grand Mesa National Forest, approximately 30 miles south of DeBeque, and
offers several types of recreational activities. There are year-round recreational activities available in both Grand Mesa and White River National Forests for such activities as: fishing, hunting, camping, hiking, picnicking, boating, waterskiing, sightseeing, and cycling. The limited agricultural activity involves livestock ranching and its related functions such as the production of feed for livestock and grass hay pasture for winter grazing. There is some crop (corn, alfalfa) production in the area, but it is very limited in importance and is largely restricted to areas on or near the Colorado River floodplain or low mesas above the floodplain where field irrigation is practical. In this area, soils are alkaline and precipitation is sparse, making it necessary to irrigate agricultural lands for any appreciable corn production.

The natural vegetation of the area is the plateau-river valley type which consists of grasses (cheat grass, Indian ricegrass, sand drop seed, wheat-grasses), forbs (Russian Thistle), shrubs (salt bush, greasewood, sagebrush), and trees (cottonwoods, willows, pinyon pine, Utah juniper). The original plant community has been greatly modified by livestock grazing and land use changes.

Wildlife and fishery resources are somewhat restricted in the area by limited available water, cover, and food, and are largely confined to areas of the Colorado River floodplain. These resources are fully discussed under Chapter Three - Earth Resources.

The present road systems (city, county, state) in the DeBeque - Grand Valley areas are inadequate to handle local traffic volumes or high volumes of summer tourist traffic. Roads are narrow and in poor physical and structural condition; county and city streets are narrow with gravel or dirt surfaces. It is the plan of the city, county, and state agencies concerned with transportation to coordinate efforts of street, road, and highway development, to alleviate presently growing problems and meet future transportation needs of this potentially fast-growing area. The whole area transportation system will benefit from this early planning process to meet future needs.

Implementation of the proposed project will include the temporary disruption or relocation of the following utilities: Mountain Bell Telephone transportation and distribution lines, Public Service Company gas distribution and transmission lines, Western Slope Gas distribution lines, Bureau of Mines switchyard at Anvil Points, Town of Grand Valley water and sanitation facilities, Denver and Rio Grande Western Railroad, and Grand Valley Rural Power Lines Association, Incorporated.

Construction would require relocation of a streamflow gauging station that is situated in DeBeque Canyon at Mile 4.9, Station 369 + 00. This gauging station will have to be relocated. This Division has preliminarily discussed this move with the USGS who in turn have contacted their cooperating Colorado State Water Engineer.

If funds are made available and authorizations are obtained, right of way acquisition could begin in late 1975. Construction could then start on some segment of the project during late 1975 or early 1976.

With oil shale, coal, oil, natural gas, and other resource development activity intensifying, the focal points will be DeBeque, Grand Valley, Rifle, and the Parachute and Piceance Creek basins. The Division plans to begin construction west of Rifle and progress toward Grand Valley. Work through DeBeque Canyon and easterly would follow shortly thereafter.

Implementation of the proposed interstate freeway...
project will also require obtaining a use permit for right of way on government lands from the Bureau of Land Management in Grand Junction. In this preliminary stage of development, it appears that approximately 50 acres of BLM administered lands would be involved throughout this 37 mile interstate project.
probable impact of the proposed development or improvement on the environment

chapter 3
The collection of Environmental Impact Statement data was accomplished with the aid of various tools such as direct contact interviews, questionnaires (1971), informal public meetings, formal public hearings (1966, 1974), field views, special studies, research papers and reports, coordination with many state and federal agencies, and contact with local officials and residents of the area. These efforts enabled members of the interdisciplinary study team to accurately and objectively apply their specific expertise toward recognizing and evaluating the probable impacts of the proposed interstate project on the total environment by assessing and evaluating the following social, economic, environmental, esthetic, and interrelated factors.

SOCIAL IMPACTS

1. General Sociological Overview

As a result of the interstate highway program being planned through central Colorado for over 15 years, the residents of the communities of DeBeque and Grand Valley have been aware of the possibility of Interstate 70 passing in close proximity to their small communities. The major questions in the residents' minds have been where, in exact terms, is the actual alignment of the interstate going to be (i.e., north, south, or through their communities) and where are the interchanges going to be located exactly (i.e., east, west, north, south, or at both ends of their communities).

Before questions of this importance can be answered, many other questions must be answered concerning economic feasibility, highway design considerations, traffic volumes (present and future) and possible biotic and wildlife disruptions. Also needed are indicators that would assess the social characteristics of the DeBeque - Grand Valley area residents.

To that end, in the fall of 1971, the Colorado Division of Highways conducted community surveys to assess the area residents' social, economic, and status variables. These sources of information and other sources generated by governmental, private, and other interested organizations and individuals, have been evaluated in arriving at sociological conclusions summarized within this section. In addition, preferences of area residents, in conjunction with possible future land use information, was developed in 1972 by a consultant employed by the Colorado Division of Highways.

When examining the information contained herein, the reader should realize that the life styles of the populations of these communities will be greatly affected whether or not oil shale develops in the corridor area. The interstate will be completed through the Colorado River Valley in which these communities lie.

A survey was administered in both DeBeque and Grand Valley to determine the social characteristics of the communities' residents. The survey itself contained a community solidarity index. This index measures two important aspects of the community -- what identity the individual resident has with the community, and how intense his identification is with the community in which he lives. The result of the index is a measurement of the collective sense of community cohesion present within the community, which in turn reveals the social stability of the community at that point in time. If community stability is known, then when relationships are examined between community action programs and community solidarity, this measure may be highly predictive of the success or failure of community efforts.

In addition, the index contains dimensions of community identity, cohesion, aspirations, perceptions of education, religion, law enforcement, determined by the individual respondents themselves.
In addition to the community solidarity index, certain socio-economic variables were asked of the communities in the study corridor. The population in both of the communities was the sample. In the community of DeBeque, there were 157 returned schedules, which represented 100 percent of the population. In Grand Valley, 152 out of 270 people were represented, which constituted 56 percent of the total population. (The questionnaire used in this study can be reviewed on pages 96 and 97 of the Draft Environmental Impact Statement.)

The average age of residents in DeBeque is 45.3, and in Grand Valley 42.9, while the national average is slightly under 25 years of age. Obviously, both communities are composed of a high percentage of older citizens. This indicator of age of the communities' residents is in keeping with the lack of economic growth in the area and the out-migration of the younger citizens in search of employment opportunities.

Most citizens have lived in their respective communities for a great length of time. The average citizen has lived in DeBeque for 25.3 years, and 22.5 years in Grand Valley. This indicates neither population is very mobile.

The stability of the citizenry in both DeBeque and Grand Valley is also indicated by the number of individuals who own their own homes. In both communities, 79 percent of the residents own their own homes. In DeBeque, 77 percent of the residents live in single family, attached dwellings, and seven percent in mobile homes. In Grand Valley 63 percent live in single family, detached units, seven percent in single family attached type of dwelling, four percent in apartments, and slightly over six percent live in mobile homes. The conclusion drawn is that citizens of DeBeque are more committed to life in that community than citizens in Grand Valley. Therefore, any disruption of the communities will result in a loss of the social community identity, cohesion, and stability that has constituted the makeup of the communities for so many years.

The average family size in both communities is about two and one-half persons (2.8 for DeBeque, 2.7 for Grand Valley). The majority of the people are married in both communities - DeBeque 70 percent, Grand Valley 72 percent. In both communities 11 percent of the population is single and two percent is divorced. Eighteen percent are widowed in DeBeque; 16 percent are widowed in Grand Valley.

Both DeBeque and Grand Valley are considered quite healthy communities socially, and in a stable condition with few exceptions. They also have compatible characteristics in many cases. For example, in both DeBeque and Grand Valley, interpersonal friendship is easily attainable. They believe they have a peaceful, orderly town, with quite prevalent cooperative community efforts. The citizens have a deep sense of belonging to the communities.

The occupations of citizens of both Grand Valley and DeBeque are as follows:

<table>
<thead>
<tr>
<th>Occupation</th>
<th>DeBeque</th>
<th>Grand Valley</th>
</tr>
</thead>
<tbody>
<tr>
<td>Professional</td>
<td>9%</td>
<td>11%</td>
</tr>
<tr>
<td>Business Owner</td>
<td>28%</td>
<td>12%</td>
</tr>
<tr>
<td>Managerial-Supervision</td>
<td>5%</td>
<td>2%</td>
</tr>
<tr>
<td>Clerk</td>
<td>0%</td>
<td>2%</td>
</tr>
<tr>
<td>Labor-Mechanical</td>
<td>5%</td>
<td>16%</td>
</tr>
<tr>
<td>Labor-Manual</td>
<td>18%</td>
<td>3%</td>
</tr>
<tr>
<td>Sales-Retail</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Service</td>
<td>7%</td>
<td>11%</td>
</tr>
<tr>
<td>Housewife</td>
<td>5%</td>
<td>12%</td>
</tr>
<tr>
<td>Welfare or retired on pension, or both</td>
<td>23%</td>
<td>31%</td>
</tr>
</tbody>
</table>

2. Citizens aspirations and desires

The citizens of DeBeque feel strongly that their aspirations as a community are achievable through community-wide efforts. The citizens of Grand
Valley have similar feelings, but personal attainment of their desires are not as strong as those of the people of DeBeque. Through research information contained within Gerald Brown's *Highway and Community*, (1973) and personal interviews, evidence suggests the citizens of DeBeque feel Interstate 70 should be routed north of their community. However, no support was voiced for this preference during circulation of the Draft EIS and subsequent review process of the Corridor Public Hearing process (August, September, October 1974). The citizens of Grand Valley seem to favor an alignment south of the existing community near the Denver and Rio Grande Western Railroad. However, during the Corridor Public Hearing, the community seemed to be divided between the south alignment and an alignment further north. This information seems to indicate the changing moods of these communities, as additional and more precise information became available. This topic received considerable discussion and evaluation in both Chapters 5 and 8 of this document.

3. Neighborhood identity and cohesion
Analysis of data indicates the people of DeBeque have a very strong sense of identification with their community (88 percent), and they are a cohesive group of people. This indicator points to the fact that there is a great deal of communication between persons in the community and that the information decision-making power of the community leadership is strong. This situation does not exist as strongly in Grand Valley. Comparatively, 64 percent of Grand Valley's citizens have a rather strong sense of identification with the community.

4. Education facilities and programs
Based on analysis of the available information, in DeBeque the citizens feel their educational system is strong (95 percent), while the people of Grand Valley feel its educational process (88 percent) is adequate in preparing their children for life.

The school in DeBeque is in J-49 Mesa County School District with an enrollment of 55 students. The school in Grand Valley is located in Garfield County School District with a past ten year average enrollment of approximately 130 students. Both are small schools housed under one roof in their respective communities. No direct physical impact to these educational facilities resulting from this interstate development is expected.

5. Religious facilities and programs
There is one interdenominational church in DeBeque and two in Grand Valley -- one Methodist and one United Christian. No direct physical impact to these religious facilities resulting from this interstate development is expected.

6. Health and welfare facilities and programs
There are no health or welfare facilities available in the immediate project area. Directors of the Mesa and Garfield County Departments of Public Welfare stated there are approximately 47 persons in DeBeque and 42 persons in Grand Valley who are receiving public assistance in some form. Welfare programs available to the area residents include:

The effect of oil shale, coal, or natural gas development on the educational facilities of Grand Valley could be detrimental. One projection calls for 1200 students to be enrolled in grades one through twelve within three and one-half years (Daily Sentinel, March 11, 1974). This situation will call for the expansion of schools and hiring of additional teachers throughout the affected area (Grand Valley, DeBeque, Grand Junction, Rifle, Meeker).
Old Age Pension Program, Aid to Needy Disabled, Child Welfare Service, General Assistance, Day Care, and Aid to the Blind. Also, there are no physicians or hospitals located in the project area. To receive normal, everyday health or social services, residents must travel east to Rifle or Glenwood Springs, south to Collbran, or west to Grand Junction. Improvement of the main transportation system throughout the area would be beneficial due to faster and safer travel for persons seeking health and social services.

7. Fire, police, and ambulance facilities and services
The Town of Grand Valley has a town-county marshal for protection, while DeBeque has no marshal. DeBeque relies on the Mesa County Sheriff's Office and the Colorado State Patrol for police protection. Both communities have volunteer fire protection with Grand Valley having three fire units and approximately 18 volunteers. DeBeque has no real fire protection service. Ambulance service comes from the Grand Junction area. However, DeBeque has recently been loaned an older ambulance by Glenwood Springs in anticipation of acquiring an ambulance of their own. There is a trend among outlying communities to upgrade their emergency vehicles. All police, fire, and ambulance service would be greatly benefited by improving the main highway transportation facility through this area. It would make high speed emergency travel faster, safer, and more efficient which would improve fire, police, rescue, ambulance, and other emergency services throughout this region.

8. Social and Cultural Facilities and Programs
The community of DeBeque has occasional community gatherings, centering around the school and church. In Grand Valley, the volunteer fire department carries on most of the organized social activities. The school usually is the center of social and culturally oriented programs.

Grand Valley has the following clubs and organizations: Grand Valley Park Association, American Legion, Firemen's Association, Rebekahs, Junior and Senior Rifle Clubs, 4-H, and Chamber of Commerce.

DeBeque has the following clubs and organizations: American Legion, 4-H, and Rebekahs, and no strong organizations appear to exist.

The completion of an interstate facility will provide safer access for a more integrated region-wide social and cultural involvement program.

9. Neighborhood Shopping Facilities
DeBeque and Grand Valley have one general store each. Residents must travel to neighboring communities to obtain most goods and services. The general store in Grand Valley will have to be relocated with the alignment south of Grand Valley. Travel to regional shopping facilities will be made safer and less congested through improvements to the transportation system between the existing communities and the available regional shopping facilities at Rifle, Glenwood Springs, and Grand Junction.

10. Recreational Facilities and Programs
There are few recreational facilities available in the communities of DeBeque and Grand Valley. Each community has a small undeveloped city park. DeBeque has expressed plans to improve its city parkland and plans to build a community recreation center for local gatherings. Grand Valley obtained a piece of land south of the Denver and Rio Grande Western Railroad which is administered by the Grand Valley Park and Recreation Association. No direct impact will result to the parklands in either community as a result of this proposed Interstate 70 construction. However, in maintaining existing access, better access to Grand Valley parkland could result.
Recreational facilities are available in the region on White River and Grand Mesa National Forests and support such activities as: skiing, camping, fishing, boating, waterskiing, hiking, picnicking, hunting, snowmobiling, and sight-seeing.

The larger communities of Grand Junction and Glenwood Springs, and to a limited extent, Rifle, offer family recreation activities such as swimming, bowling, drive-in movies, indoor theaters, roller skating, golf, and tennis. The development of Interstate 70 will benefit the residents of the Debeque and Grand Valley areas by making these facilities more readily available.

11. Displacement and Relocation of Persons and Families

The construction of Interstate 70 and the recommended alignment (2-A and 4-A) will necessitate the relocation of approximately 18 homes and nine businesses primarily in the area south of Debeque along existing U.S. 6, and in the town of Grand Valley. This number could vary slightly as this project moves into and through the design phase of project development. This relocation activity is classed as adverse and will have a detrimental impact on the families and businesses affected. This topic is thoroughly discussed in Chapters 4 and 5.

12. Type, condition, and availability of housing

Existing housing within the project area is made up largely of small, older homes and mobile homes. Most homes are in excess of 50 years old (excluding mobile homes) and in various stages of repair. There are very few homes available for purchase, and no homes available for rent in Grand Valley, Debeque, and Rifle. This situation is presently changing within this region because several subdivisions and mobile home park applications have been recently filed with Mesa and Garfield County officials for approval in the Rifle, Una, Grand Valley, and Grand Junction areas. This will improve the availability of housing within the area and region. Prior to any construction on this proposed project, the Division will provide safe and sanitary replacement housing to individuals relocated as a result of the proposed highway project. If no replacement housing is available, legal means will be explored in order to provide the replacement housing required by law before construction can begin.

13. Neighborhood Growth and Development

In monitoring information released through the various news media and local officials, it is evident that some growth and development is close to implementation in this area. In addition to requests for new subdivisions and mobile home parks as previously mentioned, a request for a new community has been received by Garfield County. The new town would be located south of Grand Valley and the Colorado River on Battlement Mesa. (Note Figure 4.) The new town could house 3500 people in four years and as many as 30,000 people in 15 years as the oil shale industry expands. It is felt by planning and local officials in the area that a whole series of "new towns" would not be approved; however, the community on Battlement Mesa has gone beyond the possibility stage and will become a reality. (Letter from Colony Development dated September 21, 1974, Chapter 8, page 76.)
determined by the new residents. Their dominance by numbers could present the possibility of attitudinal conflicts between "oldtimers" and "newcomers" further disrupting community cohesion. Present educational facilities will be physically inadequate. The educational system in the area faces questions of adequacy in facilities and curriculum content. With the influx of new people, the pattern of social disruption will continue through all areas of the existing social structure. These changes will occur in recreational, religious, cultural, economical, emergency and health services, in both the desires of the residents and the need for facilities.

In addition, existing communities such as Rifle, Grand Junction, and Glenwood Springs will also grow to a lesser degree and at a more gradual pace (commuting construction employees). This activity will require increased demands for goods and services by these created or expanded communities. A four-lane interstate facility would make the supply of these additional goods and services a safer and more efficient task by those private groups, local, state, or federal agencies charged with meeting these additional demands.

14. Regional Growth and Development

In replacing an inadequate, two-lane highway with a four-lane interstate system, some new development and growth stimulus can be expected in west-central Colorado. Through improving access into and through the region, the growth of new business and industry could be promoted and induce more individuals to relocate in this area. The impact generated by constructing an interstate in this area will be minimal when compared to the expected stimulus which will be generated by an oil shale or other energy related industries in these areas.

The social implications of this development are many and varied for the DeBeque - Grand Valley area and will extend into other communities in Mesa and Garfield Counties. The impact on other existing communities will not be as severe as the impact on DeBeque and Grand Valley because of their proximity to natural resource deposits and their ability to provide additional new services.

According to the Mesa County Planners, the impact on Grand Junction will be modified by the planning that has been done for an increase in the population to 100,000. Provisions have been made through planning and zoning for additional subdivisions, industrial areas, schools, and public service facilities to accommodate this anticipated growth.

The sociological assessments that were made in the DeBeque - Grand Valley area for the interstate highway project could be invalidated by rapid energy resource development in the area. The factors considered by the community solidarity index would no longer reflect community composition, cohesion, aspirations, perception of education, religion, and emergency services with a great degree of validity. There is a distinct possibility that the community of Grand Valley could cease to exist in its present form, and that it will be replaced by the new community planned by Colony Development Operation. If similar development occurs along Roan Creek, DeBeque could be similarly affected.

Normal, gradual growth is usually considered beneficial in that it brings new payrolls, sales inventories, real estate trade, service and support oriented business, and retail-wholesale buying into the region creating a diversified and healthy economic climate. On the contrary, an extensive oil shale or coal development situation could become detrimental in that a large number of new residents would flood the area over a relatively short time (one to two years) which would bring
undue stress on small towns and communities through overloading of public service facilities (gas, power), educational facilities, local utilities (water, sewer), business services (restaurants, motels, etc.), and housing units. Problems with existing taxation procedures do not allow for an immediate return of collected tax monies to impacted areas and thus create a "tax lag." With this situation, the impact has occurred before monies become available to provide the much needed additional services to the affected area or region. This problem is currently under study by the state legislature. Information available from the petroleum industry indicates that development will be gradual, and they are working with local officials on ways and methods of minimizing impacts (providing counties with "front money" - money before the impact is realized, developer providing the needed facilities, etc.). This would tend to produce a gradual growth potential which would be beneficial to the area. However, the present energy shortage could foreseeably shorten this gradual growth timetable and would then have a definite effect on the pace or rate of exploration, experimentation, development, and production, and very possibly create an adverse effect on the area and region.

The social impact of the oil shale development will be so severe upon the social makeup of the area that any impact resulting from the construction of the interstate highway would be lost in the resulting social transition.

In addition to probable oil shale and energy development having a direct influence on the area and projected traffic volumes on the interstate facility, there are other proposed developments which would affect these volumes.

Other possible generators of growth in the area are the proposed dams and reservoirs on the Colorado River between DeBeque and Grand Valley as previously discussed. In addition to the generation of power, the projects could also supply water for the processing of oil shale. These projects could also reasonably be expected to stimulate residential growth on their periphery.

It is evident that the major generator of growth in the DeBeque - Grand Valley area will be the oil shale industry. Interstate 70 will largely accommodate the growth in the area and will not generate a significant amount of growth by itself. The primary impact of the construction of I 70 will be the acquisition of approximately 820 acres of land for the highway right of way which will be taken off the county tax rolls. A Present Land Use Map (Figure 3) and a Future Land Use Map (Figure 4) have been included. Note the land north of DeBeque and Grand Valley in private ownership; most of this belongs to large oil companies and has potential as development sites.

Buffalo Basin Project

This proposed development by the Rifle Ski Corporation is located approximately five miles southwest of Rifle, Colorado. The Buffalo Basin project calls for the development of a large scale ski complex, both temporary and permanent housing, a small reservoir (Webster Hill Reservoir), and is being described as a "major destination ski and resort area." The ski area would be located in the Cache Creek Basin on the north flank of Battlement Mesa. Presently, planning is being directed at a population of between 2500 and 5000 people, but the area has development potential for between 10,000 and 12,000 people. Webster Hill Reservoir would be located just southeast of the Anvil Points power plant. It would back water approximately one mile to the east toward Rifle and have a storage capacity of between 10,000 and 25,000 acre feet. The total project site has been under intensive investigation for the past seven years, and Rifle Ski Corporation has purchased in excess of 8000 acres.
of land in this area. The U.S. Forest Service is presently preparing the necessary Environmental Analysis Report. Depending on decisions reached with the aid of this study, the Forest Service would later prepare an Environmental Impact Statement for the area because of the ski area's required involvement and use of lands within the White River National Forest.

Recently (March 1975) the Rifle Ski Corporation made application to the Garfield County Commissioners for a zoning and PUD authorization. The final decision concerning this project will not be made for approximately four months.

This development would not directly affect the proposed interstate facility except in generating increased traffic volumes. Access to this area would be by county road from the Rulison Interchange (one mile west).

 Una Dam and Reservoir
Another proposed development is the Una Dam and Reservoir site proposed by the Bureau of Reclamation about three-fourths of a mile east of the Paradise Dam site. The two reservoir locations are in direct conflict because their storage areas for impounded water cover approximately the same basin. Una Dam would provide reservoir storage capacity of 196,000 acre feet. The reservoir would store water for municipal and industrial purposes and the generation of hydro-electric power. It would back water to and beyond the Town of Grand Valley and require relocation of more than nine miles of Denver and Rio Grande Western Railroad's mainline track. If this reservoir were constructed, there would be considerable impact because most of the valley would be inundated, including about one mile of interstate highway. Using the planned high water line of 5070 feet for the Una Reservoir, it would be necessary to design the interstate freeway through this area (Sections 2 and 3) farther to the north on higher ground. Due to the considerable added construction costs, the Division cannot logically justify this added cost without a firm commitment that Una Dam will be built. However, the alignment could be adjusted in order to accommodate the reservoir.

Access to this area would be provided by frontage road connecting the DeBeque Interchange and the Una Interchange.

Paradise Dam and Reservoir
The second planned development consists of a dam site called the Paradise Dam located approximately three miles southeast of DeBeque, Colorado. The potential site has been studied for the past eight years by Paradise Oil, Water, and Land Development, Incorporated. The reservoir would provide water storage of 70,000 acre feet of water and back water to within two miles of the Town of Grand Valley, Colorado. The reservoir is being planned with residential development as part of the total package. Its uses include recreation, power production, and other beneficial water uses. Water filings have been made for the dam and reservoir and a conditional decree has been issued, as well as a U.S. Bureau of Land Management permit for this construction. Negotiations are continuing with the Denver and Rio Grande Western Railroad because it will involve relocation of nine miles of mainline track at a cost of approximately ten million dollars.

The recommended alternates in Sections 2 and 3 have been plotted using the reservoir's high water elevation of 5020 feet; therefore, should this reservoir be constructed, it would not require any relocation of the proposed interstate freeway.

A possible development which is in the very early planning stages is a 400+ acre reservoir to be constructed by Getty Oil on the Bureau of Land Management lands approximately four miles northwest of
DeBeque, Colorado. The reservoir would be utilized for agricultural, oil shale, and recreational uses such as swimming, boating, water skiing, and fishing.

Proposed Industrial Parks
In addition to the platted subdivision (Travelers Highlands) immediately north of U.S. 6 at Una Crossing, there are two large industrial parks proposed in this same area. Una Industrial Park is approximately 500 acres in size and would be located north of the Colorado River and north and south of the present U.S. 6. Grand Valley Industrial Park is approximately 200 acres in size and would be located south of U.S. 6. Both industrial parks have received sketch plan approval from Garfield County and the developers are currently working on final design of the industrial parks. As a result of these developments, the Colorado Division of Highways is proposing an additional interchange at the Una Railroad crossing. The proposed interchange will provide convenient access to these planned industrial parks.

A third industrial park is planned in the Rulison area. The Division plans an interchange at Rulison which will serve this future industrial park as well as the community of Rulison.

If these planned developments are constructed, larger volumes on Interstate 70 can be expected in this area than were previously anticipated. It is possible that the construction and completion of Interstate 70 in this region could provide the added stimulus for the completion of these planned developments. The affects could be detrimental if there is too much growth and development too fast. Without gradual growth and development, the additional demands on housing, public utilities, private and commercial establishments, and educational facilities might not be met. Gradual growth is usually considered beneficial, but the secondary side effects of fast, intensive growth can be detrimental.

DISCUSSION AND SUMMATION OF SOCIAL IMPACTS
Even though the residents of both DeBeque and Grand Valley have lived with the inevitable realization of Interstate 70 for a number of years, the actual introduction of the facility will cause more changes to take place in these communities than anticipated by the residents.

The Colorado River is a natural barrier to the south of both towns. Both communities are surrounded by low benches and mountains which extend into extensive, rugged mountains; however, there is adequate space in the lower valley areas for...
moderate commercial and residential expansion. A man-made barrier, the Denver and Rio Grande Western Railroad, is also south of both cities. The presence of the railroad is important to both communities. Existing U.S. 6 has more of a direct impact upon Grand Valley, while bypassing DeBeque to the south.

Proposed construction of Interstate 70 and development of oil shale and energy related industries in the area would substantially alter the existing social character of the communities. In the Grand Valley area, a southerly route would tend to concentrate the man-made barriers; however, it would necessitate a loss of tax base. A northerly route could create a physical barrier north of town which could inhibit industrial, commercial, and/or residential developments that were initiated in this area of Parachute Creek Valley. (See Reference Nos. 1, 7, and 8.) (Information also from Western Colorado Regional Planning Commission, Club 29, Mesa and Garfield County Governments, Citizens of DeBeque and Grand Valley.)

ECONOMIC IMPACTS

The economic condition of this area is considered to be low profile and stable with industrial and commercial developments being few and interspersed throughout the area. For the past 50 years, the economy has been grounded in agriculture, mining, and their related activities. Within recent years, pulsating activity in oil shale development has increased, but not to a noticeable stage. Tourist trade has become an important part of the economy during the last five years, but has been somewhat curtailed by the high cost of gasoline. The specific impact of the energy shortage has caused some minor reductions in traffic volumes during certain parts of the year and has caused some loss of revenues. The actual traffic counts are remaining constant with last year's counts; therefore, there will be no significant reductions in projected traffic volumes.

One fact is certain in that recent activity in the oil shale industry will have a definite economic impact on this proposed interstate area and the whole western Colorado region. The impact of the proposed construction of I 70-(19)8(36), DeBeque - Grand Valley, is secondary in nature to the development of an oil shale industry. With the implementation of plans that participating oil companies have for this region, which are presently referred to as tentative, a drastic upward shift in the region's economy will take place. Due to the nature of these plans, a precise empirical evaluation of the economic impact of the oil shale development for the next decade is hard to evaluate at present, but it is safe to say that it will be significant.

During the first two months of 1974, two tracts of federally owned oil shale land in the area were leased to large oil companies for development. The capital investment paid for leasing rights to these two Colorado tracts (C-a, C-b) amounted to $328 million, and lease stipulations dictate that these sites must be developed within five years. Therefore, when considering the capital investment for leasing rights and the magnitude of investment capital necessary for support services, there will be a definite upswing of economic activity in this area in the foreseeable future.

The following profile and discussion relate to the economic situation as it exists or has existed over the past 25 years in relationship to the impacts associated with the proposed interstate construction.

ECONOMIC PROFILE - GARFIELD AND MESA COUNTIES

GARFIELD COUNTY

Present Data
1970 population - 14,821
Percent Change 1960-1970: +23.3
Percent Change 1950-1960: +3.4

<table>
<thead>
<tr>
<th>Year</th>
<th>Median income as percent of state average</th>
</tr>
</thead>
<tbody>
<tr>
<td>1970</td>
<td>87.7</td>
</tr>
<tr>
<td>1960</td>
<td>90.3</td>
</tr>
<tr>
<td>1950</td>
<td>90.4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year</th>
<th>Percent families below poverty level</th>
</tr>
</thead>
<tbody>
<tr>
<td>1970</td>
<td>8.4</td>
</tr>
</tbody>
</table>

Percent of population employed:

<table>
<thead>
<tr>
<th>Year</th>
<th>1970</th>
<th>1960</th>
<th>1950</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>39.6</td>
<td>37.5</td>
<td>37.8</td>
</tr>
</tbody>
</table>

Actual employment:

<table>
<thead>
<tr>
<th>Year</th>
<th>1970</th>
<th>1960</th>
<th>1950</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>5,865</td>
<td>4,501</td>
<td>4,389</td>
</tr>
</tbody>
</table>

Percent of labor force unemployed:

<table>
<thead>
<tr>
<th>Year</th>
<th>1970</th>
<th>1960</th>
<th>1950</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>4.8</td>
<td>7.7</td>
<td>3.1</td>
</tr>
</tbody>
</table>

Tax Income to State: $138.22 (per capita)
Welfare Costs to State: 13.57 (per capita)
Education costs to State: 62.88 (per capita)
Per Capita Surplus: 61.77

Percent employed by industry:

<table>
<thead>
<tr>
<th>Industry</th>
<th>1970</th>
<th>1960</th>
<th>1950</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture</td>
<td>9.5 (598)</td>
<td>17.1</td>
<td>30.1 (1,156)</td>
</tr>
<tr>
<td>Mining</td>
<td>6.7 (395)</td>
<td>11.6</td>
<td>5.3 (231)</td>
</tr>
<tr>
<td>Construction</td>
<td>11.5 (678)</td>
<td>8.3</td>
<td>9.0 (394)</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>2.8 (166)</td>
<td>2.7</td>
<td>3.9 (257)</td>
</tr>
<tr>
<td>Transportation</td>
<td>6.8</td>
<td>5.7</td>
<td>6.4</td>
</tr>
<tr>
<td>Trade</td>
<td>23.7 (1,395)</td>
<td>20.3</td>
<td>17.4 (469)</td>
</tr>
<tr>
<td>Services, including lodging &amp; finance</td>
<td>16.8</td>
<td>12.8</td>
<td>12.3</td>
</tr>
<tr>
<td>Health services and other professions</td>
<td>9.6</td>
<td>6.2</td>
<td>3.5</td>
</tr>
<tr>
<td>Education</td>
<td>7.8 (462)</td>
<td>5.7</td>
<td>4.0 (172)</td>
</tr>
<tr>
<td>Public Administration</td>
<td>4.3</td>
<td>4.8</td>
<td>4.1</td>
</tr>
</tbody>
</table>

Agricultural employment (livestock) was halved 1950-1960. Mining employment (coal and uranium) first rose sharply and then fell slightly in the 1960's (and more in the early 70's). Tourism and education furnished substantial growth in the 1960's.

MESA COUNTY

1970 Population: 54,374
Percent change 1960-1970: +7.2
Percent change 1950-1960: +30.1
Median income as percent of State average:

<table>
<thead>
<tr>
<th>Year</th>
<th>1970</th>
<th>1960</th>
<th>1950</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>84.4</td>
<td>92.9</td>
<td>86.2</td>
</tr>
</tbody>
</table>

Percent families below poverty level: 11.4
Percent of population employed:

<table>
<thead>
<tr>
<th>Year</th>
<th>1970</th>
<th>1960</th>
<th>1950</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>37.0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1960 35.2
1950 34.5

Actual employment:

<table>
<thead>
<tr>
<th>Year</th>
<th>1970</th>
<th>1960</th>
<th>1950</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>20,125</td>
<td>17,841</td>
<td>13,427</td>
</tr>
</tbody>
</table>

Percent of labor force unemployed:

<table>
<thead>
<tr>
<th>Year</th>
<th>1970</th>
<th>1960</th>
<th>1950</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>5.5</td>
<td>6.0</td>
<td>5.4</td>
</tr>
</tbody>
</table>

Tax income to State: $110.17 (per capita)
Welfare costs to State: 22.10 (per capita)
Education costs to State: 59.18 (per capita)
Per capita surplus: 28.89

Percent employed by industry:

<table>
<thead>
<tr>
<th>Industry</th>
<th>1970</th>
<th>1960</th>
<th>1950</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture</td>
<td>7.3 (1474)</td>
<td>11.4</td>
<td>22.0 (2926)</td>
</tr>
<tr>
<td>Mining</td>
<td>2.3 (463)</td>
<td>5.5</td>
<td>2.0 (275)</td>
</tr>
<tr>
<td>Construction</td>
<td>6.2 (1561)</td>
<td>7.6</td>
<td>9.2 (1233)</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>10.1 (2041)</td>
<td>6.7</td>
<td>4.7 (636)</td>
</tr>
<tr>
<td>Transportation</td>
<td>9.8 (1980)</td>
<td>9.7</td>
<td>12.6 (1695)</td>
</tr>
<tr>
<td>Trade</td>
<td>21.3</td>
<td>21.5</td>
<td>20.1</td>
</tr>
<tr>
<td>Services, including lodging &amp; finance</td>
<td>13.3</td>
<td>13.3</td>
<td>12.4</td>
</tr>
<tr>
<td>Health services and other professions</td>
<td>12.6 (2539)</td>
<td>9.0</td>
<td>5.8 (773)</td>
</tr>
<tr>
<td>Education</td>
<td>10.0 (2023)</td>
<td>6.5</td>
<td>4.4 (586)</td>
</tr>
</tbody>
</table>
Mesa County’s diversified agricultural employment has declined below its 1950 level. A 1950’s uranium boom has dwindled. Railroad employment has halved. Notwithstanding this, there has been solid growth in manufacturing and in regionally sold health and educational services to maintain a healthy economy.

Ranking in importance of sources of basic income, we see the following:

**Mesa:**
1. Agriculture
2. Tourism and trade (including services)
3. Manufacturing

**Garfield**
1. Construction
2. Tourism and trade (including services)
3. Agriculture
4. Mining

These rankings compare the quantities of basic income generated in these sectors from wage, salary, and proprietorship income.

1. Agriculture

The economy of these areas has been based on agriculture and related activities since the time of early settlement near the turn of the century.

The land available and suitable for intensive agricultural development is limited largely to low-lying areas along the water courses in the region. This condition is dictated by lack of sufficient natural precipitation, necessitating irrigation; the rough, undulating terrain at higher elevations away from the valley floors; and unfavorable soil types over much of the area.

An assessment of the impacts on the agricultural economies of Mesa and Garfield Counties necessitates a discussion of the benefits and disadvantages associated with the construction of the interstate facility.

**Economic Advantages**

a. Greater latitude in choosing crop rotation and timing by providing an improved and expanded transportation facility.
b. Reduce travel time to market and trade centers materially, thus allowing for more daily work time in production activity.
c. Enable the farmer to spread his holdings in that machinery and livestock could be transferred among dispersed fields.
d. Contribute heavily to the mechanization of farming by providing safer “truck” highways in combination with power farming.
e. Decrease the cost of transportation through lowering operating and maintenance costs. At the same time, spillover effects of road-generated dust from unpaved shoulders that spoiled certain products and increased home cleaning are reduced.
f. Bring postal, fuel, and supply deliveries to farmers more economically and make community services such as bookmobiles and mobil health units more widely available.
g. Allow safer movement of livestock throughout the area.

**Economic Disadvantages**

a. Require acquisition of some productive agricultural land, reducing size of farmable units.
b. Possibly split existing farmable units into separate quadrants, thus reducing the efficiency and production of a particular field.
c. Require relocation of irrigation systems which temporarily delay anticipated crop production.
d. Temporarily reduce available access to agricultural units during construction because of construction equipment.

e. Construction of Interstate 70 will have an impact on agriculture activities in the area. However, development of support services for energy related industries will have a much greater effect in reducing the amount of available agricultural land.
Development of commercial and industrial facilities could bring greater gains to landowners and possibly be more attractive than continuing the present land use (agriculture).

2. Industrial

Highway improvements usually can be expected to introduce new accessibilities that offer transportation efficiencies and economies. Sensitive to means of cutting costs in order to increase profits or lower prices (thereby increasing sales volumes), industrial enterprises are often prompt to exploit the accessibility gains offered by a highway improvement.

The reasons for industrial location decisions are numerous and vary from industry to industry and sometimes from plant to plant according to the particular productive processes of the enterprise and the ways in which it can use the advantages created by the improved facility. These proposed industrial park locations have been previously discussed under Regional Growth and Development.

The community consequences that would follow logically from the consumer reaction to the highway improvements in this region are:

a. Real income gains for certain users of the improved facility lead to increased demand for goods and services and for the transportation required to obtain them. Increases in commercial sales, industrial productivity, and consumer satisfaction are possible with the expenditure of user "savings."

b. Competitive advantage is given to those locations, enterprises, modes, goods, and services to which are attached the lowered transportation costs or added satisfaction afforded by the improved highway. Increased land values, revenues, sales, development and investment could ensue, resulting in a myriad of economic effects on the region. The locations, enterprises, modes, goods, and services placed at a competitive disadvantage would feel an opposite set of effects from the substitutions that occur. Trade activity may move from one locality to the locality favored by the improved transportation.

c. Changes in consumer taste bring about increased demand for travel by highway modes -- auto, bus, truck. The extent, pattern, and form of the community and its economic and social life will reflect the changes required to accommodate the operating characteristics and system configurations of the predominant mode. The mode may aid the indulgence or development of other such tastes as those for low density housing, drive-in movies, and dining out.

3. Construction

a. The construction industry is benefited from the injection of funds that employ their services and labor. In construction programs of the magnitude of this highway project, it will be a considerable boost to the local economy for the short term -- four to eight years.

b. In the long run, the construction industry may continue to benefit as the highway's altered set of accessibilities spark successive rounds of development designed to take advantage of those accessibilities.

4. Employment

Implementation of the proposed project would create some new construction jobs (25 to 35) for local residents, resulting in new payrolls to the area. It could create as many as 100 total new jobs for local residents, including support and service jobs, which would definitely benefit the labor market and service communities involved. Depending upon construction procedures and available funding, enhancement of the employment situation could be spread over seven or eight years. This would stimulate the general economy and possibly reduce the unemployment rate of the area and region. With energy resource development in the area, competition for the available local work
force could become a necessary consideration. In addition, there is no significant commercial relocation to eliminate existing jobs in the study area.

5. Property Values
Property in the area averages about $300 per acre, but ranges in value from $150 to $1600 per acre. These values were obtained from real estate offices in the region. Value depends largely on present land use, availability of land type, buyer demand for this land type, degree of speculation, and proposed or future land uses for a particular location within the area. Garfield and Mesa Counties have or are presently involved in establishing land use controls to guide future residential or commercial development in these areas.

By improving access via Interstate 70 and the development of impending oil shale and related industries, the property values in this area can be expected to rise. The degree of appreciation will largely depend on the amount of oil shale or energy related development that takes place. The scale of the development will dictate the quantity of land needed and its market value. Generally, this increase in property values will benefit current landowners, but not prospective buyers.

6. Taxes
There will be some loss of tax revenue by removing taxable land from the county tax rolls for use in the proposed interstate transportation system. There is a lack of development throughout the project area, and most of the land is zoned as open space and agriculture. Therefore, the actual loss of revenue will not be large, but it will be noticeable. This loss will be offset by the generation of increased economic activity which will result in the collection of new tax revenues from gasoline, excise, sales, and property taxes.

7. Highway costs
The cost of construction of this 37 mile section of Interstate 70 has been estimated to be in the neighborhood of $45 million. Further discussion has been included under Section 5 - Alternatives, of this Statement.

8. Distribution and intensity of economic activity
Local economic activity in the project area is minimal and restricted at present to the communities of DeBeque and Grand Valley. Each community has a small general store, two or three gas stations, and a cafe, which is the extent of local goods and services and any economic activity. In order to obtain variety and quality in goods and services, area residents must travel to the larger service areas of Rifle or Glenwood Springs to the east, or Grand Junction to the west.

Any logical discussion of distribution and intensity of economic activity must consider future oil shale, coal, or natural gas development in the area because of its overall economic effect on the communities of Rifle, DeBeque, and Grand Valley, and their roles as future trade and service centers. For the past 20 to 30 years, Grand Valley and Rifle have been visualized as the base areas for an oil shale operation in the region. Only recently there has been speculation by participant oil companies that these bases or centers of operation may be expanded to include Meeker, Rio Blanco and DeBeque because of potential access problems from the Colorado River Valley into the Piceance Basin and vast oil shale lands lying north of Grand Valley. At the present time, feasible access appears available up the Roan Creek drainage into the Piceance Creek Basin (Rio Blanco). With the recent step up in oil shale research and leasing program in the area, a decision as to principle access routes should not be long in coming.

Regardless of where base operations are located, there will be a drastic change in the intensity of
economic activity in the whole northwestern and west-central regions of the state. Many new families (construction and permanent) in the area will create demands for housing, water and sewer, power, retail goods and services, medical services, and better transportation facilities.

DISCUSSION OF ECONOMIC IMPACTS
Due to the increased accessibility to the region afforded by the improved highway, tourism, a major industry, should show a marked increase upon completion of the proposed project. This is attributed to the fact that by far the greatest number of tourists utilize a motorized land vehicle as their mode of transportation. The recent energy shortage could lighten transcontinental traffic, but will not significantly effect local service traffic. Given the economic characteristics of this region, the construction of the proposed interstate section will be an impetus to greater and further economic growth. Because of the development of new energy related industries of unprecedented magnitude, the economy of the area in the future can be expected to differ vastly from its present situation. The amount and degree of this development is conjecture only at this point in time. However, the prospects appear near reality that some type of oil shale, coal, and/or natural gas development will occur. The proposed project will aid in the expansion of these industries and all of their related economic activities.

LAND USE
The northwest region of Colorado can expect to see a great increase of population in the next 14 years. By 1987, it is expected that the three county area of Rio Blanco, Mesa, and Garfield will be supporting a population of 308,200. Because the population of this three county area was only 78,200 people in 1972, the projected population of 308,200 in 1987 represents a fourfold increase in population. (See Reference No. 18, page 5.)

The 160,000 people which may be generated by the development of oil shale will require 45,000 single family homes and 10,000 mobile homes. Initially, it is expected that mobile homes will comprise 70 percent of the housing stock. (Reference 18, page 11.) As the oil shale industry establishes itself, the percentage of mobile homes should drop to 25 percent. At this time, single family units will probably comprise 50 percent of the housing and multi-family units will probably comprise the remaining 25 percent of the housing stock. (Reference 18, page 28.)

The total population increase of 230,000 people will require 26.4 square miles of land for development. (Reference 18, page 33.) Because two to three million people could be accommodated on the available land in the three county area, there is no doubt that sufficient land is available for development. (Reference 18, page 71.) Under a controlled growth situation, Grand Junction, Glenwood Springs, Meeker, Rifle, and Rangely are likely candidates for expanded growth. (Reference 18, page 80.) Possibly one or two new towns might become necessary in order to adequately accommodate the projected population increases in five to seven years. These towns would most likely be located on the mesas lying generally south of the Colorado River between Silt and Grand Valley, and in the area lying east of Meeker along the White River. (Reference 18, page 91.) Considering the amount of planning required to develop a new community, it appears that the existing communities will need to absorb the first several years of incremental growth.

The oil shale industry is expected to develop into a 750,000 barrel a day industry in 14 years. (Reference 13, page 7.) This production is based on the assumption that eight plants will be constructed, each producing 50,000 - 100,000 barrels of oil per day. Already, the major oil companies own and
lease private and public lands in the Piceance Creek Basin (Figure 4). In Colorado, the Bureau of Land Management has leased Tract C(a) to Gulf-Standard, and Tract C(b) to Atlantic-Richfield. The private oil shale lands are presently owned by the following companies: Colony, Union, Occidental, Sinclair, Superior, Getty, TOSCO, Mobil, EXXON, Standard of California, Cities Service, Continental, Texaco, and Shell. (Reference 24.)

If the oil shale industry becomes profitable, it is reasonable to assume that all of these oil companies will become actively involved in the extraction of oil from the Green River formation.

In addition to new communities, the oil shale industry will also require utilities to serve the plant sites. The utilities include such things as roads, railroads, pipelines, and electrical lines (Figure 4). The eight retorting plants may require approximately 3,350 acres of land for off-site utility corridors and roads. (Reference 13, page 20.) Because Interstate 70 is the major highway in this area of the state, it will play a major role in the transportation of goods and services in and out of this area of Colorado.

It is expected that the mining of shale will first begin on the private lands along Parachute Creek north of Grand Valley. Because of the favorable terms of leasing land from the federal government, the two tracts in the northern part of the basin will probably be mined next. The terms of the lease encourage rapid development because they allow the oil companies to credit the third and fourth years of their operations to the fourth and fifth payments on their leases. Because the oil shale deposits are not quite as rich along Roan Creek, this area will probably be the site of second generation oil shale processing plants. As the extraction process is improved, the mining of this area of the Green River Formation will become economically feasible.

In addition to the mining of oil shale, other minerals such as sodium and coal will also be extracted. A coal gasification plant may be constructed near Steamboat Springs, and others will probably be planned in the area. These plants may provide the necessary power for the oil shale industry. Land has already been leased to Sinclair for the extraction of sodium, utilizing an in-situ process.

It becomes apparent that the future of oil shale will also be the future of the northwest region of Colorado. If the extraction of oil from shale proves economically feasible, the area will be subjected to many environmental impacts. The environmental impacts which may be associated with the construction of Interstate 70 between Grand Valley and DeBeque will be insignificant to those which may be associated with the development of the oil shale industry.

At the present time, the highway corridor is largely devoted to agriculture and ranching (Figure 3). Development is largely restricted to the towns of Grand Valley and DeBeque. In the future, the acreage of agricultural and range lands will be reduced in order to make way for more housing and industrial development.

Already the oil shale industry is having an impact on the area around Grand Valley. Construction will begin next spring on a new town which will be located just south of Grand Valley on Battlement Mesa. Initially, the new community will be built on 1.5 square miles of land and will provide housing and community facilities for approximately 3,000 to 3,500 people. This community is expected to accommodate 70 percent of the plant and support personnel which will serve the commercial oil shale plant to be constructed by Colony Oil on the mesa above Parachute Creek, north of Grand Valley.
present land use

legend

0 1 3 5

SCALE OF FEET
In Thousands

WOODLAND
IRRIGATED CROPLAND
RANGELAND
COMMUNITY

Figure 3
future land use

SOURCE: Bureau of Land Management, Cameron Engineers, Inc.

Figure 4
Plans have been submitted to the Garfield County Commissioners to construct a highway and a rail wye spur up Parachute Creek in order to serve the commercial Colony Oil Shale plant. Construction on this wye spur began in September 1974 and will probably terminate just north and east of the Grand Valley town core. This area will develop into a railroad staging area for the oil shale development further up the valley.

The new town south of Grand Valley has the potential of developing into a much larger community if the need arises. Colony Oil has options on an additional five square miles of land which could be developed into a community between 25,000 and 30,000 people. This would only occur if oil shale proved to be economically feasible to mine, and other plants would be constructed in the area. In addition, as more plants are constructed, the rail spur will probably be extended farther north.

When second generation oil shale mining begins on Roan Creek, the area around DeBeque may also grow substantially. While some development may occur above DeBeque, the majority of the development will probably occur close to the Colorado River. (Reference 1, page 16.)

TRANSPORTATION IMPACTS

1. Consistency of highway with area-wide plan

In the early 1960's, a plan (Pavlo Report) was developed for future construction of Interstate 70 from Denver across western Colorado. Construction of this interstate section is consistent with this overall interstate plan, which recommended that Interstate 70 generally follow the Eagle and Colorado River drainages and the existing U.S. 6 corridor.

Planning for other transportation needs in this area is in the infant stage in the Regional Planning and Management Regions. To date, planning has been developed by the Division of Highways as the need arises (i.e. traffic volumes, accident rates, congestion, recommendations, etc.). As regional plans develop, as called for in the Colorado Division of Highways Action Plan, the interstate could act as a control point for future transportation system planning, thus insuring region-wide planning consistency.

All state highways, county roads, and private drives begin or terminate at U.S. 6. Therefore, in upgrading U.S. 6 to an interstate facility, present access will be maintained through interchanges and a system of frontage roads.

2. Traffic service levels

The existing highway facility (U.S. 6) is inadequate from design and safety standards to handle the Average Daily Traffic (ADT) of 4,500 vehicles. To meet existing design and safety standards for these traffic volumes, U.S. 6 would have to be expanded and upgraded to include 12 foot driving lanes; paved ten foot shoulders, channelizing major intersections; providing accel, decel, and climbing lanes; providing flatter grades, curves, and fill slopes; installing guard rail in critical areas; and designing stronger bridges for heavier loading.

The proposed interstate facility will be designed to adequately handle the 1994 projected and anticipated traffic volumes in excess of 10,000 ADT over its 20 year design life. These projected volumes are established by the Planning and Research Division in Denver through continued monitoring of present volumes and developments for the area.

In the future, development of energy related industries and support service communities will increase these projected volumes and these estimated volumes would be under the established capability design volumes of a four-lane interstate transportation facility.
3. Adaptability to future transportation plan integration with other transportation facilities

This proposed interstate project has been coordinated for several years with all local planning groups and agencies and is a very important part of the state's overall transportation plan. Many local and regional planning authorities (e.g., Colorado West Area Council of Governments [Planning and Management Region 1]), Colorado River Valley RC & D, and Club 20) have set the completion of Interstate 70 across western Colorado as their number one priority. (Note A-95 Review by the Colorado West Area Council of Governments, Appendix, Exhibit B.)

Due to the rural nature of western Colorado and lack of population concentration centers, it will be many years before any large-scale area-wide change in transportation methods or modes is foreseen. In a luncheon address during the Fifty-second Annual Meeting of the Highway Research Board, the following quote is from William D. Ruckelhaus, former Administrator of Environmental Protection Agency (EPA): "The automobile has a secure place in the American pantheon. I see no immediate alternative to automobiles for travel across the country, between small towns, or in the far exurbs." The last sentence of this statement pretty well points up present transportation conditions on the Western Slope of Colorado as it currently exists.

As population densities increase and concentrate, a need may arise for other modes of transportation at which time they can be integrated or interlocked with the interstate system (bus lines, multiple use and purpose of right of way, rail, etc.) by whatever means are logically, socially, and financially acceptable at that time. The automobile will be the main means of travel in most areas of western Colorado for the next 20 to 30 years. Highway and interstate travel are presently and will continue to be closely integrated with air, bus, and train travel as they are further developed and expanded in the face of the current energy crisis.

This 37 mile segment of Interstate 70 is a very important part of western Colorado's east-west transportation system in providing convenient interstate travel between Salt Lake City, Utah, and Denver, Colorado, as well as safe intrastate travel between Grand Junction and Denver.

To date, there have been no area or regional transportation plans developed for this region, but efforts are underway within the Governor's 13 Planning and Management Regions to develop transportation plans for their respective regions.

Interstate 70 is the focal point for this planning, and the Division of Highways is actively participating in these regional transportation plans to assure integration with all future and long-range transportation planning.

4. Joint development potential

Providing an interstate facility within the next six or eight years in cooperation with increased and improved air, rail, and bus service will make western Colorado a very desirable place to live and work. Improvement of other transportation services will come with increased population and a demand resulting from an energy oriented stimulus.

In reference to expanding available transportation facilities existing in the areas, the Denver and Rio Grande Western Railroad has indicated plans to provide a wye and spur track for Atlantic Richfield from the main track to a point just north of Grand Valley. It is presently being constructed and will act as a docking or staging area for unloading of equipment for energy resource development in the area. This Division has reviewed this Denver and Rio Grande Western Railroad proposal for conflicts.
and at present, it seems unlikely that a conflict will occur. The recommended interstate alignment would be constructed over the railroad spur. (Note Figure 22.)

5. Multiple use of highway rights of way
As future demands for other forms of transportation arise, they can be successfully integrated into the interstate right of way. Current support has been stimulated to include bike and equestrian paths within the right of way on this project. With the interest in bicycling and cross-country hiking increasing dramatically each year, these are reasonable and legitimate requests. In an era of national concern for the environment, complexed interstate construction will not provide access to areas which were previously inaccessible mainly because the interstate will be a controlled access transportation facility located within an established transportation corridor. Therefore, access on or off the interstate facility will be provided only at specific interchange locations (DeBeque, Una, Grand Valley, and Rulison). This will tend to concentrate and thus control traffic at these interchange locations. A system of frontage roads will provide for local area traffic movement and access.

6. Accessibility as a factor in the overall environment
The development and construction of this segment of interstate will not provide access to areas which were previously inaccessible mainly because the interstate will be a controlled access transportation facility located within an established transportation corridor. Therefore, access on or off the interstate facility will be provided only at specific interchange locations (DeBeque, Una, Grand Valley, and Rulison). This will tend to concentrate and thus control traffic at these interchange locations. A system of frontage roads will provide for local area traffic movement and access.

7. Disruptions caused during construction
There will be some disruption of local traffic patterns during the construction phase. Due to the very rural nature of this area, disruption will be primarily in and around the vicinity of Grand Valley and the confines of DeBeque Canyon. Interference will be minimal and reduced as much as possible by Division policy of requiring contractors to maintain a two-way traffic flow most of the time. Short delays and interrupted traffic flow will be necessary during some phases of construction (blasting, paving, heavy equipment and truck cross-traffic areas) in order to insure the safety of the highway user. Detours will be provided in certain areas where it would be almost impossible to maintain traffic flow (bridge construction, tunnel excavation) and complete the scheduled construction. The exact location of detours cannot be specifically identified until this proposed section receives roadway design approval.

8. National defense
Completion of this proposed 37 mile segment of interstate will provide a continuous four-lane controlled access transportation facility extending from the Utah line easterly to Glenwood Springs, Colorado, a distance of 118 miles. This segment will meet interstate as well as military standards and expedite the efficient movement of supplies and personnel in the event of a national emergency, thus expanding the range and scope of national defense protection for all citizens.

ESTHETIC IMPACTS
1. Conservation of parks, historic and cultural sites, and landmarks
The construction of this proposed interstate facility will not directly affect any parks,
historic, or cultural sites or landmarks. As stated by the State Historical Society, the area has potential for archaeological finds during earthmoving and construction operations.

As a result of this comment and subsequent formulation of a Memorandum of Agreement with the newly formed (January 1974) Office of the State Archaeologist, the Division requested that the State Archaeologist conduct an on-site field survey and reconnaissance of the proposed Interstate 70 corridors and alignments. During July, August, and October of 1974, this area was surveyed for potential archaeological sites. It resulted in the discovery of several sites scattered indiscriminately throughout the 37 mile project. All of the sites located were of a minor nature, except for one. This site was located south of the Colorado River at Una Bridge. It is believed to be a crossing point of the Dominquez-Escalante Trail. If the trail is reconstructed, it has potential to be nominated for a national register site. The Division has initiated procedures which are in compliance with Federal laws and regulations governing potential national register sites. In addition to this survey, during coordination and contact with personnel of the Bureau of Land Management, two archaeological finds were pointed out in the project area.

Near the town limits of Grand Valley, some of the oldest crocodile eggs discovered to date in the western hemisphere were located approximately one-half mile north of Grand Valley and U.S. 6. These eggs are reported to be on display in the Smithsonian Institute by their finders, Herman Wilson and Herman Schneider, both of Grand Valley. The other known site is an old Indian cave located northwest of DeBeque in which some artifacts have been discovered (moccasins, beads, corn, and an arrow). Contact with BLM people also indicated that the old stagecoach road through DeBeque Canyon is probably of some historical significance; however, most evidence of this early transportation facility has been altered by construction of the Denver and Rio Grande Western Railroad.

In addition to direct contact with the State Historical Society, Office of State Archaeologist, and Bureau of Land Management, and as a result of comment on the Draft Environmental Impact Statement, the Division on October 10, 1974, wrote a letter specifically to Mr. Stephen H. Hart, State Preservation Officer, for comment on cultural sites which might be affected on this proposed project. (Note Appendix, Exhibit C.) We have received no reply from Mr. Hart, but have subsequently learned that clearance by the State Historical Society constitutes clearance by Mr. Hart. Clearance is not given by them if there are conflicts with cultural sites on a project, at which time Mr. Hart would become personally involved. Therefore, the State Historical Society letters (Appendix, Exhibit C) constitute project clearance by the Historical Society and Mr. Stephen H. Hart.

In reviewing the archaeological sites located throughout this 37 mile project and comparing these sites to the recommended interstate alignment, none of the sites will be directly or indirectly affected by the proposed interstate construction. Specifically, in the Una area where the potential National Register site is located, the recommended interstate alignment is across the river, railroad, existing U.S. 6, and as far north in the corridor as physically possible in order to bypass a platted subdivision (Travelers Highlands) and two potential industrial parks which lie in and around the Una Railroad crossing. (Note Figure 21.) Therefore, this potential national register listing will not be directly or indirectly affected by the construction of Interstate 70 in this area.
During the construction phase of this project, should additional archaeological sites be unearthed, work would stop in this particular area and the Office of State Archaeologist would be notified for survey and/or salvage operations. This process is explained in the special provisions and/or standard specs governing this proposed interstate construction and meets the intent of state and federal legislation covering this subject.

2. Conservation of areas of natural beauty, recreation, or scenic value
Lands within the interstate corridor east of DeBeque Canyon to Rifle are not generally considered as areas of natural beauty or scenic value, or areas with significant recreational value. However, the DeBeque Canyon area (Section 1, Figure 13), most westerly seven miles of this project, is rather picturesque and scenic with some limited recreational value. There are presently two roadside picnic areas maintained by the Division for use by the traveling public. The Division is proposing a rest area for eastbound traffic in the Beavertail area and is looking at the areas at either the east end of DeBeque Canyon (Alternate 2-E) as possible rest area sites for westbound traffic. This decision will be made during final design, utilizing input from responsible agencies, organizations, and/or individuals. To minimize the physical and aesthetic damage to the walls of DeBeque Canyon and also minimize the affect on the Colorado River, the Division is recommending the construction of Alternate 1-8 in the Canyon. This alternate calls for minimal cuts in the canyon walls and minimal encroachment into the Colorado River. This subject is further discussed in subsequent sections of this Chapter as well as in Chapters 4, 5, and 9.

It should be noted however, that to construct an interstate facility through DeBeque Canyon will cause some aesthetic and physical damage to the canyon’s environment. The Division of Highways is taking a very close look at this particular area and making every logical and feasible effort to select the specific alternate alignment design concept that will do the least aesthetic and environmental damage to the canyon.

3. Perception of the road from the neighborhood
Due to the very rural nature of this area and the interstate alignment recommendations of this Division, only the community of Grand Valley would be directly affected by the construction within the limits of this 37 mile project. Within the city limits of Grand Valley, the interstate facility will somewhat detract from the slow-moving rural neighborhood characteristics of western Colorado. This affect will be unavoidable but may not be entirely adverse. Modern design, construction, and landscaping techniques will produce a very aesthetically pleasing transportation facility which will definitely enhance this area of town as well as obscure the Denver and Rio Grande Western Railroad from view of town. By landscaping and seeding fill slopes, interchanges, etc., a very eye pleasing facility will result, similar to I 70 through Glenwood Springs. By using the most recent design concepts and blending the interstate into the existing landscape, it can be made to look less intrusive. This area of western Colorado will definitely be seen as an asset to anyone viewing the facility from nearby areas.

4. Perception of the road by the driver
The Division of Highways will employ the most recent design concepts and landscaping techniques for the construction of this proposed interstate section. These include concepts recently developed for Vail Pass. Interstate 70 construction and include treatments such as: slope rounding, benching, staggered benching, and mini-benching, eliminating unnatural cut and fill lines through slope blending, and special treatment for riverbank
rehabilitation and revegetation. Other design concepts that will be employed are the flattening of cut and fill slopes; controlling soil erosion; revegetating disturbed areas; and making rock cuts irregular and as natural looking as possible. Modern construction practices include close supervision and control of all phases of construction to insure adherence to all Division of Highways stipulations concerning rehabilitation of the natural environment. This is accomplished through the use of landscape architects on construction projects.

By using these recent design concepts and modern construction practices, including special emphasis on rehabilitation of disturbed areas, the proposed interstate facility can be blended into the existing landscape and terrain to give a satisfying and pleasing view of the facility to the highway user.

NOISE, AIR, AND WATER IMPACTS

1. Noise
This proposed 37 mile segment of interstate traverses some of the more sparsely populated areas of western Colorado and includes only two small communities - DeBeque and Grand Valley - and isolated farms and ranches scattered throughout the Colorado River Valley. It is anticipated that no noise problems will be created on this proposed interstate project that do not presently exist. The community of Grand Valley is the only major noise-sensitive location of potential impact because the recommended alignment traverses the southern part of town. Some increase in highway noise through tire-road noise will result from raising speed limits through the area. In anticipation of noise levels exceeding the State Standards for residential homes, the Division will recommend the construction of a noise barrier wall through Grand Valley to shield the existing community from potential interstate generated noise. (See sketch on page 63.)

Throughout the rest of the area, it is felt that overall highway noise can be lessened by providing a controlled access, constant speed facility. By providing a steady, constant flow of traffic through the area and eliminating the need for acceleration and deceleration, highway noise can be reduced, especially from truck traffic. Except for Grand Valley, there are no noise problem areas. An in-depth noise analysis will be conducted during the design phase of this project after the actual location has been selected and approval is received. A preliminary noise analysis (Appendix, Exhibit E) has been included in this Final EIS for review.

2. Air Pollution
Air pollution is not of major importance in this area now because of relatively low population and traffic volumes; but with increased development in the area and region, it will be of significance in the future. By improving the highway facility to interstate standards and incorporating good design features into the system, air pollution levels can be slightly reduced. The heaviest concentrations of car emissions (carbon monoxide, hydrocarbons, nitrogen oxides) are released when vehicles change speeds and especially during acceleration. By providing a four-lane interstate with controlled access, less horizontal curvature, and flatter grades, there will be a smoother, more efficient traffic flow and thus a reduction in aggregate overall emissions. The 20 year projected traffic volumes on this section of Interstate 70 are such that no significant pollution problems will be directly attributed to this interstate freeway in the future. By improving access to and through this area, coupled with oil shale development, there will be some families attracted to this area which will cause some increased ambient air deterioration. The quantity and extent at this time cannot be accurately evaluated because it would depend on the magnitude of these various

30
other determinants (oil shale, and related in-
dustry development, number of processing plants,
size, number and location of developments, etc.).
There should be no serious air quality problems
expected in this area of western Colorado for many
years to come (15 to 25) because of presently
sparse populations and adequate air drainage most
of the year. An Air Quality Study can be found in
the Appendix, Exhibit D. Included with the study
is the review of the project by the Colorado De-
partment of Health Air Pollution Control Division
which is summarized by quoting from their review
sheet: "This general safety and improvement proj-
tect will have minimal impact on air quality and is
in general compliance with the Colorado Air Quality
Implementation Plan. Approval of this project is
recommended."

During the construction phase of this project, the
contractor will be required to operate within
approved state and federal pollution controls and
laws and to provide effective dust abatement mea-
sures in accordance with federal guidelines and the
Division's plans and special provisions governing
air pollution on this highway project. This will
be accomplished by watering or priming detour and
haul roads, requiring dust control devices on
gravel crushing plants and asphalt hot plants, and
watering of dry, dusty cut and fill areas. These
measures will considerably reduce problems of dust
control and air pollution and help keep them within
acceptable state and federal limits.

3. Water Quality and Flood Control
During the construction phases of this project,
there will be some accelerated soil erosion in
areas denuded of vegetation, temporarily resulting
in an increased sediment loading of the water
courses in the area. Also, there will be some
increased siltation in the Colorado River due to
encroachment on the river or its overflow channels
in the DeBeque Canyon area. Prior to construction,
any encroachment necessary will be coordinated and
reviewed with the Colorado Division of Wildlife
for their recommendations prior to construction.

A monitoring program will be initiated during the
spring of 1975 which will be in addition to the
ongoing USGS program. The purpose of this addi-
tional monitoring will be to concentrate on poten-
tially more troublesome areas for adverse water
quality impact. By more intense monitoring of
these areas before and during construction, it is
believed that any further degradation of water
quality can be identified and reduced precluding
more severe long-lasting adverse impact. This
monitoring program will be grab sampling at two
mile intervals through Sections 1 and 2 (DeBeque
Canyon to a point south of DeBeque in Section II)
and one sample from each of the remaining sections
(3, 4, and 5). Samples will be collected on a
monthly basis prior to construction (for baseline
information) and daily or biweekly (as necessary)
during construction. Two parameters will be con-
sidered: turbidity in Jackson Turbidity Units
(JTU) and total dissolved solids in mg/l. Again
the main emphasis of this secondary monitoring
program will concentrate on the DeBeque Canyon
corridor where the minor to moderate river en-
croachments will be occurring.

The Division of Highways will also be formulating
specifications which pertain directly to water
quality. These specifications will be in addition
to Section 107.23 of Standard Specifications for
Road and Bridge Construction. Through these
specifications it will be possible to make the
contractor aware of his responsibilities toward
fulfilling the most recent water quality standards
and stream classifications as adopted by the Colo-
rado Water Quality Control Commission effective
June 14, 1974.

The specifications will call for an overall water
quality plan to be filed by the contractor prior to construction. This plan will indicate locations of major river encroachments and discuss other deleterious water quality situations which may occur. This plan would also indicate any need for discharge permits. The purpose of this plan is to point out anticipated sites of adverse water quality impact which call for special attention prior to the problem developing.

In addition to this preliminary plan, these specifications will require the contractor to provide a water quality/erosion control officer who will have appropriate manual labor under his direction to construct necessary channeling and holding structures for drainages as they develop with ongoing construction. This water quality/erosion control officer will be immediately available to the project engineer and/or landscape architect upon the latter's request. Because erosion control problems leading to degradation of water quality develop on daily or even hourly basis, it is necessary to have appropriate labor immediately available to reduce any significant erosion control problems. It is believed that normal gravity settling procedures will be effective on these projects. Soil particle mesh size studies have yet to be completed, but preliminary surveys plus past experience in this locale indicate that fine suspensions of sediment which are unable to settle by gravity will not be a problem on this project. Hence, if the appropriate channeling and holding structures can be implemented as construction develops, the net adverse water quality impact can be reduced.

It is important to emphasize that the actions outlined above will not always guarantee adherence to the water quality regulations for that portion of the Colorado River adjacent to this project. It is believed, however, that implementation of the above recommendations will reduce temporary water quality degradations and avoid permanent and severe impacts. Waters of the Colorado River are used primarily for agricultural irrigation; therefore, related temporary siltation problems will be less critical than if the water were used for domestic purposes.

Flood control considerations include placement of riprap, maintaining minimum river width to accommodate spring runoff by keeping encroachment to a minimum and designing bridges for a 50 year flood frequency. (Reference 11.)

If more specific data on past and present water quality conditions of the Colorado River is desired, existing USGS information has been broken out and included as a Water Quality Analysis, Appendix, Exhibit F. This data will act as baseline information to supplement the programmed water monitoring program.

**GEOLOGICAL IMPACTS**

The Interstate 70 corridor between the Plateau Creek Interchange and Rifle is practically limited to the valley of the Colorado River. Five major rock formations and two major soil types are recognized along this segment of I 70. (Note Geological Map, Figure 5.)

**Rock Formations**

(1) Mt. Garfield Formation

The lower section of the Mesa Verde group of the Cretaceous era, consists of tan sandstones, gray shales, carbonaceous shales, and coal. Thickness varies from 300 to 650 feet. This formation provides coal for the Cameo Public Service Power Generation Plant.

(2) Hunter Canyon Formation

Uppermost of the Mesa Verde Group, it is difficult to clearly divide this unit from the Mt. Garfield formation. The contact would be near the Plateau Creek Interchange, with the Hunter Canyon formation being the dominant rock eastward in the
Figure 5

**Legend**

- **Scale of Feet**
  - In Thousands

- **Green River Formation**
- **Wasatch Formation**
- **Alluvial Outwash**
- **Terrace**
- **Landslide**
- **Flood Plain**
- **Mesa Verde Formation**
DeBeque Canyon. This formation is from 400 to 650 feet thick and is composed of an assemblage of sandstone, sandy shale, calcareous shale, and clay shale. Major cliffs are formed by the massive buff fluvial sandstones of the Hunter Canyon Formation. Coal is virtually absent from this sequence.

(3) Wasatch Formation
Disconformably positioned on the Mesa Verde group, the Wasatch formation of Lower Eocene age (Tertiary era) consists of variegated shales and irregular, crudely bedded sandstones. The sandstones are gray or buff to dark brown with a few white, red, and pink layers. Thickness in the study area is about 4000 feet.

(4) Green River Formation
This formation was also deposited during the Eocene epoch and consists of gray, white, and brown shale, marlstone, sandstone, thin limestones, and - of great local significance - "oil shale." Locally, thickness of the Green River Formation is about 1200 feet.

(5) Tertiary Basalt
From late Tertiary time through the early Quaternary, lava flows covered large areas of western Colorado. Remnants of a major flow caps the highlands on the south side of the river in the vicinity of Grand Valley.

Geomorphology
The major force in the creation of the valley of the Colorado has been the river itself. Downcutting of the river has carved a deep chasm in the extensive plateau that covers much of the northwestern part of Colorado. Other agents - wind, rain, snow, cold, heat - acting in proportions determined by the semi-arid climate have also contributed to present topographic appearance of the Interstate 70 corridor.

Bedrock
Geomorphic features throughout the corridor reflect chemical and physical properties of the neologic formations. DeBeque Canyon is narrow and precipitous, whereas east of the canyon, the valley abruptly widens as the floor rises above the Hunter Canyon Formation and into the less resistant Wasatch Formation.

On the north side of the river between DeBeque and Rifle, the Wasatch formation exhibits characteristics of semi-arid badland topography with many steep-sided, sharp ridges and "V" shaped gullies. The spectacular whitish cliffs on top of the Wasatch are marlstone members of the Green River Formation.

Soils
Major soil types consist of alluvial sands and gravels in the Colorado River channel and floodplain, and of colluvial and local alluvial soils nearer to aggradation valley walls. Locally derived soils are predominantly fine grained, but range upward to house-size blocks. Basalt fragments frequently occur in the local alluvial soils on the south side of the river from DeBeque to Rifle. In DeBeque Canyon, soils in the river and immediate floodplain are coarse-grained sands and gravels with limited amounts of colluvial and alluvial soils away from the river. These soils appear to be stable and not especially erodible.

On the north side of the Colorado River east of DeBeque, extensive areas of recent alluvial soils cover most of the valley floor. These fine-grained
alluvial outwash and mudflow deposited soils adjacent to the exposed Wasatch and Green River Formations are erodible and may be subject to settlement with the introduction of water, especially where additional loading from Interstate 70 fills is imposed.

South of the river between DeBeque and Rifle, soils are fine-grained alluvial and colluvial soils consisting of particles from the Wasatch and Green River Formations and the lava flows. Because vegetative cover and gentler slopes reduce the incidence of large mudflows, settlement problems are not a factor on the south side. Erosion and subgrade failures are a threat when equipment crosses these soils, however.

Pediments and Terraces
Geomorphic features not as closely related to specific rock types include several pediment slopes and various terrace levels between DeBeque and Rifle.

The pediment slopes consist of gently sloping erosional plains formed near the base of higher mountains. Bedrock depths are shallow under these slopes. Some doubt currently exists as to the precise mechanics of pediment formations, but it is agreed that pediment formation is typically limited to semi-arid climates.

Terraces reflect various levels of river erosion. The significance and distribution of terraces vary with the geologic history of a valley or region. Terraces are not commonly exposed along this corridor - some may have been buried by quite recent local alluviums - and are of minor significance to roadway location.

Adverse Geologic Conditions
Significant adverse geologic conditions that could affect roadway location or design are listed below:

1. Landslides - Landslides were observed throughout the corridor, associated primarily with Wasatch Formation rock and derived soil. Shales of the Wasatch Formation have a high clay content and are not highly competent. Bedrock failures were mapped on both sides of the valley near DeBeque, and surficial deposits containing derived soils are failing extensively on the south side of the river in the Grand Valley to Rulison area. (Irrigation may be a Factor in the soil slides.) Cuts in Wasatch rock derived soil should be carefully evaluated.

One major slide exists in DeBeque Canyon just east of Beavertail. (Note Figure 19, Photo 3.) This slide began as a massive rockfall when a prominent vertical fault line was undercut by the Colorado River. The rockfall occurred in June 1924 and caused extensive diversion of the river channel. As a result of the diversion, the small railroad settlement known as "Tunnel" and several hundred feet of track were swept away. A small farm south of Tunnel was also extensively damaged. Highway construction in 1957 reactivated the area by cutting the lower section of the mass of fallen rock. The slide assumed a rotational configuration and moved quite rapidly. The toe pushed up as much as 23 feet.

The slide remains active today. Minor movements cause unevenness in the pavement and leveling maintenance is required every few months.

In 1968, Lyle Talbott, a graduate student at Colorado State University, investigated the slide and wrote a master's thesis on his findings. Talbott's recommended correction consisted of diverting the intermittent stream from Roberts Canyon and unloading the top of the slide. The Division of Highways is confident that the slide can be safely crossed using Talbott's design.

2. Hydrocompaction
Soils susceptible to settlement - known as hydrocompaction - are typically silts and clays
deposited by mudflows in a semi-arid climate. Soil particles apparently fail to assume a dense arrangement as the flow dries. Cohesive strength builds as the flow dries, and this strength allows the particles to remain in a porous configuration after the water leaves the pores. This cohesive strength can also allow the flow to remain in a state of high porosity (low density) with additional deposition (loading) on top, thus these "honeycomb" structured soils may be found randomly to great depths. (These soils would not be found below a water table.)

Irrigation systems, canals, and pipelines are the most adversely affected by these settlements. Ironically, these activities are most likely to cause hydrocompaction. As water is introduced, it reduces cohesion between soil particles and allows the particles to compact.

While highways do not introduce additional water, channelization of runoff waters into median and lateral drainage ways can concentrate available water. Introduction of concentrations of water can begin a vicious cycle. As the ditch or median area becomes wet, some of the loose soil structure in underlying deposits becomes unstable, fails, and assumes a more dense particle arrangement.

The area settles, reducing or losing the grade on the drainage, and allows additional water concentration or even ponding.

Hydrocompaction occurs in several areas in western Colorado. Notable areas include the Interstate 70 Palisade Interchange where total settlement is in excess of two feet. Other incidences of settlement have occurred in that same area along the base of the Bookcliffs, where the mudflow type mass wasting is common. Between Glenwood Springs and Carbondale on S.H. 82, areas near the Evaporite and Maroon Cliffs exhibit the hydrocompaction phenomena causing distortions in the highway and irregularities and sinks in the surrounding areas.

While no evidence exists that major settlement problems will be encountered along the I 70 corridor, investigations into the severity and extent of deposits of soil susceptible to hydrocompaction will be conducted during the soil survey phase of design.

3. Rockfall

In the language of geology, rockfall occurs regularly in DeBeque Canyon and from the Roan Cliffs. However, in the span of human involvement, the incidence of rockfall could be termed infrequent to rare along any probable alignment. The probability of a highway user-displaced rock encounter would be remote. However, during final design or construction, this matter should be reconsidered and specific, detailed observations made at that time.

Gravel Pits

The only available sources of surfacing materials within the proposed project corridor lie within the floodplain of the Colorado River. Formations flanking the Colorado River Valley are generally made up of soft sandstones and mudstones not suitable for pavement materials.

Gravel Pits

The only available sources of surfacing materials within the proposed project corridor lie within the floodplain of the Colorado River. Formations flanking the Colorado River Valley are generally made up of soft sandstones and mudstones not suitable for pavement materials.

Tentative sites for gravel surfacing pits to be used for the construction of I 70 are tabulated and discussed below and are depicted on the Alternatives Map, Figure 13 and are identified by mile post.

1. Two miles west of the beginning of the project at the Island Acres State Recreation Area

Land now designated as the Island Acres State Recreation Area about two miles west of the beginning of this project, was originally purchased by the Division of Highways. Excess lands not needed for I 70 right of way was later sold to the Colorado Division of Parks and Recreation. The sales agreement included a provision that set aside ten
to 12 acres of ground to be excavated at some future date for gravel to complete paving of I 70 easterly into DeBeque Canyon and S.H. 65 up Plateau Creek Canyon.

Excavation of the pit will result in enlargement of the lake created by an earlier I 70 project. Adequate safeguards are written into the contract to assure protection of the recreation area during construction activities. Rehabilitation of the lake area is also assured. The source will therefore become the surfacing source for all of the west end of the DeBeque Canyon. The exact breaking point between this pit and pits to the east will be determined after calculations show the point of most economical haulage distances.

2. Westbound Mile 9 - near the east end of DeBeque Canyon
A forty acre tract of federal land on the north side of the Colorado River could serve as a gravel source if Alternate 2-B is accepted. If this source is not approved, another upstream site closer to DeBeque would be selected. The exact site can be chosen only after negotiations with landowners in the area determine availability of the gravel source.

3. Mile 15 - near the Una Dam site
Gravel exists in this area on private land, though its availability is unknown at this time.

4. Mile 20 - near the Una siding
The Division has a long-term option to mine gravel at this location. Over one million cubic yards of gravel is available here. This proposed pit is in the vicinity of the archaeological site which is to be nominated for a National Register listing; however, the pit is north of the Colorado River and will not affect the site.

5. Mile 31 - near Rulison
The Division has a short-term option to mine gravel at this location on private land. Large quantities of gravel are available.

EARTH RESOURCE IMPACTS
1. Vegetation
Natural vegetation in the DeBeque - Grand Valley area has been altered by grazing and other man related activities. Rare and/or endangered species have not been reported with the exception of some possible endemic flowering plants reported for the DeBeque area. It is a very small annual-Phacelia Submutica of the Hydrophyllaceae, which has a very short flowering period of only a week or two in mid May. Its only known locality is on clay knolls on the northeast edge of DeBeque. The species is located just north of the junction of the old county highway with U.S. Highway 6. Further field studies would be required to establish the identity and range of this rare plant species. The proposed interstate alignment in this particular area is either along or south of the existing U.S. 6 alignment; therefore, it will not affect this rare plant species.

The modification of ecosystem dynamics is varied by the occurrence of several invader species - particularly cheatgrass - and by the increase in post-climax species in shrubby vegetation types such as big sagebrush. The most prevailing invaders include cheatgrass, tamarisk, sweet clover, and Russian olive. In the absence of continual disturbance, the invaders are temporary pioneers of short-time inhabitants. The exceptions are cheatgrass - which is a hardy annual - Russian olive, and tamarisk - which may assume permanent plant community roles. All plant communities in the area are undergoing regression, with the exception of the cottonwood community. There is some question as to whether or not the climax state is unfavorable since the changes in vegetation have favored the area's ability to support mule deer populations. On the other side, however, there are regressive tendencies such as accelerated erosion and decreased soil stability. The area...
Figure 6

Legend

<table>
<thead>
<tr>
<th>Scale of Feet</th>
<th>legend</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 1 3 5</td>
<td></td>
</tr>
</tbody>
</table>

- **Agricultural Land**
- **Saltbush Community (Atriplex confertifolia, A. canescens)**
- **Cottonwood & Flood Plain Scrub**
- **Mixed Desert Shrub (Sarcobatus vermiculatus, Atriplex spp. Artemisia spp.)**
- **Pinon-Juniper (Pinus edulis - Juniperus osteosperma)**
- **Big Sagebrush Community (Artemisia tridentata)**
- **Greasewood Community (Sarcobatus vermiculatus)**

**Vegetation**
may have some broad scientific value for wildlife study, disclimax investigations, and range management studies.

Large portions of the bottomlands have been cultivated. These areas have been seeded with alfalfa pasture grasses and legumes.

Plant Communities
The five major plant associations that are found are Saltbush, Cottonwood, Big Sagebrush, Greasewood, and Pinyon-Juniper. Among the major vegetative associations are numerous plant community types with considerable mixing between types. (Note Vegetation Map, Figure 6.)

Saltbush
This association occurs on the desert floodplain on moderately alkaline soils and is interspersed with pinyon-juniper and big sagebrush stands. The dominant vegetation is a mixture of salt-tolerant shrubs including saltbush, greasewood, horsebrush, and winterfat. Grasses occurring in this plant community type include galleta, Indian ricegrass, perennial ryegrass, and western wheatgrass. Forbs include halogegeton, locoweed, and buckwheat. Under existing climatic conditions, perennial grasses have decreased in favor of shrubby vegetation.

Cottonwood
Fairly extensive climax stands of cottonwoods occur along the Colorado River on unconsolidated alluvium. These forested bottomlands provide cover for deer and are very desirable winter and spring range. The bottomlands also provide nesting habitats for waterfowl.

Understory vegetation on drier sites includes big sagebrush, wild rose, silver buffalo berry, Russian olive, skunkbush, and rabbit brush. Wet sites support water birch, tamarisk, and riverbank willow.

Ground cover vegetation includes alkali sacaton, saltgrass, wheatgrasses, rye grasses, blue grasses, fleabane daisy, and Canadian thistle. Wet sites within the cottonwood stands contain sedges, rushes, and cattails. Introduced plants escaped from cultivation are common to the cottonwood association. These are chiefly grasses such as intermediate wheatgrass, orchard grass, and smooth brome. Willow communities are interspersed among the cottonwood stands occurring on sandbars and streambanks.

Big Sagebrush
Big Sagebrush stands occur on deep loamy soils and are accompanied by dense growths of grasses and forbs. Particularly prevalent is an abundance of cheatgrass.

Sagebrush stands tend to be post-climatic as a result of heavy grazing. This produces a condition of nearly pure sagebrush with a mixture of cactus, juniper, and greasewood. The specific composition of big sagebrush communities is highly variable. Ten major plant communities are described by the Soil Conservation Service as dominated by sagebrush. Plant communities associated with sagebrush vary considerably in their ability to support livestock and in their characterization as critical deer range. Big sagebrush within this interstate corridor is also a primary habitat for small mammals and upland game birds. Shrub species included in this association are greasewood, silver sage, saltbrush, juniper, and pinyon pine.

Ground cover species include muttongrass, Indian ricegrass, galleta grass, blue gramma grass, Idaho fescue, and slender wheatgrass. Common forbs include Russian thistle, tumbling mustard, and geranium.

Greasewood
The greasewood association has been subjected to heavy grazing and invaded by cheatgrass. This association occurs on loamy clay, saline soils on
valley floors which are periodically subject to flooding. Occurring with greasewood are several species of saltbrush, Russian thistle, sapphire, prickly pear, primrose, buckwheat, and tall rabbitbrush. Grasses in association include western wheatgrass, basin wildrye, squirrel tail, and saltgrass.

Greasewood does not furnish particularly good range to deer. It does support small mammal populations, and provides good forage when not in a regressive state due to overgrazing.

Saltgrass meadows occur on the floodplain of the Colorado River on soils of high salt content. Water tables are commonly high.

Occurring with the predominant saltgrass are other grasses such as bluegrasses, wheatgrasses, alkali sacaton, and sedges. Some common shrubs include saltbrush, silver buffalo berry, and tamarisk. Greasewood stands surround the salt meadows.

Pinyon-Juniper

This association is dominated by pinyon and juniper, and occurs on a variety of soils which are moderately shallow loam soils. The pinyon-juniper stands intergrade with sagebrush and often invade the latter vegetation type.

Included in the understory vegetation are tall rabbitbrush, mountain mahogany, service berry, and bitterbrush. Grasses that are potentially associated with this vegetation type include Indian ricegrass, salina wildrye, wheatgrasses, and Sandberg's bluegrass. Forbs typical of the association are copper mallow, hairy goldaster, fleabane daisy, Gilian, and gumweed.

Fire has a decided role in the dynamics of this vegetative association. Following fire, these vegetative types revert to grassland range and become dominated by pinyon-juniper parklands.

As in all other vegetation types, the successional status of the pinyon-juniper association may be retarded by grazing, or by periods of prolonged drought. The pinyon-juniper association provides good winter range through use as both food and cover, and is an excellent habitat for small mammals.

Throughout the proposed 37 mile project, all of the five previously discussed vegetative types will be affected to various degrees, and the affect is considered temporary. Construction of the proposed interstate highway would cause considerable localized disturbance to the vegetative types and associations. The impact would come in the form of removal of vegetation from within the acquired Interstate 70 right of way. The proposed interstate will not destroy any existing plant communities or associations through initiating regression by its physical construction. However, vegetation is often affected or impacted by present and future uses of the land such as: livestock grazing, clearing for subdivisions, commercial, or industrial developments; agriculture, and highway construction. These uses can often be controlled or guided by zoning, land use controls, and good, effective future planning.

The Division of Highways will take the necessary action to revegetate disturbed areas and at least maintain the successional trend of the vegetative communities and associations affected by this proposed interstate highway project. A further discussion of this subject can be found in Chapters 4 and 9.

2. Wildlife

The information contained within this wildlife section resulted from a six month study conducted for this Division by the Colorado Division of Wildlife. An interdisciplinary team of experts from within the Division of Wildlife conducted separate individual studies dealing with their
particular area of expertise. These studies were then compiled in a Wildlife Analysis Report covering the limits of this proposed project and submitted to the Division of Highways in July 1973. This report contained a vast amount of technical material (125 pages) and has been subsequently condensed for incorporation into this statement. In condensing this data, care was taken not to misconstrue the information contained within the original analysis report. If more detailed material is desired than is contained within this document, refer to the Draft Environmental Impact Statement for this project. Also, the Wildlife Analysis Report in its entirety is available for review and/or copying at either the Division of Highways Central or District Offices in Denver and Grand Junction.

In addition to the analysis report, maps were provided which graphically depict the information contained within the narrative report. These maps contained information on big game winter and spring concentrations, waterfowl and shorebird concentrations, passerine and game bird distribution, raptor distribution and nesting areas, forage and sport fisheries ranges, and 1972-73 deer-vehicle accident locations (note Figures 8-12). Wildlife present in the study area are depicted in the Figure 7 photographs.

To aid the reviewer in understanding terminology used within this segment, the following glossary of terms and definitions has been included:

Aquatic wildlife - those forms (primarily fish) large and small that can and do live under water.

Big game - antelope, deer, elk, etc., or those that are controlled and protected by wildlife laws and regulations.

Forage fish - normally the smaller and less desirable fishes such as minnows and are all or part of the diet of larger fishes. These fishes are not protected by laws and regulations.

Furbearers - beaver, mink, muskrat, and similar animals commonly taken for their fur and covered by laws and regulations.

Game fish - cold and warm water fishes such as the trout, bass, catfishes, etc., that are caught for sport and are covered by laws and regulations.

Non-game - coyote, fox, skunk, prairie dog, magpie, etc., and other animals and birds not classified as game or furbearers.

Passerines - the singing and perching birds which includes over one-half the total bird population.

Raptors - birds of prey - eagles, falcons, hawks, owls, kestrels, and vultures.

Rookery - nesting site of the heron.

Shorebirds - normally have long legs and bills and pointed wings. Are waders that feed and nest along shorelines such as curlews (sandpipers), plovers, killdeer, etc.

Small game - rabbits, fox (tree), squirrel, game-birds, etc., that are controlled and protected by wildlife laws and regulations.

Upland game birds - grouse, pheasant, quail, etc., or those commonly hunted for sport and covered by laws and regulations.

Waterfowl - geese, ducks, swans, and mergansers - normally migratory and covered by laws and regulations.

Wildlife - means wild vertebrates, mollusks, crustaceans, and fish.

Due to the scope of the work involved in this wildlife analysis and the necessity of the personnel of the Division of Wildlife to properly address all possible impacts to the wildlife resources, they were supplied mapping containing all available highway alternatives. Therefore, the analysis contains discussion of impacts related to specific interstate alternates and specific discussion can be referenced to Chapter 5 - Alternatives of this Statement.

A. Terrestrial Wildlife

This category deals with terrestrial wildlife which occurs in the project corridor and includes big game, small game, nongame mammals, upland game birds, passerines, shorebirds, and waterfowl.

Some important species of big game in the project area include elk, deer, and mountain lion. Small game includes rabbits and squirrels. Nongame mammals include skunks, raccoons, coyote, fox, mice, and rats. Varmints include prairie dog, marmot,
1. Blue heron rookery at mouth of DeBeque Canyon.

2. Bald eagles at mouth of DeBeque Canyon.

3. Mountain lion track found in DeBeque Canyon.

4. Mule deer along alignment of 2-C west of DeBeque. Picture taken from helicopter during January flight.

5. Weasel caught in live trap near DeBeque.

6. Close-up of great blue heron.

and rock squirrel. (See Figure 8.)

Upland game birds include ring-necked pheasant, mourning dove, and chukar. Important waterfowl in the area includes mallard, gadwall, teal, pintail, and Canadian goose. Important shorebirds include great blue heron, killdeer, western and horned grackle, and American avocet. Passerines include Lewis' woodpecker, black billed magpie, common raven, mountain bluebird, western meadowlark, red-winged blackbird, and a wide variety of sparrows. (Figure 9.)

This list is by no means complete, but it is very representative of wildlife in the area. The information has been condensed from the Draft Environmental Impact Statement; therefore, if more detail is desired, please consult the Draft Environmental Impact Statement. Also, discussions contained in this section reflect impacts and discussion relating to the Division of Highways' recommended alignment in each section.

Detrimental Impacts

The following discussion of impacts has been condensed from the Draft Environmental Impact Statement to reflect largely discussion relating to and concerned with the recommended alignments in each section.

The wildlife resource in the project area will receive varying degrees of detrimental impacts through the limits of the proposed interstate project and through implementation of specific alternatives. These impacts have been expressed by the Division of Wildlife in terms of low, moderate, high, or extremely high. In Section 1, Alternates 1-A and 1-B would have a moderate impact on terrestrial wildlife. This would come from physical destruction of the habitat needed for additional right of way, disturbance of wildlife by heavy equipment, removing or altering the existing canyon walls causing cliff dwelling species to leave the area, encroachment into the Colorado River, and widening of the two-lane highway to a four-lane interstate, creating additional hazard to small mammals and reptiles which must cross the highway to get water.

In Section 2, Alternate 2-A would have a low impact and would come from habitat destruction, further severing access to water, and increasing deer-auto accidents. Alternate 2-B would have a high detrimental impact because it traverses prime waterfowl, shorebird, passerine, deer, and small mammal concentration areas. One abandoned blue heron rookery will be directly affected, and another active rookery 250 yards away could be affected by traffic. However, the Denver and Rio Grande Western Railroad presently passes within 700 yards of the existing rookery without noticeable adverse effects. A large island which provides excellent nesting habitat will be slightly affected by bridge structures. Alternate 2-C would have a low impact due to the degree of habitat destruction and river crossing effects.

In Sections 3 and 4, the impact to wildlife populations would be low and result from the physical loss of wildlife habitat and natural vegetation.

In Section 5, the impact would be moderate and be directed mainly to deer within this area. This is an important deer wintering area, and the impact would come from additional winter range loss and a potential increase in deer-auto accidents.

The creation of frontage road systems throughout the project to maintain access will have a minor detrimental impact. However, these systems will create the potential of future commercial development which will have a high detrimental impact on existing wildlife habitats.

Beneficial Impacts

Terrestrial wildlife could be benefited from inter-state construction in the following ways: Alter-
Warmint concentraton
big game, small game, non game,
big game, small game, non game, varmint concentrations

Figure 8
waterfowl, passerine game birds
waterfowl, passerine game birds
nate 1-B would require much less physical and esthetic damage to the canyon walls than Alternate 1-A. Alternates 2-A and 2-E would provide an opportunity to acquire scenic river frontage and access for potential use by the public for camping, picnicking, sight-seeing, hunting, and fishing. If the purchase of right of way opens this section to public use, the beneficial effects will be high.

Summary of Findings

Because the construction of Alternate 1-A through DeBeque Canyon would require extensive alterations of the sandstone formations, much of the habitat utilized by canyon and cliff dwelling species will be damaged.

Disturbance of the islands within Alternate 2-B will have a temporary adverse affect on wildlife concentrations, which will be confined largely to periods during the construction phases of this project. Two heron rookeries are located in the area of 2-B. One old heron rookery, which has been abandoned for the past two or three years, would possibly be displaced. The other active rookery would be affected from a moderate to minor degree, with the highest disturbance occurring during the construction process. Nesting heron in the active rookery are presently located approximately 100 yards from the Denver and Rio Grande Western Railroad's mainline track which has not detered spring nesting activities. Also, the present U.S. 6 alignment passes within 500 yards of the active rookery. With the proposed Alternate 2-B, the westbound lanes would be only 100 feet nearer to the rookery. Therefore, except for the construction period and possible displacement of the abandoned rookery, the implementation of Alternate 2-B would not significantly alter the present conditions as they relate to the rookery.

Associated gravel operations and river encroachment which destroy or alter the natural islands within the channel of the Colorado River, will have a detrimental impact upon waterfowl which utilize the islands for nesting sites. Other wildlife species such as mule deer and small mammals, which seasonally use the islands, will also suffer adverse impacts. Carefully planned gravel operations outside the channel as discussed on pages 40 and 41 can have a beneficial impact on some wildlife species through progressive gravel pit rehabilitation efforts by the Division of Highways and/or Division of Wildlife.

1. Raptors

The following discussion deals with raptors (birds of prey - eagles, hawks, and falcons), located within the project corridor. Important raptors which are periodically found within the project limits are bald and golden eagles, red-tailed, rough-legged, Cooper's, sharp-shinned, and marsh hawks, American Kestrel, turkey vulture, and great horned, Burrowing, and screech owls. The two rare raptors found in this area are the peregrine and prairie falcons.

Detrimental Impacts

The detrimental impacts associated with raptors are largely restricted to Sections 1 and 2. Impacts would be realized in the form of physically impacted nesting sites and causing increased traffic and human activity in remote areas as would be the case with Alternates 1-C, 1-D, 2-B, and 2-C. The loss of hunting habitat and roosting and loafing perches can be directed to Alternates 2-A, 2-B, and 2-D which require the taking of considerable meadowlands, pinyon-juniper lands, and large cottonwood trees near the mouth of DeBeque Canyon and along the river which would have a moderate to high impact on raptors. Alternates available in Sections 3, 4, and 5 would have a minor impact on raptors.
Beneficial Impacts

Beneficial impacts would be realized from well-designed gravel operations through proper revegetation and protection from too much human interference and would attract waterfowl and other prey species, thus benefiting raptors by providing an increased food source. Important wildlife habitat may be acquired and protected from future development. Any protection afforded wildlife will enhance raptors. Pulloffs or roadside parks will avoid important wintering and nesting areas. This is because most raptors will tolerate automobile traffic, but will not tolerate the presence of people. Therefore, the careful location of pull-offs and riverside parks could benefit the raptors populations within the project corridor.

Rare or Endangered Species

The peregrine falcon, which is listed as endangered by the U.S. Department of Interior, does inhabit the area. One adult of the subspecies anatum (the most critically in danger of extinction) was observed flying over the river during the nesting season, although nest searches within the project corridor failed to reveal any evidence of nesting. The other endangered subspecies of peregrine falcon (tundrius) is present in the area only briefly during migration.

The entire Colorado River drainage is an important hunting area for peregrines. Shorebirds, waterfowl, meadowlarks, and various jays and blackbirds are some of the peregrines' preferred prey which abounds in the region. These falcons are highly mobile and the interstate probably will not directly affect them.

SUMMATION OF FINDINGS

Alternates 2-B and 2-D will have the greatest detrimental impact upon raptors, especially bald eagles.

The associated frontage road system will probably cause an equal or greater detrimental impact to raptors than any proposed alternate.

Gravel operations on the river may disturb important bald eagle wintering areas through noise and human activity.

2. Mule Deer Analysis

Because of the importance of big game, namely deer, within the project limits and their value as a hunting, recreation, esthetic, and monetary asset to the area, a special study was conducted in reference to mule deer populations and deer-vehicle accidents. To arrive at some correlation between the numbers of deer-auto accidents, it was necessary to arrive at some estimated populations, critical crossing areas, and potential mitigative measures to reduce these losses of the wildlife resources.

To gather information relating to population density, counts were made each month from January 1972 to March 1973. These counts were nighttime spotlight counts of the entire project length. Total deer sightings for the period January 1972 through May 1973 were as follows for each section:

Section 1 - 92, Section 2 - 87, Section 3 - 167, Section 4 - 52, and Section 5 - 1389. The areas of greatest density and kill occurred from just east of Anvil Points turnoff road west for approximately two miles along the Cottonwood Gulch area. (Auto/Deer Collision, Figure 11.) The highest deer kills occurred during the months of December, January, and February, being 30, 23, and 28 respectively.

Detrimental Impacts

In Section 1, Alternate 1-D severs a low to moderate density of deer on the winter range. The number of deer crossing this route is estimated to be 100; therefore, there would be a substantial number of deer-auto accidents. In Section 2, based upon a midwinter aerial count of 157 deer...
Figure 10

Legend

SCALE OF FEET

In Thousands

Potential Marsh Hawk Nesting Area
Potential Marsh Hawk Nesting Area
Potential Owl, Kestrel and Hawk Nesting Area
Potential Owl, Kestrel and Hawk Nesting Area
Potential Eagle, Falcon, and Vulture Nesting Area
Potential Eagle, Falcon, and Vulture Nesting Area
Observed Eagle and Hawk nests

raptors
auto/deer collisions

**Legend**

- **Red Circle**: Deer killed January thru May 1973
- **Blue Circle**: Deer killed 1972

**Scale of Feet**

1 in Thousands

Figure 11
along this proposed 2-C alignment with approximately 50 deer moving from north to south (Colorado River), there will be a considerable number of deer-auto accidents. Within Sections 3 and 4, there will be a low to moderate affect on deer-auto accidents, with accidents increasing slightly. In Section 5, along Alternate 5-A, numerous deer-vehicle accidents can be expected in this portion of the project. Given the deer-density, crossing patterns, and past number of deer-vehicle accidents in this area, it is indicative of this fact, especially with an expanded four-lane interstate facility. The additional right of way required for wide medians will necessarily decrease available winter range especially on the north side of the proposed interstate facility (Section 5). The vegetation within the median, depending on abundance, condition, and composition may serve to attract deer into the median. Therefore, it may be less detrimental to plant natural vegetation than, say, crested wheatgrass. Loss of deer habitat, primarily winter range, can be expected due to an increase in the amount of right of way, alignments shifted adjacent to Highway 6, new alignments, and addition of frontage road systems. This loss is not viewed to be major with the possible exception of Alternate 2-C.

Beneficial Impacts
The interstate right of way will likely be cleared of browse species, thereby making deer near the highway more visible to motorists. However, previous studies have not indicated that brush removal was effective in reducing deer-vehicle accidents (Pojar 1971).

The concrete median barriers used on interstate projects should not hinder deer movement. When this barrier is used, the least amount of right of way will be needed, and potentially less winter range lost. Where concrete barriers are used, primarily in DeBeque Canyon, small game openings near the bottom of the barrier should be considered for use to permit the movement of small game to either side of the interstate.

As far as the deer resource is concerned in relationship to deer-vehicle accidents, the flattening of slopes, leveling of grades, providing wider shoulders and medians, lessening and straightening curves, and removing large dense vegetation from immediately adjacent to the road will greatly improve sight distances during daylight as well as darkness and be a benefit in reducing deer-vehicle accidents.

Summation of Findings and Recommendations
Two alignments are more detrimental to mule deer movements in comparison to the existing alignment of Highway 6. These are 2-C and 1-D, both of which would substantially increase the number of deer-vehicle accidents and result in a reduction of the deer resource and increase property damage losses to highway users. Other alternates, with the exception of those near the present alignment (3-A, 4-A, 5-A) will not have an impact of any significance on deer. In terms of the critical deer concentrations and movements along portions of 3-A, 4-A, and 5-A, it is recommended that measures be sought to reduce the potential for deer-vehicle accidents.

The Division of Highways asked for recommendations from the Division of Wildlife on methods to mitigate deer-vehicle accidents throughout the project. These will include such measures as deer barrier fencing, underpasses, or water devices in critical concentration and vehicle-deer accident areas.

B. Aquatic Wildlife - Fishery Resource
This segment deals with the analysis of the Colorado River and its active tributaries from west of Rifle to the Roller Dam in DeBeque Canyon. (Note Figure 12.) It contains data on fish species
inventoried, a discussion of detrimental and beneficial impacts, a listing of rare and endangered species, and a summation of findings and recommendations.

The Colorado River within the proposed interstate project limits is not classified as an important sport fishery. This is primarily due to degraded habitat, unsuitable water temperatures, and a heavy silt load which tends to force this section into a "warm water" classification.

The predominant fish species collected in this stretch of the Colorado River were the flannel-mouth, western white, and mountain suckers; roundtail chub, fathead minnow, red shiner, and very few brown or rainbow trout. The only endangered fish collected in this area was the humpback sucker.

The live tributaries which flow into the Colorado River within the project limits are: Parachute Creek, Roan Creek, Battlement Creek, Beaver Creek, Wallace Creek, and Cache Creek. None of these tributaries have significant fish populations that would be affected by construction of this proposed interstate project.

All of the above information has been graphically illustrated in Table 1.

Detrimental Impact

In Section 1, Alternate 1-B poses the greatest threat of detrimental impact to the fishery and aquatic wildlife habitat because of probable river encroachment. Increase in water velocities, disturbance of natural backwater areas, and loss of streambank vegetation will all have a detrimental impact.

In Section 2, Alternate 2-A would have a potentially high impact on the westerly end of this section. The steep sandstone formations through this area would dictate extensive cuts or major channel encroachments into the Colorado River. Alternate 2-B would have a moderate detrimental impact. This routing will reduce the amount of river encroachment along Alternate 2-A and if care is taken during construction, this alternate will have little effect on the backwaters or the main channel of the river. Alternate 2-E would have a minor to moderate impact, with river bridge crossings causing increased sedimentation. This area is probable habitat of the humpback sucker (classified as rare), and any direct channel encroachments or disturbance of backwater areas can impair the humpback sucker habitat in the area, as well as the total aquatic habitat.

Alternates in Sections 3, 4, and 5 would have minor impacts on the fishery and aquatic habitat because the proposed alignments are located away from the Colorado River.

Beneficial Impacts

While gravel mining within the channel of the Colorado River can be detrimental to the habitat, those operations taking place outside the channel and within the floodplain can have an overall beneficial impact if pits are reclaimed into fishing ponds of adequate depth and with the necessary inflow of water to prevent winterkill.

Sections of the project area will border the Colorado River, and right-of-way acquisition would isolate small parcels of private land between the interstate and the river. If those adjacent parcels were included in the interstate right of way, with eventual public access allowed for recreational use, they will be a significant beneficial impact.

The development of river-oriented rest areas and construction of a separate fishing and recreational trail through DeBeque Canyon will mitigate negative impacts and will create added benefit by increasing access to the area. The development of a separate trail throughout the approximate nine
miles of DeBeque Canyon should create access for a wide range of recreationists, including fishermen.

Recreational boating within the project area is usually not for fishing purposes, but instead is undertaken simply for the pleasure of floating the Colorado River. Float trips are becoming increasingly more popular. The design of rest areas and other locations should include where the conditions will permit, public boat launching and loading ramps. Development of these ramps would create a beneficial impact attributed to interstate construction.

Placement of large boulders and other related methods at encroachment locations in DeBeque Canyon will cause the water to flow with slower velocities which will be beneficial by creating valuable aquatic habitat.

Endangered Fish Species
Colorado River Squawfish and Humpback Chub
Species officially classified as endangered which may inhabit the project area are the Colorado River Squawfish (Ptychocheilus lucius) and the humpback chub (Gila cypha) (U.S. Department of the Interior, 1973). While neither species was collected within the project area during the analysis period, it is believed that they exist in this area. When water conditions and time permit, Division of Wildlife personnel will continue the inventory with the objective of determining whether either species is present.

Range of the Colorado River Squawfish, Humpback Chub, and Bonytail Chub
The range of the Colorado River Squawfish, humpback chub, and bonytail chub is not depicted since none of these species were collected. It is assumed, however, that if they are present, they will be in the Colorado River with a similar range to that of the humpback sucker.

Rare Fish Species
Bonytail Chub
The bonytail chub (Gila elegans) is probably also in the project area. This species is extremely rare and will probably be classified as "endangered." Again it will be necessary to conduct further inventory work under optimum water flows to attempt to collect this species.

Humpback Sucker
During the field inventory, the humpback sucker (Xyrauchen texanus) was collected in the Colorado River. (Note Figure 12.) Although this species is not yet classified as "endangered" by the U.S. Bureau of Sport Fisheries and Wildlife, it has been classified as "endangered" by the Colorado Division of Wildlife.

The humpback sucker is primarily found only in the Colorado River drainage (Beckman 1952). Early findings indicate the species is found over a wide range of the Colorado River drainage extending as far west as California, but today its range has greatly declined. Survival of the humpback is dependent upon natural reproduction and necessary spawning areas since to date, no artificial propagation has been attempted. Spawning areas are located in still or slow moving water with gravel and sand bottoms. Unrestricted upstream and downstream migration is very important during the spawning period.

Humpback suckers were inventoried at two locations within the project area. Fifteen were collected in the area adjacent to the Colorado River Overflow east of DeBeque, and one immediately above Roller Dam near the west end of the project. Those found within the area of the overflow were collected on April 17, 1972, and April 11, 1973, and the one found at Roller Dam was collected on April 19, 1972. The Roller Dam inventory was not conducted during the time period of the analysis, but it is indicative of the humpback's range.
Range of the Humpback Sucker

From the inventory, it is concluded that the general range of the humpback sucker, within the project area, extends from the Colorado River Overflow downstream to Roller Dam, a distance of approximately 15 river miles.

Any disturbance of the existing channel of the Colorado River and established backwater areas within the range can have a detrimental impact upon the humpback sucker, as well as other species of either rare or endangered fish. The magnitude of impact will, quite logically, depend on the extent of disturbance.

Summation of Findings and Recommendations

Data collected on all the proposed alternates indicate Alternate 1-B through DeBeque Canyon will be most detrimental to the fishery and aquatic habitat within the Colorado River. This conclusion was reached because of potential channel encroachment that might occur. Alternate 1-A, in contrast, will have the least or minimal impact since it requires no additional encroachment into the Colorado River within DeBeque Canyon.

Within Section 2, east of DeBeque to the mouth of DeBeque Canyon, Alternates 2-D and 2-B will have moderate impact. However, this impact rating is based on the assumption that little or no river encroachment will occur. If river encroachment results in either alternate, the impact would be moderately high.

Moderate to high impact will result along the western one and one-half miles of Alternate 2-A, since river encroachments are required due to high and steep sandstone formations along the highway. A split alignment with Alternate 2-B would reduce the necessity for major encroachment along 2-A.

Within Sections 3, 4, and 5, the impacts to aquatic wildlife will be insignificant.

Channel encroachment and gravel mining operations, if allowed in the Colorado River, could adversely alter critical habitat and spawning areas of fish species that inhabit the disturbed section of river.

The humpback sucker (Xyrauchen texanus) was collected in the Colorado River project area in a section that extends from the Colorado River overflow downstream to Roller Dam. Species now classified as endangered which may inhabit the Colorado River in the project area include the Colorado River Squawfish (Ptychocheilus lucius) and humpback chub (Gila cypha). Neither species was collected during the analysis period.

Retention of off-channel gravel pits as public access fishing ponds will be a major beneficial impact, as would acquiring areas of critical aquatic habitat in conjunction with interstate right of way.

Any future design of this segment of Interstate 70 involving channel encroachments or disturbance of backwater areas must be carefully reviewed to determine potential impact.

C. Overview of Detrimental Impacts Associated with each Alternate

The final part of this analysis contains a numerical rating of the probable detrimental impacts to each wildlife group which has been attributed to the construction of each proposed alternate. To summarize the detrimental impacts to wildlife from each alternate, a numerical rating system of 1 to 10 has been developed (Table 1). A rating of 1 signifies "minor detrimental impact" on wildlife resources, while 10 indicates "extremely high detrimental impact." Each Division of Wildlife specialist with delegated responsibility for an analysis segment independently rated the impacts associated with each alternate. Each rating is, therefore, dependent on the judgment of the rater, and is indicative of his professional opinion and analysis findings.
Table 1 -- Numerical rating of overall detrimental impacts on wildlife resources along alternate alignments of Interstate 70 from Plateau Creek east to Rifle.

<table>
<thead>
<tr>
<th>SECTION</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALTERNATE</td>
<td>1-A</td>
<td>1-B</td>
<td>1-C</td>
<td>1-D</td>
<td>1-E</td>
</tr>
<tr>
<td>TERRESTRIAL WILDLIFE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bin Game</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>9</td>
<td>1</td>
</tr>
<tr>
<td>Small Game</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>Fur &amp; Bear</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>Non-Game</td>
<td>7</td>
<td>5</td>
<td>7</td>
<td>7</td>
<td>2</td>
</tr>
<tr>
<td>Var &amp; Mammals</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>Passerines</td>
<td>3</td>
<td>1</td>
<td>4</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>Upland Game Birds</td>
<td>3</td>
<td>2</td>
<td>5</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>Shorebirds &amp; Waterfowl</td>
<td>3</td>
<td>9</td>
<td>3</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>AQUATIC WILDLIFE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Forage &amp; Sport Fish (Colorado River)</td>
<td>2</td>
<td>8</td>
<td>2</td>
<td>1</td>
<td>9</td>
</tr>
<tr>
<td>Forage &amp; Sport Fish (Plateau Creek)</td>
<td>9</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RAPTORS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Auto-deer ACCIDENT PROBABILITY 1/</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rating Scale</td>
<td>1-2</td>
<td>3-6</td>
<td>7-10</td>
<td>11-15</td>
<td>16-20</td>
</tr>
</tbody>
</table>

1/ Does not take into consideration use of preventive measures such as fencing and underpasses.

3. Other Resources

The construction of this proposed interstate project will not significantly affect or involve any other natural resources in this area other than sand, gravel, land, water, vegetation, and wildlife as discussed throughout this Chapter.
any probable adverse environmental effects which cannot be avoided should the proposed improvement be implemented.

**chapter 4**
Should the proposed interstate development be implemented, there may be an adverse effect generated on residential and commercial properties and individuals who must be relocated because of the upgrading and expansion of the transportation facility to interstate standards. The number of relocations (home and business) could be approximately 27, primarily in the Grand Valley area, but this number could vary slightly with the final design of this project. Most relocations will occur in the community of Grand Valley. The necessary relocations will receive all available help and assistance from the Division through right-of-way relocation assistance and damage and relocation grant payments which pay the cost of this relocation activity.

The taking of several acres of land for use in the expansion of the transportation corridor must be termed adverse in effect. This action is both unavoidable and necessary for expansion of the two-lane highway to interstate standards. The adverse effect or impact will come in the form of removing approximately 845 acres of land from the county tax rolls and committing it to transportation uses and taking approximately 94 acres of agricultural land out of production, as well as the taking of some lands which are presently utilized as wildlife habitat.

River siltation and pollution will temporarily increase during the construction process. This project will require the placement of many minor and some major drainage structures and will require some encroachment into the Colorado River in DeBeque Canyon, as previously outlined in Chapter 3 and further discussed in Chapter 5, as well as several river bridge crossings in Sections 1 and 2. These actions will tend to temporarily increase the sediment loading within the Colorado River. The contractor will be required to use necessary precautions as outlined in the water quality program in the special provisions governing this project, to keep stream siltation and damage to the riparian ecosystems to a minimum.

During the construction phase of this project, there will be some adverse effects on the human environment from increased noise, dust, congestion, inconvenience to the highway user, and disruption of local traffic patterns. Through good construction practices such as good signing and lighting, proper placement of flagmen, good dust abatement programs, and informing the local citizenry of construction schedules, much of the dust, congestion, and inconvenience can be avoided. Noise from construction equipment will be controlled through state and federal laws implemented by the regulating and enforcing authority. The contractor will be required to follow and abide by all state and federal pollution laws as well as Division procedures, standard specifications, and special provisions governing the construction process and the environment.

There will be an impact on wildlife populations through taking some wildlife habitat, increased noise and human activity, and through a possible increase in deer-auto accidents. In areas of historically high deer-vehicle accidents, this Division is planning and recommending eight foot deer fencing to help keep deer off the interstate facility. Also in these areas, small bridges and/or larger concrete box culverts will be designed as drainage structures to allow wildlife the opportunity to cross under the freeway. All of the measures will help reduce the magnitude of the impact on the wildlife resource, but cannot be expected to completely eliminate the problem of deer-auto accidents or the impacts on the wildlife resource.

There will be an adverse impact on vegetation within the acquired interstate right of way. This action will come in the form of clearing vegetation from the recommended alignment within the
right-of-way limits to place the template and construct the interstate facility. The disturbance will be confined to the right-of-way limits and the contractor will be required to keep construction equipment within these limits and easements. This will eliminate unnecessary damage to vegetation near the interstate construction activity.

There will be some esthetic damage to the canyon walls in DeBeque Canyon. In extremely tight areas where the cliffs, roadway, and river are presently squeezed together, it will be necessary to make rock cuts in these areas (Chapter 5, Section 1). However, these areas will be limited largely to very constricted areas, possibly eight or nine separate areas within the canyon. (Refer to Illustrations 1-16, Chapter 5.) When these rock cuts are made, they will be accomplished using the latest construction techniques in an attempt to leave the rock face as natural looking as possible.
alternatives

chapter 5
A. The "Null" or "Do Nothing" Alternative
The "null" or "do nothing" alternative has been considered as a base alternative before further consideration of the proposed Interstate development. To select the "null" alternative for this highway section would mean leaving the present U.S. Highway 6 as it exists. With safety of the highway user as one of the main objectives of the Division of Highways, the Planning and Research Division conducted a four year (July 1, 1970, to July 1, 1974) accident history from .3 mile east of the Plateau Creek Interchange in DeBeque Canyon to approximately four miles west of Rifle, Colorado as previously mentioned in Chapter 2, page 5. In reviewing the four-year accident history, it is quite evident that improvement of present conditions is very necessary. To reiterate, over that four year period (July 1, 1970, to July 1, 1974), there were a total of 364 accidents with an estimated economic loss of $1,769,950 to those involved. There were 199 persons injured and 16 persons killed. Many reasons have been identified for the high number of accidents on this 37 mile stretch of highway, and some of them are presented below. The present two-lane highway is narrow and has no paved shoulders to allow highway users the opportunity to pull out of the travel lanes and let faster moving traffic pass. Site distance is poor in many areas due to rolling terrain which does not afford many opportunities to pass.

Bridges over the Colorado River are deficient as to width and strength, and the railroad overpass east of DeBeque is a definite safety hazard due to alignment and terrain problems in this particular area.

There are no shoulders for riding bikes or hiking. Livestock must be driven down the main highway, adding to the hazard for driver, pedestrian, and livestock alike. There is considerable deer movement across the present highway which also poses a threat to driver and deer. Of the 364 accidents on this 37 mile section, 86 resulted from a collision with an animal (mainly deer). Because the present U.S. Highway 6, within the proposed project limits, has interrupted traffic, continued acceleration and deceleration of traffic, it contributes to any air pollution detectable in this area. It is a well-known and publicized fact (Highway Research Record, EPA, State Division of Air Pollution Control) an efficient, constant flow of cars and trucks produces substantially less vehicular emitted air pollutants (carbon monoxide, hydrocarbons, and nitrogen oxides) than a slower moving, interrupted traffic flow, for a specific, fixed site.

When these various conditions are combined to compound the presently unsafe condition, it makes for an unsafe, hazardous, and inefficient segment of highway. Comparing this two-lane highway with a completed section of Interstate 70 immediately west of this proposed project gives an explicit contrast. Planning and Research Division, Division of Highways, conducted a two-year (August 1, 1971, to August 1, 1973) accident history from the Mack Interchange to 0.5 miles east of Plateau Creek Interchange in DeBeque Canyon (total of 38.4 miles), for the purpose of comparing two sections of road. A comparison of rates is as follows: an accident rate of 1.25 accidents per million vehicle miles (MVM) was recorded on the completed I 70 section compared to 1.90 on the two-lane section of the proposed project, a fatal accident rate of 1.40 per 100 million vehicle miles was recorded on the completed 1 70 section compared to 1.90 on the two-lane section of the proposed project, a fatal accident rate of 1.40 per 100 million vehicle miles was recorded on the Interstate 70 section as compared to 5.76 per 700 MVM on the two-lane section, and the most significant figure shows a fatality rate of 1.40 fatalities per 100 MVM compared to 8.37 fatalities per 100 MVM on this existing two-lane section. It can be clearly noted from these figures that the death rate on this substandard two-lane highway is
significantly higher than on the controlled access interstate facility. Therefore, the proposed project to upgrade this two-lane highway to interstate standards will provide much safer transportation and conceivably save several unnecessary fatalities yearly.

To summarize, the social consequences of the "do nothing" alternative include continued unnecessary injury and loss of life for the highway user on this definitely obsolete transportation facility. Economic consequences would include loss of salaries by those injured individuals in addition to any economic loss resulting from future accidents. Since western Colorado depends largely on truck transport for delivery of goods, the inefficient facility adds transport and delivery costs which must be passed on directly to the consumer. Environmental consequences would include a continued high wildlife resource loss through deer-auto accidents along the currently unprotected (deer underpasses, deer fencing, etc.) highway.

Therefore, when looking at these facts, the situation cannot be ignored by the Division of Highways and action must be initiated to alleviate the dangerous conditions that exist to every highway user in this region.

Benefits of Not Building
The benefits associated with this "no build" alternative would be to completely eliminate all benefits derived and adverse effects resulting from the construction of this interstate facility as discussed throughout this document. Transportation movement and existing highways would remain as they presently exist with no improvement.

B. Alternative Transportation Modes
The DeBeque to Grand Valley project area is presently served by marginal train, air, and bus service with air and bus service being passenger oriented. The Denver and Rio Grande Western Railroad's services are oriented more toward freight movement. There is a passenger train which traverses the area three times a week in each direction (east-west), with scheduled stops in Grand Junction and Glenwood Springs. Bus service provides freight handling and daily passenger service between Grand Junction and Glenwood Springs. Bus service provides freight handling and daily passenger service between Grand Junction and Denver. There is good passenger air service available in Grand Junction, and marginal service from nearby feeder airports such as Rifle and Glenwood Springs. Other than these minor and very limited transportation services, all transportation in the western half of Colorado is by vehicular highway travel, with little demand for alternative modes.

This is largely due to smallness of towns and cities, lack of dense population concentrations or centers, and passenger accommodations, lack of convenient scheduling, and poor connections between modes for potential users.

Bus transit may become a practical form of mass transit in this area in the foreseeable future. Rail transit appears to be completely impractical. Studies by Deen and James, reported in Highway Research Board Record 293, indicate that peak-hour passenger volumes of 12,000 per hour are required to justify the expense of a rail transit system. Meyer, Kain, and Wohl reported in Harvard University Press (1965) that a peak-hour passenger volume of 50,000 per hour are required in order to justify rail transit. Peak-hour volumes for this area have been estimated to be 3,000 per hour in 20 years.

In order to operate efficiently and economically, bus transit needs a modern highway upon which to travel. Completion of this segment of I 70 would, therefore, work toward eventual development of a public bus transit system.

In the large urban areas with populations in excess of 200,000, some recent success has been obtained using a mini or dial bus system. Their success
Figure 13

Legend

- Potential Gravel Site
- Interchange Site
- Potential Rest Area
photo sequence of the entire project area
At the beginning of the project, the roller dam is the intake point for most of the irrigation water for the Grand Valley.

On Alternate 1-F around Beavertail Mountain. This area is icy and dangerous during much of the winter season with little sun.

A portion of Alternates 1-A and 1-B requiring little or no river encroachment. Take off point for Alternate 1-C with a bridge across the river and over the railroad on the left. Slide trouble spot at the curve.

Existing rest stop, proposed for improvement, with access from the east-bound lane through Beavertail Mountain.

Little or no river encroachment will be required in this area.

Photo depicts the existing roadway (U.S. 6) in relationship with the Colorado River to the north and the steep rock cliffs to the south.

Artist rendition showing the construction affect on the steep rock cliffs if Alternate 1-A were constructed which calls for no river encroachment and all sidehill excavation.

Artist rendition depicting the affect on the Colorado River if Alternate 1-B is constructed, which calls for four-lane construction with encroachment into the Colorado River.
1 Water gauge station at Long Point. The north end of the tunnel proposed on Alternate 1-E will be located near the far curve.

2 Looking upstream, along Alternate 1-A and 1-B, at the take off bridge site for Alternate 2-C along the ledge in the far left.

3 Alternate 2-A and 2-B and beginning of Alternate 2-B with a bridge crossing to the left for the west-bound lanes.

4 Looking downstream at Long Point and the north entrance site, in the far center, for the tunnel proposed for Alternate 1-E. Alternate 1-C will follow the ledge on the right above the railroad track.

5 (High Altitude) Looking southerly into DeBeque Canyon. Alternate 2-A will follow the existing highway and require major river to widen it to interstate. Alternate 2-B west-bound lanes only will be constructed across this flood plain. Alternate 2-C will be constructed along the higher ground in the distance.

6 Alternate 2-A will follow the existing highway here with major river encroachment required to widen the roadway to four lanes.

7 Looking easterly toward the DeBeque cutoff road, which is the route proposed for Alternate 1-D and follows along the line of trees, to the right, in the distance.

Figure 15
1. Looking downstream into DeBeque Canyon at the junction of Sections 1 and 2. Alternate 1-C crosses the river from the ledge in the distance to rejoin the existing highway at the curve. Alternate 2-C crosses from the existing curve onto the flat above the railroad.

2. The DeBeque Interchange is proposed at the location. The DeBeque Cutoff Road and Alternate 1-D follows the tree lined road to the right.

3. East entrance road to Town of DeBeque, from Alternate 2-E. Alternate 2-A crosses the river and rejoins the existing highway at the curve in the distance. Alternate 2-D will continue along the east side of the river in the right side of the photo.

4. On Niger Hill near Mesa/Garfield County Line, Alternates 2-A & 2-E follow existing roadway here at crest of Niger Hill, then 2-A swerves to the left, just beyond the crest to improve vertical and horizontal alignment. 2-A rejoins the existing alignment. Alternate 2-C also rejoins the present alignment in this area. Alternate 2-D follows along the right or southerly side of the Colorado River here.

5. Looking westerly across the Roan Creek drainage toward the mouth of DeBeque Canyon. This area would be traversed if Alternate 2-C were implemented and the interchange would be located in the Roan Creek drainage in the lower center of the picture.
1 Typical terrain between DeBeque and Grand Valley. All section 2 alternates follow this alignment but Alternate 2-D which continues along the other side of the Colorado River.

2 Alternate 4-B, the north of Grand Valley route, swerves to the right in this photo from a point near the start of the railroad paralleling.

3 Looking southwest at the town of Grand Valley. Photo shows the entire length of Alternate 4-B, with the take off point in the distance. The north of Grand Valley interchange is in the valley seen just beyond the water tank on the right. Alternate 4-A & 4-C interchanges will be located near the highway curves in the center.

4 A long stretch of highway, through typical terrain east of Grand Valley, is the proposed location of Alternate 5-A. One of the many power line crossings in this area can be seen.

5 Looking west to Grand Valley oil shale cliffs in the distance. Alternate 5-A will follow along the highway.

6 Rulison turnoff and site of the Rulison Interchange, looking west.

7 Typical countryside and the proposed interstate highway location.

Figure 17
1 Webster Hill from the west. Site of unavoidable deep sidehill cuts along this proposed location.

2 Webster Hill in the background. Anvil Points access road leads to the left near center of photo.

3 At Webster Hill looking easterly toward Rifle.

4 Looking easterly from nearby the west Rifle interchange. Union Carbide Uranium Mill in the center and Rifle just beyond.

5 Town of Rifle from the Union Carbide Uranium Mill.

6 Near site of west Rifle interchange.
Beavertail area which would be tunneled and bridged on all section
Alternates except Alternate 1-F.

Participation by several individuals, groups, and agencies in
field view of this project held on June 16, 1973.

Photo depicts DeBeque Canyon Slide area in relation to the existing
highway. This area is the Beavertail area which would be bypassed
by all Section 1 alternates, except 1-F.

Depicts highway fill slope revegetation which has occurred since
the highway construction project through DeBeque Canyon in 1958.

The Colorado River in winter depicting the ice jamming situation
which extends from river bank to river bank. Photo looking
northerly at the east end of DeBeque Canyon.

Figure 19
ILLUSTRATION NO. 10

SCALE: 1" = 200'

LEGEND

- Bicycle Path
- Talus Removed to Rock Face
- Cut Slope
- Fill Slope
- Columnar Rock Cut
- Retaining Wall
- Location and Direction of Photo

Bicycle Path

Talus Removed to Rock Face

Cut Slope

Fill Slope

Columnar Rock Cut

Retaining Wall

Location and Direction of Photo
SCALE: 1' = 200'

LEGEND
- Bicycle Path
- Talus Removed to Rock Face
- Cut Slope
- Fill Slope
- Columnar Rock Cut
- Retaining Wall
- Location and Direction of Photo

TRIBUTARY 4 & TREES

BICYCLE PATH

TALUS REMOVED TO ROCK FACE

CUT SLOPE

FILL SLOPE

COLUMNAR ROCK CUT

RETAINING WALL

LOCATION AND DIRECTION OF PHOTO

LOCATION AND DIRECTION OF PHOTO

COLORADO RIVER
has been attributed to reasonable fares, convenience, and flexibility in passenger pickup and delivery, the gasoline shortage, and lower initial investments for transit authorities.

In future years, as oil shale and related industries develop and accelerated growth patterns develop throughout the area, public transportation will first be warranted in localized high-density areas. Local planning authorities should include mass transit planning in their long-range plans. These systems could enhance longer, intrastate trips to secure goods or services in Grand Junction, Rifle, Glenwood Springs, or Denver, by eliminating presently needed, shorter local work trips from the interstate highway system.

It is also believed by the Division that available air, bus, and train passenger services could be expanded and improved by the following measures: 1) providing passenger pickup and deliver facilities, 2) improving connections, 3) providing accurate and meaningful schedules, 4) advertising availability of services, and/or providing service for a realistic fare.

C. Alternate Freeway Locations

Due to the length of this project and the fact that it traverses variations in terrain and environment, it has been divided into five sections (1 through 5) as shown on Figure 13. Graphic representation has been provided through photographs of the entire project area (Figures 14-19).

As a result of comments received on the Draft Environmental Impact Statement and at the Corridor Public Hearing, five areas within the project received additional intensive study and evaluation. These were: 1) DeBeque Canyon (Alternates 1-A and 1-B), 2) east end of DeBeque Canyon (Alternates 2-A and 2-B), 3) area southeast of DeBeque (Alternates 2-A and 2-E), 4) the Una Siding area (Alternates 3-A and 3-B), and 5) the Grand Valley town area (Alternates 4-A and 4-B). Based on information contained within this chapter and in this document and following intensive study, evaluation and review, this Division is recommending a specific alternate in each section. These recommendations have been graphically represented on Figure 13.

Section 1

Section 1 is approximately seven miles in length and is largely confined to the narrow reaches of DeBeque Canyon, although one alternate considered (1-D) bypassed the Canyon to the east. Section 1 begins just east of the Plateau Creek Interchange and terminates where the Canyon widens - some seven miles to the east. Alternates are described in detail in the Draft Environmental Impact Statement and are summarized briefly below. (Note Figures 13, 14, 15 and Illustrations 1-16.)

Alternates 1-A and 1-B are both similar in that they follow the existing highway very closely. Alternate 1-A would require many large hillside cuts since no encroachment into the Colorado River would be accepted. Alternate 1-B would allow some encroachment into the river at places. Both 1-A and 1-B propose twin tunnels through Beavertail Mountain near the beginning of the project.

Alternate 1-C would place the westbound lanes above the railroad tracks across the river from the existing highway which would become the eastbound lanes.

Alternate 1-D would bypass DeBeque Canyon to the east and rejoin other alternates near the town of DeBeque.

Alternate 1-E would tunnel through Long Point near the middle of Section 1.

Alternate 1-F is a variation of 1-A and 1-B which would eliminate the Beavertail tunnels by following along the existing highway around Beavertail Mountain.
Recommendation

The recommended alignment utilizes Alternate 1-B. Alternate 1-A cannot be recommended for adoption due to the extremely large cuts that would be required in order to not encroach into the river in certain areas. The cuts would permanently destroy the natural appearance of these beautiful cliffs. The mahogany stains, the eroded pockets, and caves cannot be recreated by any available construction procedure.

Those areas where 1-B requires cliff excavation have already been disturbed by earlier construction. The appearance of these areas can be enhanced by using offset drill hole patterns to create a columnar effect not dissimilar from adjacent undisturbed formations. Staining of freshly blasted sandstone has proven to be practical on a western Colorado prize-winning Interstate 70 project.

The following pictures show areas where Alternate 1-A would be impractical.

No. 1 - DeBeque Canyon scene looking easterly from Mile 1.2. Note high cliffs on right which force alignment to the left. Widening will be contained in this area by retaining wall or cantilevered structure due to river channel limitations.
No. 2 - DeBeque Canyon scene looking easterly from Mile 3.3. High cliffs on right preclude widening in that direction. A moderate amount of river encroachment appears to be the only practical approach. See Plates 6, 7, and 8, Figure 14, Draft Environmental Impact Statement, where the same area is depicted.

No. 3 - DeBeque Canyon scene looking easterly from Mile 4.2. In this area, widening to the right is impractical. Note difference in appearance of natural undisturbed cliff face above, in contrast to lower area which was blasted in 1929 and has never recovered its natural appearance even after 45 years of healing time.
No. 4 - DeBeque Canyon scene looking easterly from Mile 5.7. Widening to the right is impractical in this area. Enormous permanent scars would result if Alternate 1-A were chosen. Streamside vegetation on the left is new growth coming after the existing highway was reconstructed in 1959.

No. 5 - DeBeque Canyon scene looking easterly from Mile 6.9 near the end of Section 1. Widening to the right is impractical in this area. Massive cuts into the cliff would cause an unnatural appearance which would never fit in with surrounding rock faces.
The Colorado Division of Wildlife in their comment on the Draft Environmental Impact Statement supported 1-A, although they conceded that encroachment might be unavoidable at certain locations. Their request that they be allowed to review each proposed encroachment prior to final decision will be honored.

The Audubon Society of Western Colorado stated that they were opposed to large hillside cuts which "would cause the destruction of much nesting habitat, particularly for such species as cliff swallows and white-throated swift. While we are not really in favor of river encroachment, at least the river will recover in time." The wisdom in the last part of the above statement is substantiated by the fact that when the reconstruction of U.S. 6 through DeBeque Canyon was completed in 1959, the river's edge through the Canyon was almost entirely barren due to the widening of the highway toward the river. Within a few short years, vegetation had voluntarily become reestablished, until now 15 years later, little evidence of that construction exists. The loss of vegetation at streamside is, at worst, a short-term impact.

Where channel width limits the allowable amount of river encroachment, retaining walls or cantilevered bridges must be provided. A precast retaining wall developed for Interstate 70 Vail Pass projects would have excellent application in the Canyon. This wall provides pockets where vegetation can be introduced so that eventually, the wall facade would largely be screened. Willows and tamarack should adapt successfully to this environment.

Alternate 1-C deserves no further consideration due to much higher costs and extraordinary, difficult construction directly over the railroad in many instances. No support for this alternate came from the circulation of the Draft EIS or from discussion of the alternates at the Corridor Public Hearing.

Alternate 1-D is opposed by the Division of Wildlife due to conflicts with big game winter range. A citizen, Ms. Alma Harris, also wrote a statement in opposition to 1-D, citing added length and expense. No support for 1-D emerged from circulation of the Draft EIS or from discussion of the alternate at the Corridor Public Hearing.

Alternate 1-E has support of the Colorado Division of Wildlife despite the added cost of over $44 million. Tunnels of the length required through Long Point require ventilation, 24 hour surveillance, and expensive, intensive maintenance. Power requirements for ventilating fans would be significant. Ventilating buildings, power lines, and an electrical substation would be visually obtrusive in the Canyon scene. Energy resources would be committed for many years. In view of the added expense and other stated objectionable features, as well as the lack of general public support, Alternate 1-E will be given no additional consideration.

Alternate 1-E will be given no additional consideration.

No further consideration will be given Alternate 1-F which would eliminate the Beavertail tunnels near the beginning of the project. Plate 2, Figure 14, of this Statement pictures the relationship of cliffs and river in this area. Alternate 1-F is not acceptable for the following reasons:

1. Steep terrain above the existing highway makes mandatory a long continuous encroachment into the river. A slough-like effect would result.
2. I 70 would be located in an area where icing is known to be a continual wintertime hazard on the existing highway.
3. The Beavertail rest area site could not be developed.
4. The alternate is 0.9 miles longer than 1-B. This added length over the years would result in many thousands of gallons of fuel needlessly expended and additional costs to highway users.
5. No public support developed for 1-F although one man (Bill Prather, page 51, Corridor Public Hearing Transcript) expressed some doubt as to
This shows that portion of this alternate as proposed for construction entirely along the existing roadway. It shows the major river encroachment and channel changes that would be required to construct the standard width four-lane Interstate Highway.

This will utilize the existing highway for the east-bound lane only with no river encroachment. The west-bound lane would be shifted north and constructed through the most tree free alignment of the flood plain. Three bridges will be required with no riverbed alteration.

Photo depicts the existing relationship at the east end of DeBeque Canyon between the Colorado River, U.S. 6, and the steep rock cliffs.

Artist rendition of the encroachment conditions which would be necessary if a four-lane interstate facility were constructed along the existing U.S. 6 alignment (Alternate 2-A), characterizing the necessary channel changes and river encroachment.

Artist rendition of a viable alternative in this area which would move the west-bound lanes of Interstate 70 across the Colorado River to the north, thus eliminating the need for river encroachment in this particular area.
the advisability of expending the extra funds re­
quired for tunnels and bridges at Beavertail.
Throughout the Canyon length (Section 1) a bike-
recreation trail is being recommended for construc­
tion as part of this proposed project as previous­ly discussed in Chapter 3, page 27.

Section 2
Section 2 alternates are briefly summarized as
follows (note Figures 13, 16, and 20):
Alternate 2-A follows the existing highway to a
point about one mile east of DeBeque. From that
point easterly, 2-A stays along the south bank of
the Colorado River, crossing the river over a mile
upstream from the present crossing. It rejoins
the present highway east of Mile 15, but diverges
to the north again for a short distance between
Mile 16 and 17. In that area, the existing high­
way will serve as a frontage road.

Alternate 2-B is a modification of 2-A which would
send the westbound lanes across the river near the
east end of the Canyon. The existing highway (2-A)
would become the eastbound lanes.

Alternate 2-C would send I 70 north of DeBeque.

Alternate 2-D keeps I 70 on the south side of the
river for an additional four miles. Alternate 2-D
rejoins 2-A near the end of the section.

Alternate 2-E follows the existing highway east of
DeBeque.

Recommendation
In Section 2, the Division of Highways is recom­
mending for interstate construction combinations
of Alternates 2-A, 2-B, and 2-E. (Note Figure 13.)

Alternate 2-B is recommended for the following
reasons:
1. Alternate 2-A in this area would require a
long continuous river encroachment that would
destroy streamside growth and eliminate a portion
of the meanders of the Colorado River. (Figure 20)

2. Alternate 2-B would provide millions of travel­
ers that rare "moment of pleasure" afforded by
the experience of driving widely separated travel
lanes with a river in the median. Variety of
scene is an important element in the influence
a highway has on the driver. It can keep him
alert, enhancing the safety aspect. Very few
opportunities exist for this type of design treat­
ment. At predicted traffic volumes, over seven
million people per year could be experiencing the
added pleasure of this alternate during the 1990's.

3. Traffic-construction conflicts would be virtu­
ally eliminated for this two mile section. The
existing highway would only require resurfacing
to become the eastbound lanes.
No. 6 - DeBeque Canyon scene looking easterly from Mile 8.2. High cliffs along the existing highway prevent widening to the right. River encroachments would therefore be required. These would destroy natural appearance of river's edge in an area where the river's edge can be preserved by the acceptance of Alternate 2-B.

No. 7 - DeBeque Canyon scene looking easterly from Mile 8.5. High cliffs on right prevent widening in that direction. An extensive river encroachment will be required unless Alternate 2-B is accepted.
The Division of Wildlife and U.S. Department of Interior have recommended adoption of 2-A in this area, citing impact on deer winter range, increase in deer-auto accidents, and encroachment onto a blue heron rookery.

One hundred eleven acres of potential deer winter range would be fenced off by deer barrier fence along the north side of the westbound lanes. Barrier fence has proved to be a successful deterrent to deer movement. Therefore, the deer-auto accident problem would be of little significance. Some deer would be denied the forage on the 111 acres of fenced land. In view of the many thousands of acres of deer winter range located north of the area (see Figure 8), the loss of 111 acres does not appear to be of sufficient magnitude to warrant elimination of the alternate.

Figure 20 of this Statement pinpoints the location of the only active blue heron rookery in this area. Note that the channel change required by 2-A would require working somewhat closer to the rookery than required by the construction of the westbound lanes under 2-B. Neither alternate comes within 600 feet of the rookery. It is interesting to note that the blue heron established their rookery within 300 feet of a busy and noisy railroad. The
impact of a highway 600 feet away could in no way be more disturbing to the blue heron than a busy railroad 300 feet away.

The alignment of the westbound lanes under Alternate 2-B has been carefully fitted between the areas of heavy undergrowth and larger cottonwoods in order to reduce the visual impact caused by the removal of vegetation.

The Division of Wildlife objects to Alternate 2-C due to severe detrimental impact on big game winter range (note Figure 8). No support for 2-C developed as a result of circulation of the Draft EIS or during the Corridor Public Hearing. Consequently, no further consideration will be given to 2-C.

Since no support developed for Alternate 2-D, it will be given no further consideration.

Support developed for the adoption of Alternate 2-E east of DeBeque. A compromise alignment somewhat between 2-A and 2-E is being recommended. (Figure 13.) The main reason for recommending the alternate alignment was complications associated with crossing the railroad tracks. If 2-E were to be adopted, I 70 would parallel the existing highway. Near Mile 14, a crossing of the railroad is required. Grade relationships and terrain dictate that I 70 underpass the railroad. Before the underpass could be constructed, a shoofly to carry railroad traffic around the bridge construction area would have to be constructed. Since the railroad crosses over the existing highway on a bridge, the shoofly could only begin east of that underpass bridge. This would cause I 70 alignment to be shifted several hundred feet to the east. The area east of the underpass bridge is cut by two large dry washes which drain the country to the north. Large culverts or small bridges would be required to carry the shoofly over these drainages. These complications contributed to the selection of a compromise alignment which provides a railroad overpass, a much simpler solution to the problem. The compromise alignment leaves the river bottom much sooner than 2-A. Traversing the river bottom and taking of the agricultural lands was the main feature to which people objected. The compromise alignment takes no agricultural land and is located for the most part out of the river bottom.

Section 3

Two alternates were considered within Section 3. (Note Figures 13, 17, 18, and 21.)

Alternate 3-A leaves the present highway and traverses the open country along the north side of Travelers Highlands Subdivision.

Alternate 3-B follows the present highway throughout the length of the section.

Recommendation

Alternate 3-A with an interchange at Una is being recommended. Figure 21 depicts the area around Una. An analysis of 3-B was completed subsequent to the corridor hearing, and it shows that all 236 lots in the Travelers Highlands Subdivision would be taken by the I 70 right of way acquisition if 3-B were to be adopted. Using an estimated present value of $3500 per corner lot and $2500 for interior lots, some $630,000 would be expended on purchase of these lots. Alternate 3-A would have a relatively minor impact on the Travelers Highlands Subdivision since the interchange as proposed in Figure 21 would be located to the west of the subdivision. Two other industrial subdivisions, the Grand Valley Industrial Park and the Una Industrial Center, will both be very adequately served by the proposed Una interchange. A connecting road from the interchange to the Una bridge over the Colorado River will feature a railroad grade separation bridge over the railroad tracks. Some lot realignment will be required within the
Una Industrial Center. However, since this subdivision has not received final approval from Garfield County officials (as of January 1, 1975), revisions of the plats should pose no significant problem.

Much testimony (note Chapter 8) was entered into the record supporting the addition of an interchange at Una. Many statements also emphasized the necessity for providing a grade separated crossing over the railroad tracks. A great amount of emphasis was placed on the safety aspect. As the area develops, much traffic will be using this crossing, including school buses. Construction of an at-grade crossing would be unacceptable to local officials and citizens.

The Colorado Division of Wildlife recommended that Alternate 3-B be adopted since they felt that alternate would have less impact on big game winter range. Impact of proposed industrial developments will, no doubt, cause significant changes in big game habits in this area. Therefore, regardless of where I 70 is placed, the area will eventually become unsuitable as big game habitat.

Section 4

Section 4 is only 2.5 miles long and includes the area adjacent to and through Grand Valley. Three alternate routes were outlined in the Draft EIS and are summarized below.

Alternate 4-A would send I 70 through Grand Valley immediately north of and parallel to the railroad tracks. The one-half city block north of Front Street will be utilized for I 70 right of way. An interchange is planned at the east edge of town; the crossroad over I 70 will be carried over the railroad tracks to the south on a railroad grade separation bridge.

Alternate 4-B would skirt Grand Valley to the north. An interchange is planned north of the city and just east of the Parachute Creek Road at the center of town.

Alternate 4-C follows the present highway through the center of town with an interchange at the east edge of town.

Recommendation

The recommended alternate in Grand Valley is 4-A. This recommendation followed considerable study and evaluation of data prepared for the Grand Valley area.

Comments returned to the Division showed that opinions are definitely divided between 4-A and 4-B, as they were at the Corridor Public Hearing.

No support was received for Alternate 4-C; therefore, no further consideration will be given this alternate.

During early studies and evaluations of I 70 alternates in the Grand Valley area, the Division hired a professional planner, Mr. Gerald E. Brown, to compare land use impacts of 4-A and 4-B.

Mr. Brown's August 1973 report, "Highway and Community" recommended adoption of Alternate No. 1 (4-A) for many reasons analyzed in detail in his report. He also recommended a north-south Parachute Creek road bypass of Grand Valley from I 70 north, a railroad grade separation bridge to carry the county road south, and a pedestrian-bikeway crossing south of the Parachute Creek Road. The interchange location makes possible a bypass of the town of Grand Valley to the east with a new county road up Parachute Creek, although construction of this bypass would be the obligation of the Town of Grand Valley or Garfield County. (Note Figure 22.)

A summary of various impacts for Alternates 4-A and 4-B which were used in formulating the above recommendation follows.

Land Use

From the standpoint of existing and proposed land
use in the Grand Valley area, 4-A has definite advantages. If Alternate 4-B were adopted, Grand Valley would find itself between two artificial barriers - I 70 on the north and the railroad on the south. Both barriers represent walls through which very few "openings" can be provided. This would place Grand Valley in an "island-type" situation allowing little future expansion of the town core.

More agricultural land would be taken by 4-B (49 acres compared to 28 acres for 4-A). About 100 acres of developable residential and commercial land would be taken by 4-B compared to 17 acres and 87 existing lots by 4-A. Growth to the north would be effectively blocked by 4-B. Since growth to the immediate south of Grand Valley is already blocked by the railroad, 4-A would have little impact on future growth patterns.

**Air Quality**

Using the Air Quality Study (Appendix, Exhibit C) as reference and support material, highway generated pollutants from Alternate 4-B would adversely affect the air quality of Grand Valley more often than with 4-A. The prevailing surface winds in the Grand Valley area are most frequently toward the north - northeast, which would send pollutants from Alternate 4-B directly over the town. With Alternate 4-B, this situation would be further complicated because of the channeling influences of topography on wind patterns. The direction is also influenced by daytime heating, which causes an upslope movement, and a nighttime cooling, which causes a downslope movement. However, these are secondary effects in comparison to the channeling induced by topography. By placing Alternate 4-B further up Parachute Creek Valley, highway generated pollutants would be picked up in this upslope and downslope air movement and affect the air quality of Grand Valley for longer periods of time, rather than moving them away from Grand Valley in the more open valley. In colder weather when there was not significant heating to cause an upslope and downslope air movement, pollutants would become entrapped in Parachute Creek Valley. However, during the colder winter months and during the period of a low level inversion, there would be no dispensing of highway generated pollutants from either alternative. Inversions are usually associated with major storms and not the prevalent condition in the area.

The high (30 foot) fill required with the construction of Alternate 4-B would inhibit and restrict surface wind movement, thus periodically trapping some pollutants against the fill and holding them in the town area for a longer period of time.

**Noise**

Either of the two alternates will generate highway noise. However, shielding the town from noise would be practical with 4-A due to the low profile of the roadbed grade. Some form of noise barrier wall or berm is proposed along the north right-of-way line of the recommended 4-A Alternate. The noise barrier wall could be similar to the one displayed below. It is constructed of four three foot high panels eight foot thick of precast concrete units made with lightweight aggregate and painted white. The wall deadens traffic noises and provides privacy for home occupants along a Toronto parkway.
The barrier wall would also shield the town from train noise generated on the Denver and Rio Grande Western Railroad which would be a definite environmental enhancement to the Grand Valley community.

The high roadbed grade required for Alternate 4-B to cross the Atlantic Richfield Railroad spur north of town would make the construction of noise barriers largely ineffective and impractical. Trucks climbing and descending the steeper grades required by 4-B north of town would generate additional noise levels which do not presently exist or would not exist with Alternate 4-A through Grand Valley.

Esthetics
The visual impact of constructing Alternate 4-B on a high fill north of town would be very obtrusive. By following the recommended alignment of 4-A, Interstate 70 would screen railroad yards and other railroad facilities from the majority of the town area.

Safety
The construction of Alternate 4-A will provide a railroad grade separation bridge over the railroad tracks. (Note Figure 22.) Since 4-B is far to the north, should a railroad grade separation be required in order to carry the county road over the tracks to the south, the responsibility for financing the grade separation would fall to the town or to Garfield County. Since neither entity has the financial means to construct such an expensive bridge, the railroad crossing would most likely remain at-grade for many years. Safety aspects of crossing the railroad tracks on an overpass versus an at-grade crossing are, therefore, vastly superior with 4-A.

Some members of the volunteer fire department have complained that 4-A would add longer response time to the route for fire engines answering a call south of the tracks. From the fire house to a common point south of the railroad tracks where the existing county road and the proposed new connection would tie into that county road, there is only about an additional 920 feet of travel distance. This would mean the maximum additional time required for fire response emergency vehicles is 21 seconds (44 feet/second = 30 mph). With Alternate 4-B and an at-grade crossing and an ever-increasing number of trains on the track, a long delay is possible if a train were at the crossing or approaching the crossing.

The construction of Alternate 4-B and the interchange north of town would require that all traffic (including trucks) which desire access to the south or to the railroad shipping facilities would continue to be funneled down the Parachute Creek Road, past the school, through town, and onto the old U.S. 6 alignment. This would be an adverse situation from noise, dust, and safety to school children and residents of Grand Valley. If the "new town" on Battlement Mesa is developed, this situation will be seriously amplified. Construction of the recommended Alternate 4-A would allow for construction of a new county road which would bypass the town to the east and reroute north-south traffic out of the community. (Note Figure 22.)

Social Impacts
Alternate 4-B would tend to divide neighborhoods as the town develops to the north. The physical barrier imposed by 4-B would make it difficult for children to travel between school and their homes where those homes would be located north of I 70. Community cohesion and social interaction would be restricted.

Since 4-A lies adjacent to a physical barrier, little effect on community cohesion could be
expected. School children and older individuals would have unrestricted movement from town and schools to north development areas. The proposed pedestrian-bicycle overpass to cross the railroad tracks south of the Parachute Creek Road would allow school children, older citizens, and town residents safe crossing of both I 70 and the railroad tracks to utilize the parkland and rodeo area below the tracks. (Note Figure 22.) This pedestrian-bicycle overpass would also allow the community to maintain its strong community cohesion and social interrelationship with existing homes south of the tracks.

**Economic Impacts**

Alternate 4-A will impose a more severe economic impact on the town than will 4-B. Tabulated below is a comparison of loss of assessed valuation for the two alternates.

<table>
<thead>
<tr>
<th>Alternate</th>
<th>Loss in Assessed Valuation</th>
<th>Loss in Income From Taxes</th>
</tr>
</thead>
<tbody>
<tr>
<td>4-A</td>
<td>Entire Segment: $44,680</td>
<td>$6,028</td>
</tr>
<tr>
<td></td>
<td>Within Grand Valley: 43,896</td>
<td>5,949</td>
</tr>
<tr>
<td>4-B</td>
<td>Entire Segment: $13,935</td>
<td>1,686</td>
</tr>
<tr>
<td></td>
<td>Within Grand Valley: 8,040</td>
<td>1,090</td>
</tr>
</tbody>
</table>

From the above comparison, it can be seen that 4-A will cause a loss of tax income to Grand Valley amounting to $6,028 per year. Loss of tax income for the entire route segment is greater for Alternate 4-A by approximately $4,350 per year.

While the loss of income is quite modest when compared to tax income derived in many areas, it is a significant loss to a town as small as Grand Valley. The loss would likely be a short-term situation since construction of a single motel complex could more than replace the lost assessed valuation. The desirability of commercial entities to construct at or near interchange locations can be seen throughout completed portions of interstate freeways in Colorado and throughout the United States. In addition, efforts will be made by the Division to see if legal means can be found to offer Grand Valley financial assistance during the time when assessed valuation has been reduced substantially. (Note answer 5-b, page 84.)

**Relocation** (Section 4 only.)

A comparison of estimated relocations required for Alternate 4-A and Alternate 4-B is tabulated below. (Note - exact numbers of relocations cannot be determined until final design is authorized and right-of-way plans are prepared.)

<table>
<thead>
<tr>
<th>Alternate</th>
<th>Families Displaced</th>
<th>Individuals Relocated</th>
<th>Homes Relocated</th>
<th>Businesses Relocated</th>
</tr>
</thead>
<tbody>
<tr>
<td>4-A</td>
<td>34</td>
<td>14</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>4-B</td>
<td>23</td>
<td>18</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

Finding available housing for people being relocated is a serious problem on both alternates. However, construction contracts will not be awarded until all families are relocated into decent, safe, and sanitary replacement housing. Construction of new housing units may be underway by the time final plans for I 70 are developed. If not, the Colorado Division of Highways will find means to provide acceptable replacement housing prior to the start of construction.

**Other Alternates**

A resolution dated over three years ago (October 4, 1971) passed by the Board of Trustees of Grand Valley objected to 4-A. After the recent corridor hearing, no new input was received from the Board of Trustees. Their current thinking is, therefore, unknown.

A petition containing 122 signatures, none of which have been authenticated, was received at the Corridor Public Hearing, requesting that I 70 be routed further to the north than the originally proposed Alternate 4-B. Terrain features become progressively more rugged along the east flank of Parachute Creek Valley. The originally proposed 4-B required a long, deep cut through the mesa to the northwest and flanking the east side of the
valley north of town. It required over 600,000 cubic yards of earth and rocks to be moved at an approximate cost of $1,200,000. Therefore, an alignment which would move I 70 further north would substantially increase the amount of excavation and construction costs since the mesa rises quickly a short distance northwest of the Grand Valley water tower. A new right of way would have to be purchased east and north of town, while the recommended alignment allows for the utilization of the existing right of way. In addition, other impacts previously discussed in this Section and associated with Alternates 4-A and 4-B would not be substantially mitigated by moving I 70 further up Parachute Creek Valley. In fact, some of the adverse impacts discussed under Alternate 4-B would be amplified such as: air quality problems, land use conflicts, taking of additional agricultural lands, etc. It would also introduce new and more complex problems into the construction process such as: in the narrower confines of Parachute Valley, it would be very difficult to locate an interchange to serve Grand Valley without moving it a mile or so to the east of Grand Valley. This would present access problems for town residents wanting easy and quick access to Interstate 70. It would increase construction costs and add expensive interstate mileage to the system. For these reasons, no additional consideration of an alternate further north is recommended.

One comment suggested moving Interstate 70 south of the railroad tracks through the Grand Valley area. This would require construction of two additional railroad overpasses at an approximate cost of $500,000 each. It would also require agricultural lands to be taken or severed and potential residential lands acquired for transportation rights of way. To provide an interchange in this area, either some recreation land would be taken from the park and rodeo area south of the tracks or the Grand Valley sewage treatment facilities would have to be relocated which would be expensive and an adverse impact. It would also require some home relocations. This idea would simply push I 70 into a new area sure to meet with objections from the people living there.

Section 5

Section 5 includes the area from a point one mile east of Grand Valley easterly to a point four miles west of Rifle and ties in with the presently ongoing interstate construction in the Rifle area. Only one alternate was proposed in this particular section. (Note Figures 13 and 18.)

Alternate 5-A follows the existing U.S. 6 alignment throughout this 12 mile section. During the project review process and the Corridor Public Hearing, no additional alternatives were proposed or suggested. Therefore, the Division considered no other alternatives for this section as the proposed alternative would occupy the least valuable land in the area and avoid the farmlands to the south of the Colorado River.

Recommendation

The recommended alternate is 5-A. The new proposed freeway construction would be immediately north and adjacent to existing U.S. 6. U.S. 6 would remain intact and serve as a continuous frontage road throughout this section and south of I 70. A full interchange is planned at Rulison. The interchange location near the Denver and Rio Grande Western Railroad would allow for a grade separated crossing of the railroad tracks for the county road serving Rulison. An interstate crossing grade separation bridge structure is also planned at the existing Anvil Points intersection to allow Anvil Points to service their pumping facilities near the Colorado River.
Access
Except for DeBeque Canyon (westerly seven miles of the project), existing access would be maintained by utilizing either segments of the preserved U.S. 6 alignment or constructing new frontage roads in areas where it is necessary to relocate U.S. 6. The exact locations of these frontage roads will be fully addressed during the final design phase of this project. In DeBeque Canyon, the Division is proposing the construction of a bicycle-recreation path in conjunction with this construction project to maintain and improve access in the Canyon area.

D. Summary of Recommended Alignments for the Total Project
The following is a summary of the section alignments recommended by the Colorado Division of Highways. From the beginning of the project, the recommended alignment follows Alternates 1-8 for seven miles, a combination of 2-A, 2-B, and 2-E for 12 miles, 3-A for four miles, 4-A for two and one-half miles, and 5-A for 12 miles. (Note Figure 13.)

Summary of Estimated Construction Costs and Acreages
The estimated construction cost would be approximately $42,506,483 and the estimated right-of-way cost would be approximately $875,000, for a total of approximately $43,381,483. The acreage involved for new interstate rights of way would be 751 acres of nonirrigated land and approximately 94 acres of irrigated land for an approximate total of 845 acres plus some residential lots within the Grand Valley city limits (Alternate 4-A). Included in the nonirrigated land estimated acreage are approximately 50 acres of land administered by the Bureau of Land Management. Use of this land for transportation purposes will require a BLM Use Permit.

If funds are made available and authorizations are obtained, right-of-way acquisition could begin in late 1975. Construction could then start on some segment of the project during late 1975 or early 1976.
the relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity

chapter 6

Photo by Leonard Lee Rue III
During the construction period, there will be a temporary use of man's environment which will be adverse at times for reasons of increased noise, dust, congestion, inconvenience, and temporary disruption of established traffic patterns. Good construction practices (proper signing, flagging, and proper traffic regulation) and contractor conformity to federal and state pollution laws regarding noise, water, and air will maintain the problem areas to acceptable limits. Immediate and continued action will be taken to insure minimal damage to both the human environment and the ecology of the construction area.

The implementation of the proposed improvement could increase property values in the area (an opinion sustained by several studies - Highway Research Record, National Cooperative Highway Research Program) through better and safer accessibility. It is believed that no large scale, immediate change in property values will occur as a direct result of this highway project. There will be some gradual increases in property values due to greatly improved and safer access. Most significant land use changes which would cause drastic changes in property values are likely to result from other sources such as population increases resulting in increased urbanization and changes in land zoning laws and needs, increased demand for real estate properties and land speculation, and/or extensive development of the area by energy related industries.

New right of way will be acquired, resulting in the loss of some land from the county tax rolls. Generally, the loss of tax revenue will be small and unavoidable and can possibly be offset by an increase in the collection of other taxes (excise, sales, gasoline) as a result of this project's further economic stimulus and growth of the area. The improved economic climate will come in the form of increased employment, new payrolls, increased volumes of wholesale and retail sales, and a greater demand for goods and services by consumers. A slight increase in property values could result from this project as a result of improved access which would lead to increased development (industrial, commercial, residential) and result in the collection of more property taxes (oil shale industry) and increased revenues for Mesa and Garfield Counties. The implementation of the proposed improvement could increase property values in the area (an opinion sustained by several studies - Highway Research Record, National Cooperative Highway Research Program) through better and safer accessibility. It is believed that no large scale, immediate change in property values will occur as a direct result of this highway project. There will be some gradual increases in property values due to greatly improved and safer access. Most significant land use changes which would cause drastic changes in property values are likely to result from other sources such as population increases resulting in increased urbanization and changes in land zoning laws and needs, increased demand for real estate properties and land speculation, and/or extensive development of the area by energy related industries.

The implementation of this project will in no way hinder future area or regional transportation plans, but will benefit the area as a whole by upgrading and modernizing this segment of the transportation system for future productivity and facilitating further oil shale development in the DeBeque - Grand Valley areas.

Removal of trees and vegetation within the highway construction limits will be necessary; however, landscaping and revegetation of the project will reduce any long-term effects associated with this construction project.

Once completed, the expansion and upgrading of this transportation facility will provide the following long-term benefits and enhancement: 1) faster and more convenient traffic movement within and through the region, 2) millions of miles of safer highway user trips, 3) considerable savings in highway user cost over the 20 year design life of the facility, 4) more efficient and less congested movement of people, goods, and services throughout the area, 5) more efficient traffic flow coupled with stronger vehicle emission controls will significantly reduce air pollution in the years to come, 6) allow for the construction of mitigative measures (deer fencing,
underpasses) to reduce losses and preserve wildlife in the area which is presently subjected to vehicle accidents (primarily big game - deer), 7) provide faster, more efficient movement of emergency service vehicles to and through the project area and region, 8) enhance a wider range of regional trade opportunities and permit more interspersion of social intermingling by more people (old, young, handicapped, etc.) over a wide area, 9) safer operation of school buses in the area by getting them off the main high-speed transportation route and onto lower profile frontage roads, and 10) have the increased vehicle capacity to handle the projected growth of the area in a safe and efficient manner for its 20 year design life.
irreversible and irretrievable commitments of resources

chapter 7
The proposed project will require the acquisition of approximately 845 acres of land for use in the transportation system. This commitment of the land resource is considered to be irreversible. Presently, highway transportation is the main form of travel in western Colorado (due to low population numbers and lack of concentration) and land must be committed to the upgrading and construction of highways in order to make them as safe and functional as possible for all users. This use of the land resource is necessary in any transportation system development or improvement.

There will be some damage to trees and other vegetation on the project site during the construction phase. The removal of this vegetation will be a temporary condition because immediate action will be implemented during construction and after project completion to revegetate denuded areas and protect them from undue damage by wind and soil erosion. Great care will be exercised during planning, design, and construction to avoid unnecessary damage to the ecological life systems of the area.

The commitment of materials such as soil, sand, and gravel to actual highway construction is necessary and unavoidable with any choice but the "null" alternative. Commitment of these materials could be considered an irretrievable commitment of resources. Care will be taken to properly rehabilitate all borrow areas with whatever means necessary to leave them in their natural state. This could involve burying, leveling, screening, and seeding of these areas. Gravel borrow areas near the Colorado River have possibilities of being developed as fishing ponds and would have a wide range of potential values for varied recreational uses.

The upgrading, improving, or construction of new transportation facilities required by a highly mobile traveling public for their safety and convenience necessitates the commitment and use of these natural resources.

There will be no other direct commitment of natural resources to this proposed interstate freeway project. However, improved access will facilitate the energy and industrial companies in the development of energy resources in the area. The completed freeway will also serve natural growth occurring in the area and make existing recreational facilities (National Forests) more readily available to a large number and type of individuals desiring use of these facilities. This normal and gradual growth is considered very desirable by many organizations, businesses, and communities in this area of western Colorado. Example - Club 20, representing 21 Western Slope counties, has traveled to other states in an attempt to encourage industry and business to relocate on the Western Slope of Colorado. The point to be made is that growth is both good and desired in this area, even to the point of recruitment.

The loss of homes and businesses as a direct result of constructing this proposed interstate project is considered to be an irreversible commitment of resources. This commitment will be necessary to expand and upgrade the existing transportation facility.
problems and objections

chapter 8
This chapter is divided into three sections and is intended for the review of letters resulting from circulation of the Draft Environmental Impact Statement, the proceedings of the Corridor Public Hearing (October 7, 1974), and letters received after the comment period had elapsed.

In the first part of each section, the original letters received are displayed, and the end of each section is devoted to answering specific comments expressed in the letters. Each letter has been assigned a number, with the corresponding comment numbered accordingly. The question or comment from each letter is italicized, and the Division of Highways' answer is printed in normal type.

Section A
Letters containing questions and comments resulting from the circulation of the Draft Environmental Impact Statement.

Section B
Letters and comment sheets resulting from the proceedings of the Corridor Public Hearing.

Section C
Late agency comment letters which were received after the closing date of the comment period on the Draft Environmental Impact Statement (October 7, 1974) but which have been answered by the Colorado Division of Highways.
The Soil Conservation Service has reviewed the draft environmental impact statement for Project I-70-1(19) and (36) DeBeque-Grand Valley. Our comments are:

Page 2, 3rd paragraph: "Mesquite is listed as part of the natural vegetation. This shrub (sic) should be checked more closely since it is doubtful that mesquite is found in this area.

Page 21, last paragraph: "The land available and suitable for agricultural development --- will be better expressed "The land available and suitable for intensive agricultural development ---." Agricultural development outside the low-lying areas has been extensive, utilizing native vegetation for grazing animals.

Page 27, 4th paragraph: "Construction of Interstate 70 between Grand Valley and DeBeque will be insignificant to those which may be associated with the development of the oil shale industry." This is a premature statement since the impact of the development of oil shale is not known at this time. The sentence should be deleted or changed to read "--- will be cumulative with those which may be associated with the development of the oil shale industry."

Page 28, 5th paragraph: "Approximately 820 acres of marginal agricultural land --- would be better expressed "approximately 820 acres of marginal agricultural land ---."

Page 93, 2nd paragraph: "-replanted with native species of grasses and shrubs ---. It would be better to state "-replanted with adapted species ---."

Dear Mr. Prosence:

The Soil Conservation Service has reviewed the draft environmental impact statement for Project I-70-1(19) and (36) DeBeque-Grand Valley.

Page 6, 3rd paragraph: Mesquite is listed as part of the natural vegetation. This shrub (sic) should be checked more closely since it is doubtful that mesquite is found in this area.

Page 21, last paragraph: "The land available and suitable for agricultural development ---. This would be better expressed "The land available and suitable for intensive agricultural development ---." Agricultural development outside the low-lying areas has been extensive, utilizing native vegetation for grazing animals.

Page 27, 4th paragraph: "Construction of Interstate 70 between Grand Valley and DeBeque will be insignificant to those which may be associated with the development of the oil shale industry." This is a premature statement since the impact of the development of oil shale is not known at this time. The sentence should be deleted or changed to read "--- will be cumulative with those which may be associated with the development of the oil shale industry."

Page 28, 5th paragraph: "Approximately 820 acres of marginal agricultural land ---. The word marginal should be taken out, since the land is well suited to some kinds of agricultural uses.

Page 93, 2nd paragraph: "-replanted with native species of grasses and shrubs ---. It would be better to state "-replanted with adapted species ---."
The Soil Conservation Service does not have any projects which will be affected by this proposal.

We appreciate the opportunity to review and comment on this proposal.

Sincerely,

M. D. Burdick
State Conservationist

cc: Council on Environmental Quality, Washington, D.C. (5 copies)
    Kenneth E. Grant, Administrator, SCS, Washington, D.C.
    Coordinator of Environmental Activities, USDA, Washington, D.C.
September 20, 1974

Colorado Division of Highways
Post Office Box 2107
Grand Junction, Colorado 81501

Attention: Mr. Richard A. Prosence,
District Engineer

Gentlemen:

The DeBeque-Grand Valley Draft Environmental Impact Statement has been reviewed and appears to be well prepared and thorough in assessing the environmental impact of this section of Interstate 70.

Of particular interest is the reference to the new town across the Colorado River from Grand Valley near Battlement Mesa having strong possibilities of becoming a reality.

Land acquisition, planning and engineering for a potential new community on Battlement Mesa has gone beyond the possibility stage. This community is moving along toward becoming a reality that should be taken into consideration before and during the design stage of Interstate 70. The I-70 interchange to serve Grand Valley will become of great importance, not only to traffic entering and leaving I-70, but to heavy cross traffic that will become involved between the new community and the Parachute Creek oil shale operations.

We would appreciate your advising us of the dates and locations of public hearings scheduled regarding the DeBeque-Grand Valley section of Interstate 70.

Very truly yours,

Robert E. Huff,
Manager of Community Development

RE: msd

cc: Messrs. F. R. Dornheim
    D. K. McSparran
    W. B. Shay
    L. H. Frasier
    E. Claycomb
Mr. Larry Abbott
Environmental Manager
State Highway Dept.
Box 2107
Grand Junction, Colorado

Dear Sir:

I have examined the draft environmental impact statement for the DeBeque-Grand Valley section of I-70 and find only one mistake in statistics. You state the the Grand Valley School enrollment is 82 students, when in fact the enrollment has not fallen below 130 students in the past 10 years. I am enclosing enrollment figures from 1969 to the present.

I cannot help wondering how alternate routes 4A and 4C will affect our tax base in this community. I realize the possibility of new business around the interchange but these routes will eliminate some property from our tax rolls.

Oil-shale development seems to be just around the corner, but if it should fail to develop I-70 is built on 4A or 4C I feel our community will cease to exist. I am not against progress and there is a definite need for a greatly improved highway. At the same time I do not wish to see this small community irradiated by a major highway.

Very truly yours,

Stephen H. Price
Superintendent

SHP/hk

Encl: 1

Mr. Allan Green
Senior Analyst
Colorado General Assembly Legislative Council
Room 64, State Capitol
Denver, Colorado 80203

Dear Sir:

I have the information you requested. The original building was constructed in 1937. On March 9, 1965 the local board authorized a school survey to be done by Educational Planning Service of Colorado State College, now the University of Northern Colorado, at a cost of $1650. In 1966 a School Bond Issue was passed in the amount of $250,000, for expansion and remodeling of the existing facilities. The expansion and remodeling program followed the recommendation of the E.P.S., very closely with the exception of the addition of three elementary classrooms which were not included in the recommendation. Enclosed are copies of the construction plans, Bond Issue, etc.

School enrollment for the years 1964-1974 are as follows:

<table>
<thead>
<tr>
<th>Year</th>
<th>ADA</th>
<th>membership</th>
</tr>
</thead>
<tbody>
<tr>
<td>1964-65</td>
<td>127.5</td>
<td>134</td>
</tr>
<tr>
<td>1965-66</td>
<td>156.5</td>
<td>167</td>
</tr>
<tr>
<td>1966-67</td>
<td>163.1</td>
<td>174</td>
</tr>
<tr>
<td>1967-68</td>
<td>148.2</td>
<td>157</td>
</tr>
<tr>
<td>1968-69</td>
<td>138.2</td>
<td>164</td>
</tr>
<tr>
<td>1969-70</td>
<td>152.6</td>
<td>159</td>
</tr>
<tr>
<td>1970-71</td>
<td>176.6</td>
<td>180</td>
</tr>
<tr>
<td>1971-72</td>
<td>171.8</td>
<td>180</td>
</tr>
<tr>
<td>1972-73</td>
<td>144.9</td>
<td>151</td>
</tr>
<tr>
<td>1973-74</td>
<td>148.8</td>
<td>155</td>
</tr>
</tbody>
</table>

Very Truly Yours,

Mr. E. N. Haase, Chief Engineer  
Colorado Division of Highways  
4201 East Arkansas  
Denver, Colorado 80222  

Dear Mr. Haase:  

The Division of Wildlife has reviewed the Draft Environmental Impact Statement prepared for Interstate 70 alternatives from Rifle west to Plateau Creek. The data contained within the statement is accurate and exceptionally well presented. It proved invaluable in completing the review and is a credit to the Division of Highways.

Separate comments and recommendations are enclosed which relate to wildlife resources within the project area. Recommendations have been made on specific alternatives, beginning with Section 1 through Section 5. We are confident they will be considered in the final design and construction of this segment of Interstate 70.

Your continued cooperation is appreciated and we will anticipate working with you in the future.

Sincerely yours,

Jack R. Grieb  
Director

DEPARTMENT OF NATURAL RESOURCES, T. W. Ten Eyck, Executive Director • WILDLIFE COMMISSION, R. W. Coel, Chairman  
Charles A. Getzauer, Vice Chairman • Dr. J. K. Childress, Secretary • Orest Gerbaz, Member • Dean Hull, Member • Ford Strong, Member  
Dean Suttle, Member • Jean K. Tool, Member • Vernon C. Williams, Member

Deer-Vehicle Accidents

As related in the statement, the expansion of the existing U. S. 6 and 24 to a four-lane facility will result in an increase in the incidence of deer-vehicle accidents. Proposed alternatives 1-D, 2-C and 5-A have the highest potential magnitude for detrimental impact involving deer-vehicle accidents.

The statement emphasized wide medians may be considered along portions of this segment of Interstate 70. Wide medians, while advantageous to highway appearance, will encourage the occurrence of deer-vehicle accidents and require additional purchase of right-of-way. The Division, therefore, does not support the concept of wide medians.

Within the statement it was acknowledged that where the need is justified preventative measures to minimize deer-vehicle accidents will be developed. Such measures may include a combination of 8-foot barrier fencing, underpasses and overpasses. This response of cooperation was appreciated. Recommendations have been prepared for alternative 5-A from Rifle to Grand Valley and additional ones will be submitted in the future.

Recreational Access

A four-lane highway constructed to interstate standards can effectively block many access points that were previously available with a two-lane facility. This loss can be mitigated with proper planning. One example is the plan to construct a recreational trail from Frisco over Vail Pass along Interstate 70. If Interstate 70 is constructed through De Beque Canyon, access to the river from the highway will be very limited. To minimize this impact the Division supports construction of a recreational trail through De Beque Canyon in addition to establishing rest areas at available locations. The interest in such a trail for bicycling was evident from the correspondence which was included in the statement.

Rest areas, such as the one proposed at Beavertail, should also include access to the Colorado River for boat launching.
Gravel Operations

It is recommended that no gravel operations be allowed within the channel of the Colorado River due to the potential detrimental impact on aquatic life. However, gravel operations which take place in the floodplain and result in the development of small ponds can be beneficial to wildlife and provide public recreation.

Channel Encroachments Into The Colorado River

The Division does not support channel encroachment into the Colorado River and believes every effort will be made to avoid them. If, however, encroachment becomes necessary at certain locations, the Division will expect to review each proposal prior to any final decision.

Check Station

In the future the Division may establish a big-game hunter check station at some point in De Beque Canyon. Potential locations include Beavertail and Long Point. Access would be required from Interstate 70.

Alignment Recommendations

<table>
<thead>
<tr>
<th>Section</th>
<th>Recommended Alternate</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>2 - A</td>
<td>Alternate 2 - A will have minimal detrimental impact upon the Colorado River since no encroachment will occur. The construction of 1 - E will require a tunnel through Long Point which will isolate approximately 1.6 miles of Colorado River. The Division views both alternates as having the least detrimental impact in contrast to others available.</td>
</tr>
<tr>
<td>II</td>
<td>2 - E</td>
<td>While the western terminus of 2 - E may require a channel encroachment, the overall detrimental impact to wildlife will be less than that occurring along the 2 - B corridor. The eastern portion of 2 - A parallels a big-game winter concentration area. Both alternates 1 - D and 2 - C would create irreversible detrimental impact to wildlife resources.</td>
</tr>
</tbody>
</table>

* The Division's overall recommendation is essentially the existing alignment of U. S. 6 and 24 from Rifle to Plateau Creek.
Mr. R. A. Presence  
District Engineer  
State Department of Highways  
PO Box 2107  
Grand Junction, Colorado 81501  

Dear Mr. Presence:

Having just reviewed the draft environmental impact statement for the segment of I-70 from west of Rifle to the roller dam in Debeque Canyon, I would like to make several observations to the Department of Highways before the final statement is completed.

On page 16 of the statement, our proposed ski area complex is mentioned, however the ski area is only one amenity of several which our proposed development encompasses. On March 18, 1974, we presented a sketch plan to the Garfield County Commissioners of our entire proposed development, including the ski area, under the name of the Buffalo Basin Project. The sketch plan presentation acquainted Garfield County authorities with the capacities, in terms of dwelling units, and capabilities in terms of physical assets and constraints of our project lands. It also set forth possible development patterns. The County officials were very receptive to the sketch plan.

The main point is that we presented to the Commissioners the possibility that our project lands were capable of handling between ten and twelve thousand dwelling units total. The majority of these dwelling units would be within the area immediately south of the Colorado River from Webster Hill and from Avril Points. As you can see, this would amount to a new town of some twenty to thirty thousand population. However, our planning is directed toward population figures of between twenty-five hundred to five thousand people. The planning is proceeding with the total capability in mind so that if a need or demand is indicated at some future date, expansion of the utilities and facilities needed will be able to move ahead as rapidly and economically as possible.

We are presently proceeding with necessary planning preparatory to asking for a P.U.D. zoning designation from Garfield County.

Our project also includes the proposed Webster Hill Reservoir which was discussed with you on January 15, 1973 and with Vernon Leonard on May 1, 1972. The reservoir now appears more feasible from an economic viewpoint than it was at the time of those discussions. We are studying consultant proposals, from several nationally known engineering firms aimed toward; proving site capabilities for sustaining the dam structure, borrow areas, geological strata permeability, etc. We anticipate okaying one of the proposals and that the results thereof will be favorable, allowing us to proceed with the structure from a construction standpoint. I am sure your office has a copy of the reservoir filing map on file.

We ask the Highway Department to take these comments into consideration prior to finishing the Final Statement. I will be glad to discuss our position and plans with anyone from the department.

Yours truly,

William J. Moulton, Manager

Page two, Mr. R. A. Presence

WJM/ja
September 17, 1974

Mr. E. N. Haase, Chief Engineer
Colorado Division of Highways
4201 East Arkansas Avenue
Denver, Colorado 80222

Dear Mr. Haase:

The Colorado Division of Parks and Outdoor Recreation has reviewed the De Beque - Grand Valley Draft Environmental Impact Statement and has no objections to this project as it is related to the State Park System and the Land and Water Conservation Program.

Sincerely,

George T. O'Valley, Jr.
Director

CC: bb
Comment No. 1: Mr. Smith was concerned with how the county road shown on his sketch would tie into Interstate 70 or a service road, and if a drainage structure under U.S. 6 could be connected.

Answer: At the present time, it looks as though U.S. 6 will remain as it presently exists as frontage road access to your property. Therefore, there would be no change of the connection with the mentioned county road or of the drainage structure under U.S. 6. These plans are tentative and cannot be finalized until this Division has received location and final design approval and right-of-way plans are prepared.

Comment No. 2-a: "Page 6, 3rd paragraph: Mesquite is listed as part of the natural vegetation. This shrub (sic) should be checked more closely since it is doubtful that mesquite is found in this area."

Answer: Mesquite was deleted and changed to saltbush (note page 37).

Comment No. 2-b: "Page 21, last paragraph: The land available and suitable for agricultural development ---. This would be better expressed "The land available and suitable for intensive agricultural development ---."

Answer: This particular comment relates to semantics and the use of the word "agriculture use." Agricultural land is generally considered to be land which the natural vegetation has been modified and some form of crop production is undertaken. The term "intensive agricultural development" does not justify changing the concept of what is normally termed agricultural use. Most agencies and individuals involved in land use planning do not consider the existence of natural vegetation as an agricultural use or development. If this were the concept used, all natural forests in natural form and containing natural vegetation would be considered under intensive agricultural development which is not the situation. However, in this document, we have made a distinction between irrigated (agricultural) and nonirrigated lands.

Comment No. 2-c: "Page 27, 4th paragraph: "---construction of Interstate 70 between Grand Valley and DeBeque will be insignificant to those which may be associated with the development of the oil shale industry." This is a premature statement since the impact of the development of oil shale is not known at this time. The sentence should be deleted or changed to read "---will be cumulative with those
which may be associated with the development of the oil shale industry."

Answer: This is an opinion which is not in agreement with considerable study evaluations and reports available on this particular subject. The Division has searched volumes, including the seven volumes of the Department of the Interior's EIS on oil shale development and three volumes of Colony's Environmental Impact Analysis and many similar reports on this subject - all very well document the impact of oil shale development in this particular area of which interstate development will be a secondary impact when compared to this development. This is the context in which this statement was made; therefore, it has not been changed. When considered in the cumulative impacts, the development of an interstate in this area will be rather minor when compared with development of an oil shale industry.

Comment No. 2-d: "Page 28, 5th paragraph: '---approximately 820 acres of marginal agricultural land ---.' The word marginal should be taken out, since the land is well suited to some kinds of agricultural uses."

Answer: This has been corrected in the text of the Final Environmental Impact Statement. Ninety-four acres of irrigated agricultural land will be involved in this development of the proposed interstate. The other 751 acres (approximately) of land involved in this particular proposal will be nonirrigated lands in natural vegetation and not under commercial or agricultural development. Due to the lack of precipitation and poor soil characteristics, any agricultural undertakings on this land is considered marginal unless one involves considerable time, effort, and money, as well as a substantial irrigation system.

Comment No. 2-e: "Page 92, 2nd paragraph: '---replanted with native species of grasses and shrubs ---.' It would be better to state '---replanted with adapted species---.'"

Answer: This has been reworded (note page 140.) The Division is experiencing problems with adapted species such as crested wheatgrass and smooth brome in revegetating highway rights of way and deer-auto accidents. The problem of early greenup attracting considerable numbers of deer in early spring has been attributed to increased deer-auto accidents; therefore, the Division is working toward revegetating disturbed areas with native shrubs and grasses if at all possible. This appears less enticing to wildlife (deer) and should reduce the number of deer-auto accidents and conserve the wildlife resource.
Letter No. 3
Department of Health, Education, and Welfare
September 24, 1974

Comment 3-a: "We have carefully compared your EIS Report to the DHEW Environmental Impact Criteria and have only one suggestion to make. We recommend that your engineering department carefully evaluate the possibility of highway flooding where the proposed road will run adjacent to the Colorado River banks. We base this opinion on your photographs and the artist's renditions as shown in figures 14 and 15 (following page 74) of your EIS Report which show the proposed roadbed as being very low in comparison to the Colorado River water level. Perhaps elevating the roadbed would be an acceptable solution."

Answer: During final design stage, the hydraulics of the canyon section will be carefully evaluated to insure that neither I 70 or the railroad will be damaged or inundated by flood flows.

Letter No. 4
Colony Development Operation
September 20, 1974

Comment No. 4-a: "Of particular interest is the reference to the new town across the Colorado River from Grand Valley near Battlement Mesa having strong possibilities of becoming a reality. Land acquisition, planning, and engineering for a potential new community on Battlement Mesa has gone beyond the possibility stage. This community is moving along toward becoming a reality that should be taken into consideration before and during the design stage of Interstate 70."

Answer: The Division has incorporated this information into the Final Environmental Impact Statement which discussed the new community development. Note pages 13 and 14.

Letter No. 5
Grand Valley Schools
August 30, 1974

Comment No. 5-a: "I have examined the Draft Environmental Impact Statement for the DeBeque - Grand Valley section of I 70 and find only one mistake in statistics. You state the Grand Valley School enrollment is 82 students, when in fact, the enrollment has not fallen below 130 students in the past ten years. I am enclosing enrollment figures from 1969 to the present."

Answer: The Division appreciates the update of information provided in your transmittal and has updated the information concerning the enrollment in Grand Valley schools to reflect your information. Note page 11.

Comment No. 5-b: "I cannot help wondering how Alternate routes 4-A and 4-C will affect our tax base in this community. I realize the possibility of new business around the interchange, but these routes will eliminate some property from our tax rolls."

Answer: Due to considerable comment by citizens of the community of Grand Valley, the Division went into extensive investigation of the available alternates in the Grand Valley area following the October 7 Corridor Public Hearing on the proposed interstate section. Alternate 4-C would have substantially more effect on the tax base of Grand Valley than would 4-A. 4-A would require the removal of approximately $44,680 from the present total assessed valuation of approximately $433,210 in Grand Valley. Route 4-B would require the taking of approximately $8,040 from the existing total valuation. The total valuation of Grand Valley is $433,210. Alternate 4-A would mean a ten percent loss, and Alternate 4-B would represent a two percent loss. Also, the Grand Valley School District shows a total valuation of $2,978,530, and with Alternate 4-A would show a 1.5 percent loss, and with Alternate 4-B would show a 0.5 percent loss in total school district valuation. A complete analysis of the available alternatives in the Grand Valley area has been provided on pages 62 - 66.
Comment No. 5-o: "Oil shale development seems to be just around the corner, but if it should fail to develop and I 70 is built on 4-A or 4-C, I feel our community will cease to exist. I am not against progress and there is a definite need for a greatly improved highway. At the same time, I do not wish to see this small community irradiated by a major highway."

Answer: The Colorado Division of Highways definitely does not want to see the community of Grand Valley irradiated by Interstate 70. We would refer this comment to the analysis on pages 62 through 66. A great many benefits can be provided to the community with Alternate 4-A which would not be possible with Alternate 4-B north of town. If oil shale development does not take place, the natural residential growth of the community would be to the north, up the Parachute Creek Valley. An alignment north of Grand Valley would definitely act as a barrier to this growth and locate the existing town between the Denver and Rio Grande Western Railroad, U.S. 6, and Interstate 70. (Refer to Figure 22.)

Comment No. 6-a: "The expansion of the existing U.S. 6 and 24 to a four-lane facility will result in the increased incident of deer-vehicle accidents. Proposed Alternates 1-D, 3-C, and 5-A have the highest potential magnitude for detrimental impacts involving deer-vehicle accidents."

Answer: The Colorado Division of Highways is recommending the construction of Alternate 5-A with mitigative measures. Note page 43.

Comment No. 6-b: "The Statement emphasizes wide medians may be considered along portions of this segment of Interstate 70. Wide medians, while advantageous to highway appearance, will encourage the occurrence of deer-vehicle accidents and require additional purchase of right of way. The Division, therefore, does not support the concept of wide medians."

Answer: The Division of Highways is not recommending wide medians - that is, medians wider than possibly 100 to 150 feet in areas where the terrain permits, except where Alternate 2-B finds the Colorado River in the median area. (Note page 5.) Wider medians, while more appealing to most highway users, also have a safety benefit of reducing headlight glare of oncoming traffic. Mitigative measures to reduce auto-deer accidents is discussed in Chapter 9.

Comment No. 6-o: "Within the Statement it was acknowledged that where the need is justified, preventative measures to minimize deer-vehicle accidents will be developed. Such measures may include a combination of eight-foot barrier fencing, underpasses and overpasses. This response of cooperation was appreciated. Recommendations have been prepared for Alternate 5-A from Rifle to Grand Valley and additional ones will be submitted in the future."
Letter No. 6  
Colorado Division of Wildlife  
September 26, 1974

Answer: The Colorado Division of Highways will continue to cooperate with the Colorado Division of Wildlife in recommendations to minimize or lessen the impacts on the deer resources. At such time when recommendations are submitted to the Division by the Division of Wildlife, steps will be taken to incorporate these recommendations into design concepts for a particular section.

Comment No. 6-d: "A four-lane highway constructed to interstate standards can effectively block many access points that were previously available with a two-lane facility. This loss can be mitigated with proper planning. One example is the planning to construct a recreational trail from Frisco over Vail Pass on Interstate 70. If Interstate 70 is constructed through DeBeque Canyon, access from the highway to the river will be very limited. To minimize this impact, the Division supports the construction of a recreational trail through DeBeque Canyon in addition to establishing rest areas at available locations. The interest in such a trail for bicycling was evidenced from the correspondence which was included in the Statement."

Answer: The Division has incorporated a combination bike-recreation trail with highway construction in DeBeque Canyon. This can be noted on page 27 and Illustrations 1 through 16.

Comment No. 6-e: "Rest areas such as the one proposed at Beavertail should also include access to the Colorado River for boat launching."

Answer: The areas where the Division of Highways is proposing a rest area will include acquired access and river frontage to the Colorado River. This will allow for boat or raft launching as a form of recreation and use of the rest area. Presently, the Division of Highways is planning a rest area at Beavertail for eastbound traffic. We are also recommending the incorporation of Alternate 2-B on the east end of DeBeque Canyon which will allow for the construction of a rest area for westbound traffic on a 40 acre tract of BLM land which is presently landlocked. Gravel excavation of this particular area could permit the construction of ponds which could be stocked. It could also permit the development of a rest area which could also be used for boat launching. However, it is not the Division's intention to limit the recreation sites available as rest areas. As mentioned, river frontage will be acquired in normal right-of-way procedures. Therefore, this will allow for boat launching in these particular areas.

Comment No. 6-f: "It is recommended that no gravel operations be allowed within the channel of the Colorado River due to the potential detrimental impact on aquatic life. However, gravel operations which take place in the flood plain and result in the development of small ponds can be beneficial to wildlife and provide public recreation."

Answer: Presently, the Division of Highways will not allow excavation of gravel within the live channel of the Colorado River. Five areas have been designated as gravel recovery areas as described on pages 35 and 36 and Figure 13. In areas where gravel operations are in public ownership, this Division will work toward development of ponds for use as recreation areas. This potential is limited however, to public lands. The Division cannot force or develop recreational land or fishing ponds on private lands.

Comment No. 6-g: "The Division does not support encroachment into the Colorado River and believes every effort will be made to avoid it. If, however, encroachment becomes necessary at certain locations, the Division will expect to review each proposal prior to any final decision."

Answer: Presently the Division is planning to limit or keep channel encroachments in the Colorado River to a bare minimum. In areas where encroachment is necessary,
the Division will carry on normal review procedures with the Division of Wildlife as it has in the past and ask for recommendations concerning these necessary encroachments.

Comment No. 6-h: "In the future, the Division may establish a big game hunter check station at some point in DeBeque Canyon. Potential locations include Beaver-tail and Long Point. Access would be required from Interstate 70."

Answer: The Division will assist the Division of Wildlife in all ways possible to establish a big game check station. However, it is somewhat debatable due to land constraints and alignment problems within the canyon as to whether or not a big game check station can be feasibly established within the confines of the DeBeque Canyon itself. It may be possible and more practical to provide hunter check stations on I-70 at the west end of the DeBeque Canyon just west of Palisade. In this area, it would allow Wildlife Conservation Officers to also check bag limits of hunters going to and leaving this particular area of State Highway 65, the Grand Mesa area. This area receives considerable hunter use during both deer and elk season. The Division feels this should be a serious consideration by the Division of Wildlife in considering areas for the big game hunter check station.

Comment No. 6-i: "Recommended Alternate, Section I, Alternate 1-A and 1-E. Alternate 1-A will have minimal detrimental impact upon the Colorado River since no encroachment will occur. The construction of 1-E will require a tunnel through Long Point which will isolate approximately 1.6 miles of Colorado River. The Division views both alternates as having the least detrimental impact in contrast to others available."

Answer: Refer to discussion of alternates, pages 53-58. The projected cost of this tunnel is nearly equal to the estimated cost of the entire 37 mile interstate project.

Comment No. 6-j: "Section II, Recommended Alternate 2-E. While the western terminus of 2-E may require a channel encroachment, the overall detrimental impact to wildlife will be less than that occurring along the big game winter concentration area. Both Alternates 1-D and 2-C would create irreversible detrimental impact to wildlife resources."

Answer: This is answered in discussion of alternates, pages 58-61.

Comment No. 6-k: "Section 3, Recommended Alternate 3-B. Alternate 3-B remains on the present alignment of U.S. 6 and 24 and will have less detrimental impact than the northern alignment of 3-A. Measures to minimize deer-vehicle accidents will be required in this section."

Answer: Refer to discussion of alternates, pages 61 and 62.

Comment No. 6-l: "Section 4, Recommended Alternate 4-A or 4-C. Neither Alternate 4-A or 4-C will have significant impact on wildlife resources."

Answer: Refer to discussion of alternates, pages 62-66.

Comment No. 6-m: "Section 5, Recommended Alternate 5-A. The interstate alignment in Section 5 should remain in the existing transportation corridor. This section will require preventative measures to minimize the occurrence of deer-vehicle accidents."

Answer: Refer to discussion of alternates, page 66.
Comment No. 7-a: "We ask the Highway Department to take these comments into consideration prior to finishing the Final Statement. I will be glad to discuss our position and plans with anyone from the Department."

Answer: This letter from the Rifle Ski Corporation by William J. Moulton, manager, contained considerable comments and/or information concerning the Rifle Ski Corporation's development. The comments presented in their correspondence have been used to update and/or correct the information presented in the Statement. The Division appreciated receiving the comments and/or update of information concerning the Rifle Ski Corporation's development near Rifle. Please note pages 15 and 16.

SECTION B
CORRIDOR PUBLIC HEARING COMMENTS

This section discusses comments presented at and as a result of the Corridor Public Hearing. To answer these questions, the Division of Highways has incorporated the answers to these questions and comments within the actual text of this Final Environmental Impact Statement. Therefore, this section is devoted to displaying the letters and comment sheets received and noting specifically the page in the Statement on which the answer is presented and discussed.
THE STATE DEPARTMENT OF HIGHWAYS
DIVISION OF HIGHWAYS
STATE OF COLORADO

PUBLIC COMMENT SHEET

Your comments or suggestions can assist the Colorado Division of Highways in the proper development of the highway project being discussed at this meeting.

Space is provided below to write your comment. Please hand in your statement at the end of this meeting or if you prefer, fold, staple, and mail to the address provided. Statements received within 10 days of the date of this hearing will be attached to and become a part of the official transcript of this hearing.

STATEMENT

I attended the meeting May 26th at Grand Valley and wish to thank all people who helped prepare the proposals. The pictures they show excellent. I wish to put at the head of 1-70 following National Park across the entire mesa. That's a much longer proposal. Also I wish to mention any rest areas only at know Tad which is fine today. There will be 6-24 and the number of tourist who pull into my driveway and seek a place to have a picnic I suggest one area between Grand and beaver tail equipped with rest rooms and water etc. also, first pull-out for a key rest and picnic sitting along withview. Let's do our one 1-70 and all turns made.

Elona Harris
Address: Grand Valley Colo.
Representing: Myself

PUBLIC COMMENT SHEET

Your comments or suggestions can assist the Colorado Division of Highways in the proper development of the highway project being discussed at this meeting.

Space is provided below to write your comment. Please hand in your statement at the end of this meeting or if you prefer, fold, staple, and mail to the address provided. Statements received within 10 days of the date of this hearing will be attached to and become a part of the official transcript of this hearing.

STATEMENT

I attended the meeting May 26th at Grand Valley and wish to thank all people who helped prepare the proposals. The pictures they show excellent. I wish to put at the head of 1-70 following National Park across the entire mesa. That's a much longer proposal. Also I wish to mention any rest areas only at know Tad which is fine today. There will be 6-24 and the number of tourist who pull into my driveway and seek a place to have a picnic I suggest one area between Grand and beaver tail equipped with rest rooms and water etc. also, first pull-out for a key rest and picnic sitting along withview. Let's do our one 1-70 and all turns made.

Elona Harris
Address: Grand Valley Colo.
Representing: Myself

Public Comment Sheet

Your comments or suggestions can assist the Colorado Division of Highways in the proper development of the highway project being discussed at this meeting. Space is provided below to write your comment. Please hand in your statement at the end of this meeting or if you prefer, fold, staple, and mail to the address provided. Statements received within 10 days of the date of this hearing will be attached to and become a part of the official transcript of the hearing.

Comment or Statement

I attended the meeting May 26th at Grand Valley and wish to thank all people who helped prepare the proposals. The pictures they show excellent. I wish to put at the head of 1-70 following National Park across the entire mesa. That's a much longer proposal. Also I wish to mention any rest areas only at know Tad which is fine today. There will be 6-24 and the number of tourist who pull into my driveway and seek a place to have a picnic I suggest one area between Grand and beaver tail equipped with rest rooms and water etc. also, first pull-out for a key rest and picnic sitting along withview. Let's do our one 1-70 and all turns made.

Elona Harris
Address: Grand Valley Colo.
Representing: Myself
Comment No. 3

We feel that DeBeque Canon is an unique and highly scenic canon that should not become another four lane thoroughfare. We would like to point out that there is no indication that we will go back to high speed driving and much that we will be stuck with 55 indefinitely. We therefore feel that I-70 through the Canon be re designed for 55 rather than 70 mph. In any case we are not in favor of splitting I-70 on both sides of the river. More are in favor of encroachment into the canon. In addition to causing massive scenic destruction, such a measure would cause the destruction of much nesting habitat particularly for such species as cliff swallows and white-throated swifts. We are not really in favor of river encroachment at least the river will recover in time.

Regarding I-70 between the east end of DeBeque Canon and Grand Valley we feel it should follow the Old Road as closely as possible. We are opposed to moving it to the north of the town of DeBeque as this is on the edge of a major deer wintering area and would result in many fatalities. Again we think this should be looked at as a 55 mph highway rather than 70.

We are furthermore are submitting a revised bird list as the none game species list prepared by the wildlife department is woefully inaccurate and insinuates. It contains at least three major errors including common grackle which does not occur and does the white-throated sparrow, and black-eyed junco should read dark-eyed junco.

David Galinat

Audubon Society of Western Colorado

Comment No. 4

Box 202
De Beque, Colorado 81630
October 17, 1974

My home is located near one of the proposed routes that will take Interstate 70 across Blue Stone Valley near De Beque, Colorado. I am mainly talking about the portion of alternate 2A, east of De Beque and south of the Colorado River. I believe the present 24 route on the north side of the river, will come through the center of our ranch and will greatly reduce in economic value and will especially reduce the ecological aspects of our property. When we moved here four years ago, my parents, two sisters, and two small brothers, all helped clear our land which was all sage brush and rocks, with a tractor and a wagon. Eventually, we have been able to build our home into a nice place. Now we have a lawn, trees, flowers, and a garden besides pasture. We all worked hard to get this far like the old homesteaders use to do.

I lived in a town for 15 years with the highway running right in front of our house. People who live in a town of a city may not realize the beauty and serenity that can be found in a ranch home which is located away from noise and air pollution of a crowded highway.

The wildlife on our property is a beautiful thing, and from time to time include deer, elk, geese, ducks, bald eagles, and golden eagles. I'm sure people in a city have never seen wildlife free except in a national park or public zoo. We too protect the wildlife on our property, and even near coyotes from time to time, but they don't bother us. There is a strong belief that the proposed route, 2A, would destroy this fine ecological area.

I firmly believe that the new Interstate 70 right-of-way should closely follow the present highway through our valley. This route would cut out less farm land and would not disturb the ecology. It also saves us that because the state already owns a large piece of right-of-way, that it would be much less expensive to follow along the present highway.

Please give us, the small ranchers, your consideration in this matter which is of vital importance to our lives.

Sincerely,

Cynthia Dawn Truitt
Dear Mr. Prosence:

Recently I represented the Garfield Land, Oil and Development Inc., and Mr. Charles Casteel at the public hearing held in Grand Valley at the Grand Valley school. At that time we placed certain documents into evidence to become a part of the public record and I gave a brief presentation with regard to Una Crossing.

I am now enclosing a copy of a letter dated March 25, 1974 which was prepared by Mr. Charles Casteel, signed by him and sent to Mr. Charles E. Shumate. Also enclosed is a letter from Mr. Shumate to Mr. Casteel dated March 27, 1974 stating that the Highway Department would be in direct contact with him in regard to the Una Crossing matter. I would like to have these two letters placed in evidence as part of the record of the recent public hearing.

Very truly yours,

John L. Kemp

Comment No. 5

Helen L. Truitt

October 16, 1974

District Engineer
Colorado Division of Highways
P.O. Box 2107
Grand Junction, Colo. 81501

We are opposed to the portion of alternate 2A east of DeBeque, Colorado, and south of the Colorado River. We believe the present alignment, 2E on the north side of the Colorado River, would be a better choice. 2A is lower in elevation and through agricultural land, which is all under irrigation with year around water rights. This route would also cut through this land which is bordered on the south for miles by arid land, and on the north by the Colorado River which is a green belt area.

This agricultural land is a nesting and feeding place for ducks, geese, and many other small birds and animals. It is also used all year around by deer and elk. 2A would cut the game off from the river for water, cover, and feed, as there is very little water if any in the arid land to the south. The 2A area is also a feeding and wintering place for bald and golden eagles.

As we have stated before, 2A is a lower elevation, although the river is usually covered with ice in the winter, we still have heavy fog, morning and night. There are two proposed dam sites in the Colorado River just above where the 2A bridge would cross the river. We believe this stored water would be warmer. Therefore, water below the dam would not freeze over so close to the dam and there would be a great deal more fog than at the present. Traffic coming from the higher area, 2E, would drop right into this area of dense fog, which will be creating a driving hazard, and would require more winter maintenance and expense.

2E, east of DeBeque and north of 3A which is south of the Colorado River, is arid land and has no agricultural land or water. Therefore, not recommended for good habitat for wildlife. This area 2E is usually above the fog, due to elevation and wind currents.

2E at this point follows the present state highway, 6-24, where 2A at this point would be all new agricultural land used as well as service roads.

2A would cost about $113,500 more than 2E at this section according to the Colorado State Highway Dept. Our President has asked all of us to cut unnecessary spending, by using 2E for Interstate 70 we would be cutting construction costs as well as saving valuable agricultural land and preserving habitat for wildlife.

Sincerely,

Donald A. Truitt
Helen L. Truitt

( Nine additional letters received by the Division of Highways from adjacent property owners and others in support of an interchange at Una)
STATEMENT

To: District Engineer
From: CBW Builders, Inc.
Re: Project 170-1(19) & (36).

This statement is supplementary to statement given by Warren E. Gardner of CBW Builders, Inc. at public hearing held in Grand Valley on October 7, 1974. The statement addresses itself to the necessity of an interchange in the area known as Una and a grade separation over the Denver and Rio Grand Western Railroad Company tracks. Such an interchange and grade separation is necessary for the following reasons:

1. The area South of proposed I-70 routing and North of the Colorado River in the area of Una will be developed as industrial parks. CBW Builders is one of such developers. Its preliminary plan has been approved by the Planning and Zoning Commission and County Commissioners of Garfield County. Authorization to proceed to final plans has been given. As evidence of this fact there is attached to this statement a copy of the approval of preliminary plans, two engineering maps of the proposed Grand Valley Industrial Park, copy of State Highway Department option to obtain gravel and a special use permit to excavate such gravel.

2. The advent of oil shale development necessitates the construction of industrial parks to service the development by commercial and industrial support facilities.

3. The development of C.B.W. Builders will provide natural resources for concrete and asphalt batching plants and provide the most convenient railroad siding in the area. The traffic loads generated by such development will cause severe problems at the Una rail crossing, both to the railroad and to those for whom a crossing of the railroad will be necessitated.

4. Una is one of only three legal railroad crossings in the 37 mile corridor now being studied. With the development of oil shale the pressure on the crossing will be intense.

5. It is mandatory that access be provided to the proposed new town on Battlement Mesa. The river crossing at Una is one of the few good river crossings near such town. At the present time the bridge at Una is the only bridge serving the South side of the river between Grand Valley and DeBeque. With the advent of the traffic to the South side of the river and the traffic generated by the commercial/industrial subdivisions, an interchange and grade crossing separation is imperative.

6. The Board of County Commissioners of Garfield County, after much planning, has recommended and advocated the necessity of an interchange and grade separation at Una.

7. The Denver and Rio Grande Western Railroad Company strongly advocates a grade separation at Una. Their representative at the public meeting on October 7, 1974, advised of this fact and there is attached to this statement a letter from the Railroad expressing the same statement.

8. The environmental impact statement of the Highway Department refers to possible reservoirs located in the Una area, one of which would be known as Paradise and one known as the Una Reservoir. It is strongly suggested that no decisions on highway location or interchanges or grade separations be made on the basis of hypothetical reservoir sites. Close investigation will disclose that both reservoirs have only conditional water rights and these water rights are being contested. They do not have requisite land ownership, nor any governmental authority for the construction of such reservoirs. In fact, request for such authority has not even been filed with any governmental authorities.

The matters above set forth are existing fact and will be reality with the advent of oil shale. Good planning mandates that oil shale be considered a past fact and that I-70 between DeBeque and Rifle be constructed to accommodate such development.

C. B. W. Builders, Inc.
Mr. Richard A. Prosence, District Engineer  
Colorado Division of Highways, District III  
P. O. Box 2107  
Grand Junction, CO 81501

Dear Mr. Prosence:

The oral statement I made on behalf of our clients, the owners of the Una and Rulison Industrial Centers, at the public hearing in Grand Valley October 7, 1974, on I-70 alignment is confirmed in writing in this letter as I indicated orally.

The Sketch Plan has been approved by the Board of Commissioners of Garfield County for the Una Industrial Center at Una on US 6 and for the Rulison Industrial Center at Rulison on US 6 in Garfield County, Colorado.

UNA -- The proposed alignment of I-70 in Section 3 indicated as route 3-A is concurred in by the undersigned representing International Engineering Company (IECO), planners and engineers for the owners of the Una Industrial Center. The proposed grade separation at Una is respectfully requested to be a complete grade separated interchange. Reasons for this request are as follows:

(1) that better circulation of traffic, especially truck traffic, will be possible through the use of the requested interchange at that location instead of traversing several miles of service highway to reach adjacent interchanges several miles to the east or west;

(2) the spacing of the Una interchange would be approximately half way or near the half way mark between Grand Valley and DeBegue, a distance of approximately 12 miles; an interchange at Una would reduce this to about 6 miles between interchanges;

(3) the requested Una interchange is in line with the existing bridge over the Colorado River at that location.

IECO concurs in the proposed grade separation of the road that now crosses the railroad at grade when the I-70 interchange is designed and built. The elimination of the present railroad grade crossing of this highway is a safety measure, possibly not economically justified at this writing, but certainly would be with the anticipated traffic to be generated by the Una Industrial Center and other activities proposed in the vicinity. This is also a request for a service road on the northerly side of I-70 from the proposed Una interchange to the Una Industrial Center, a distance of approximately 330 feet. The Una Industrial Center Sketch Plan, copy enclosed, shows a service road on the northerly side of I-70 extending to the west property line of the Una Industrial Center for the purpose of serving other property owners to the west of the Industrial Center, on the assumption this is the desire of the State Highway Department and property owners to the west.

The Una Industrial Center sketch Plan as approved includes 48 sites, mostly industrial. An estimated traffic generation based on an average of 10 employees per site could produce 960 automobile trips daily. The truck traffic is estimated to at least equal automobile trips for a total of 1,920 ADT. There are 13 of these sites with rail service; the estimated rail traffic generated is at least one railroad car per day or 13 cars daily. The resulting rail-highway hazard incidence, including other proposed rail and highway usage, should justify the complete interchange at I-70 and the grade separation at the railroad grade crossing.

RULISON -- The complete grade separated interchange of the existing road with the proposed I-70 at Rulison is in accord with the approved Sketch Plan of the Rulison Industrial Center, copy attached, and this interchange is concurred in by IECO. Also, the selection of route 5-A in the vicinity of Rulison is concurred in by IECO.

The Rulison Industrial Center Sketch Plan as approved includes 34 sites, mostly industrial. An estimated traffic generation based on an average of only 6 employees per site could produce 204 automobile trips daily. The truck traffic is estimated to at least equal automobile trips for a total of 408 ADT. This traffic with other anticipated highway usage in the vicinity should justify retaining the grade separated interchange in your plans for Rulison.

Mr. Richard A. Prosence  
District Engineer  
Colorado Division of Highways, District III  
P. O. Box 2107  
Grand Junction, CO 81501  
October 14, 1974

Comment No. 8

(303) 767-8866
Mr. Richard A. Presence -3- October 14, 1974

Please accept our congratulations for the orderly and effective manner in which the public hearing was conducted and the excellent professional work put into the planning and design of the I-70 alignment that apparently was done with great care economically, technically, and environmentally.

Please let us know how we may provide additional information if necessary on the above matter.

Respectfully,

Wm H Claire
Director of Planning

WHC:jpb

Enclosures

CC; Dr. Russell Scott, Jr.
Mr. J. Randy Wilson

---

District Engineer
Colorado Division of Highways
P.O. Box 2107
Grand Junction, CO 81501

Dear Sir:

This is in reference to hearing held in Grand Valley, Colorado, on October 7, 1974 concerning proposed route section of I-70 from a point just west of Rifle, Colorado, to the Roller Dam at the west end of DeBeque Canyon.

As I verbally stated at this meeting, the Rio Grande Railroad would like to see both an interchange at Una as well as a grade separation over our main line for highway traffic in and out of the Una industrial area.

Our position in this matter is based on the following reasons:

The Rio Grande would like to see any support industries to oil shale development such as warehousing, manufacturing, distribution companies, etc., who would be shipping or receiving freight in carload volume be located and concentrated into one area. Una, to my knowledge, is the only area near Grand Valley where there is land available with owners desiring rail service. We believe the proposed industrial parks at Una to be of good, sound planning and would benefit the railroad, industry and the community of Grand Valley.

Our present operation through this area is a high speed main line operation. For safety reasons, we want as few switches coming off our main line as possible. We have an existing siding at Una which can be efficiently utilized. This is another reason to have Una as the industrial center for the Grand Valley area. At the present time we have three public road crossings over our tracks in this area; one at Rulison, one at Grand Valley and one at Una. With high speed main line operation, we prefer not to have additional crossings and to protect people using highway transportation in and out of the proposed Una industrial area, we would like to see a grade separation over our railroad.

We sincerely hope you will take the above mentioned interchange and grade separation into your planning and look favorably on this matter.

Yours very truly,

A. R. Fjelstad
Director-Industrial Development

---
Your comments or suggestions can assist the Colorado Division of Highways in the proper development of the highway project being discussed at this meeting. Space is provided below to write out any comment you may wish to make. Please hand in your statement at the end of this meeting, or if you prefer, fold, staple, and mail to the address provided. Statements received within 15 days of the date of this hearing will be attached to and become a part of the official transcript of the hearing.

Dear Dick:

Enclosed is a copy of the statement made in behalf of Colony Development Operation at the October 7, 1974 Location Public Hearing in Grand Valley, Colorado, to replace the copy handed to the court reporter at the meeting, which had a couple of minor changes made by hand. This copy looks better for the record.

I would like to compliment you and your district personnel for an excellent display and a fine presentation to the public at that meeting. Your answers to questions and explanations to the public during the comment period after the presentation were well founded and knowledgeable, and, I think, well accepted by the audience.

Very truly yours,

Donald C. Sutherland
Vice President

Colorado Division of Highways
P.O. Box 2170
Grand Junction, Colorado 81501

Attention: Mr. Richard A. Prosence
District Engineer

October 9, 1974

FRASIER & GINGERY, INC.
CONSULTING ENGINEERS
2840 SOUTH VALLEJO STREET
ENGLEWOOD, COLORADO 80110

TELEPHONE 303 761-4860

Donald C. Sutherland
Vice President

By Donald + John Lamond
Address 5235 County Rd 215
Representing Grand Valley Area Bus.

Thank you.
My name is Donald Sutherland. I am a Vice President and Director of the Transportation Division of Frasier & Gingery, Inc., Consulting Engineers with offices in Englewood and Glenwood Springs, Colorado.

Frasier & Gingery, Inc. is engineering consultant to Colony Development Operation on some phases of the proposed new town across the Colorado River from Grand Valley, Colorado. I am authorized to present the views of Colony Development Operation favoring Alternate 4-A or the southerly route for Interstate 70 through Grand Valley in preference to Alternate 4-B which would skirt the north edge of Grand Valley or to Alternate 4-C which follows the present US 6 Highway alignment through Grand Valley.

On the basis that the proposed new town will become a reality, and that it will have an important impact on Interstate 70, the town of Grand Valley, and its surrounding area; and that it will provide attractive and carefully planned housing accommodations, schools, recreation areas, and green belts for workers and their families attracted by (but not limited to) the oil shale industry, the following opinions favoring Alternate 4-A are expressed:

1. A railroad grade separation structure over the Denver & Rio Grand Western tracks leading to the county road across the Colorado River is provided for as part of Alternate 4-A. This separation based on 1994 traffic estimates will be of great importance to public safety and welfare in providing safe and continuous access across the railroad tracks, unobstructed by the numerous, long trains moving on these tracks.

2. Colony Development Operation is heavily involved in land ownership and development in Garfield County. Alternate 4-A would avoid positioning Grand Valley between two artificial barriers of I-70 on the north and the railroad tracks on the south. This alternate would allow expansion and growth of the Grand Valley town area commensurate with the anticipated growth activity of the general area. Colony Development Operation has acquired land in the area northwest of Grand Valley and is particularly interested in having this area free from the I-70 barrier.

3. Ecological damage, erosion and potential siltation would be much greater on Alternate 4-B than on Alternate 4-A due to a heavy cut through the hill above the water tank and breaking new ground along the foothills as it swings away from and back toward the railroad tracks. Aesthetically, damage toward the mountains would be avoided by Alternate 4-A.
4. Because of shorter distance with better alignment and grades, Alternate 4-A would show substantial user benefits over Alternate 4-B for I-70 traffic.

5. Alternate 4-A interchange would provide connections to the county road and to Grand Valley proper under the Interstate Project, whereas on Alternate 4-B, much of this expense would fall on Garfield County, with an adverse effect on conduct and financing of local government.

Colony Development Operation, as one of several entities interested in oil shale development in the Grand Valley area, is aware of social, economic, and environmental effects as to direct and indirect losses to the community and to highway users. Alternate 4-A, in our opinion, offers the preferable solution to the routing of Interstate 70 in the Grand Valley area.
Dear Sir,

After living here for 75 years and a deputy assessor of this County for 32 years, I am glad to give you information pertaining to the new proposed highway that this area also the mill dam will be dropped almost at once. As the coal stake, which would remain there if you close the Valuation on these old BRIDGE most to railroad, you will find them to be down low and only Calm, which is now located five miles above at a cost of $50,000 dollars. If you make Calm and the rest of the Peninsula, then these should be condemned, and no claim and write both parcels, you can never used.

We own the NW4 of the NW4, Sec. 13 T. 7 S. 6 R. and the proper intersection 4B with Calm right this middle we have water for this kind to bring with you will be lost to buy the entire 4B acre of property, the middle, which would remain at a tract that is going to those in the right 20th month. The only place for the high way is along the rail road track.

Thank you,

Yours truly,

[Signature]

THE STATE DEPARTMENT OF HIGHWAYS
DIVISION OF HIGHWAYS
STATE OF COLORADO

PUBLIC COMMENT SHEET

Your comments or suggestions can assist the Colorado Division of Highways in the proper development of the highway project being discussed at this meeting. Space is provided below to write out any comment you may wish to make. Please hand in your statement at the end of this meeting; or if you prefer, fold, staple, and mail to the address provided. Statements received within 15 days of the date of this hearing will be attached to and become a part of the official transcript of the hearing.

CONVIEIT or STATEMENT

Mr. Provence,

I attended the Hearing last evening and appreciate the efforts your office has made in the highway department regarding the improvement to these three roads today. I agree a higher tax payer and make for the "good of the people" sincerely believe, the highway should preserve the R & R tracts.

Sincerely,

[Signature]

Address:

By:

Representing:

MAILING ADDRESS: District Engineer
Colorado Division of Highways
P.O. Box 2137
Grand Junction, CO 81501
Your comments or suggestions can assist the Colorado Division of Highways in the proper development of the highway project being discussed at this meeting. Please fill out the form below to write your comment and mail it to the address provided. Statements received within 15 days of the date of this hearing will be attached to and become part of the official transcript of the hearing.

Comment or Statement:

As a property owner in the Grand Valley area, I would like to take this opportunity to express my preference for Alternative A4 in Section IV.

If Grand Valley grows to the North, as some feel possible, Alternative A4 may restrict this needed expansion on the D&RGW line. If the line were to stretch north to the South, the construction of I-70 would actually isolate some property and possibly some residences between the two. The two would thus be divided into two pieces of land. The expansion of the D&RGW line to I-70, thereby dividing the town, means in the future, but at the present. However, Alternative A4 would parallel an existing highway in lieu of creating another. Alternative 4-A would also present a more realistic alignment now in line with the established interstate policy. Alternatives A and B, for instance, would take the tendency of development in the west towards the North. Alternative 4-A also appears to have better rights.

by: Joseph A. Young

Address: 2480 S. Putney Avenue, Grand Junction, CO 81504

Mailing Address: District Engineer
 Colorado Division of Highways
 P.O. Box 2107
 Grand Junction, CO 81501
Mr. R. A. Prosence
District Engineer
Colorado Division of Highways
Post Office Box 2107
Grand Junction, Colorado 81501

October 11, 1974

Dear Mr. Prosence:

This will refer to proposed routing of I-70 from DeBeque Canyon to Rifle and public hearing in connection therewith held in Grand Valley October 7, 1974.

Rio Grande generally favors the "A" routing throughout, although various segments of the other routings which do not involve the railroad would be equally satisfactory.

We are strongly opposed to that segment of the "C" routing passing through DeBeque Canyon. This would undoubtedly result in numerous delays to your contractor since we would insist on continuous flag protection and work stoppage during passage of trains whenever a potential hazard from falling rocks would exist while work was progressing above the tracks.

We assume that the Highway Department has made thorough hydrology studies of the Colorado River channel at locations opposite the railroad where highway construction encroaches on the river, so that the railroad embankment will not be adversely affected. When the final routing is determined, we would appreciate receiving copies of such studies at locations where we are affected.

The Railroad Company would prefer routing I-F around Beaver-tail Mountain; however, in the event Route I-A through the mountain is selected, we would expect the Highway Department to take adequate precautionary measures during blasting operations to insure that the Railroad tunnel is not damaged or displaced.

Very truly yours,

cc: Mr. E. N. Haase, Chief Engineer
Colorado Division of Highways
4201 East Arkansas Avenue
Denver, Colorado 80222

THE DIRECT CENTRAL TRANSCONTINENTAL ROUTE
Comment No. 17

(a) The community fair ground area.
(b) My adjacent property to the southwest.
(c) My neighbors property further to the southwest.

3. The additional expense of a separate roadway in a new construction area, would appear unwarranted.

Your consideration of moving this access road to the west side of the railroad would be greatly appreciated.

By Harry A. Harris

Address Box A, Anvil Points, Rifle, Colorado 81650

---

Comment No. 18

THE STATE DEPARTMENT OF HIGHWAYS
DIVISION OF HIGHWAYS
STATE OF COLORADO

PUBLIC COMMENT SHEET

Your comments or suggestions can assist the Colorado Division of Highways in the proper development of the highway project being discussed at this meeting.

Space is provided below to write out any comment you may wish to make. Please hand in your statement at the end of this meeting; or if you prefer, fold, staple, and mail to the address provided. Statements received within 10 days of the date of this hearing will be attached to and become a part of the official transcript of the hearing.

CONVIEN or STATEMENT

I feel that for the public, towns & all concerned that the Route following the R.I.R. through Grand Valley is the only Route to be considered.

R. A. Harris

Address Box A, Anvil Points, Rifle, Colorado 81650
PUBLIC COMMENT SHEET

Your comments or suggestions can assist the Colorado Division of Highways in the proper development of the highway project hereon discussed at this meeting.

Space is provided below to write out any comment you may wish to make. Please hand in your statement at the end of this meeting, or if you prefer, fold, staple, and mail to the address provided. Statements received within 14 days of the date of this hearing will be attached to and become a part of the official transcript of the hearing.

COMMENT OF STATEMENT

We strongly recommend at YA through Grand Valley. We feel it is to the best interest of the town of Grand Valley.

If you shall make such a change, to select YA, the town shall be informed by the railroad company, on the July 1st of the next. Filled with some 'wise, well-planned' such as when to grow as to said we select YA because we would expect that the right weight be held where it is or ever need to the south towards the present highway a little more. We don't want to go over any thing a whole than possible. We would also request a B7 class 4th lane and replace part of what of the road farm, probably relocation at a small area.

It's unfortunate to believe we shall expect the highway department to use the completed work at YA and we expect it onto through the whole of the best fields trying to completely the existing pigs.

By Paul Biemgardiner

Address: 44 West Grand Valley CO 81521
Representing Paul Biemgardiner

WILLING ADDRESS: District Engineer
Colorado Division of Highways
P.O. Box 2137
Grand Junction, CO 81501

Thank you very much.

Paul Biemgardiner
Dear Sir,

In regards to the proposed Interstate Highway location in consideration, I would think that a route adjacent to the existing railroad, right of way (RO) would create the least impact to the present township of Park Valley.

In addition, the concept of Interstate Highway alignments was established to provide a safe means of vehicle travel. In accordance to this concept the changes in route of travel present city in the other alternatives are adverse to this concept to the safety point of view.

As a taxpayer of the State, a property owner in this town, I do not feel that the expense...
Dear Sirs:

In regards to the proposed Interstate Highway location in consideration, we think the route adjacent to the railroad (IA) is the one. Less pollution, less accidents cut down on cost safe travelling gets traffic to where they are going faster and it will be an centrally located to our taxpayers and property owners in Grand Valley we want.

To keep all possible cost down... So (IA) is our choice.

The available ground north will be more valuable for future development which will bring the fry value up for more than present tax value than the old section.

The environmental impact would be much smaller right next to the railroad than if it was separate divided utilities.

Ott Pedrick
Nadine Pedrick
Valley Pedrick
John Pedrick
property owners.
Project Interstate 70
DeBeque Canyon - east of Rifle

THE STATE DEPARTMENT OF HIGHWAYS
DIVISION OF HIGHWAYS
STATE OF COLORADO

PUBLIC COMMENT SHEET

Your comments or suggestions can assist the Colorado Division of Highways in the proper development of the highway project being discussed at this meeting. Space is provided below to write out any comment you may wish to make. Please hand in your statement at the end of this meeting or if you prefer, fold, staple, and mail to the address provided. Statements received within 10 days of the date of this hearing will be attached to and become a part of the official transcript of the hearing.

OBJECT or STATEMENT

Would like to recommend the following route for the proposed Interstate 70, 26, 38, and 44. This will closely follow present highway, would save money or additional right-of-way, and in some cases, could use present road for one lane, thereby saving considerable money. At the meeting in Grand Valley, I was touched with the situation of Grand Valley. I know what that means that 44 is the only logical way to go, but I think the relocation of the 14 homes and 7 businesses should be handled very carefully. I think each case should be considered individually and these people relocated to nearly the same circumstances as they presently enjoy, even if it costs more than they would receive from their present residences.

By

Address:

DeBeque #66 Service

Representation:

DeBeque #66 Service

MAILING ADDRESS:

District Engineer
Colorado Division of Highways
P. O. Box 2107
Grand Junction, CO 81501

Project Interstate 70
DeBeque Canyon - east of Rifle

THE STATE DEPARTMENT OF HIGHWAYS
DIVISION OF HIGHWAYS
STATE OF COLORADO

PUBLIC COMMENT SHEET

Your comments or suggestions can assist the Colorado Division of Highways in the proper development of the highway project being discussed at this meeting. Space is provided below to write out any comment you may wish to make. Please hand in your statement at the end of this meeting or if you prefer, fold, staple, and mail to the address provided. Statements received within 10 days of the date of this hearing will be attached to and become a part of the official transcript of the hearing.

OBJECT or STATEMENT

I would like to recommend the following routes for the proposed Interstate 70. 26, 38, and 44. This would be the most economically feasible, as you could utilize some of the present road, and avoid a new area, new right-of-way, etc.

I believe the interchange in the Grand Valley area should be moved further out of town, so as not to take up populated area.

By

Address:

DeBeque #66 Service

Representation:

DeBeque #66 Service

MAILING ADDRESS:

District Engineer
Colorado Division of Highways
P. O. Box 2107
Grand Junction, CO 81501
The present and permanent public use of the Grand Valley and the valley of the Colorado River is a public purpose. To maintain the public use of the valley in a manner that will benefit the public and the residents and citizens of the Town of Grand Valley is a public purpose. Therefore, it is hereby adopted by the Board of Trustees of the Town of Grand Valley to promote the public use of the valley and to maintain the properties and buildings located within the valley.

WHEREAS, the location of the highway on the location mentioned will appropriate approximately fifty buildings and building sites for highway purposes, which will be very detrimental to the Town of Grand Valley because of the removal of valuable property from the tax rolls as well as the destruction of building units.

NOW THEREFORE, BE IT RESOLVED by the Board of Trustees of the Town of Grand Valley to go on record as opposing the location of the Interstate highway at the site mentioned.

BE IT FURTHER RESOLVED, that the Board of Trustees, as representatives of the citizens of the community, request the State Highway Department to make further studies and to work with the Town to the end that the highway will be located in a location that will best serve the traveling public, as well as the residents and citizens of the Town of Grand Valley.

BE IT FURTHER RESOLVED, that the Town Clerk certify a copy of this resolution and forward the same to the Colorado State Highway Department, Attn. Mr. Richard Provance, Grand Junction, Colorado.

The motion was seconded by Trustee George L. Henson.

At roll call, the following Trustees voted "aye":

Fred Henson, Carl Satterfield, Albert Hulbert, George Henson and

Mr. Gordon, totaling "aye", none.

[Petition with 122 signatures was attached]
Project J-70 (104) (26)

THE STATE DEPARTMENT OF HIGHWAYS DIVISION OF HIGHWAYS
STATE OF COLORADO

PUBLIC COMMENT SHEET

Your comments or suggestions can assist the Colorado Division of Highways in
the proper development of the highway project herein discussed at this
meeting.
Space is provided below to write out any comment you may wish to make. Please
hand in your statement at the end of this meeting or if you prefer, fold, staple, and
mail to the address provided. Statements received within 15 days of the date of
this mailing will be attached to and become a part of the official transcript of the
hearing.

EXECUTIVE OR STATEMENT

We suppose it is generally felt by governmental authorities and oil companies that there is too little public concern over the future
existence of any area of the state of Colorado. This feeling is usually expressed in various ways, but in the majority of cases it seems to be
that the public has little interest in the matter.

Despite all the hoopla and tinsel that is being placed in the hands of the public by the Colorado Division of Highways and
Division of Wildlife, it appears that the public is not interested in the matter. The public is not interested in the fate of the future
existence of the area and the future of the wildlife there.

Despite all the hoopla and tinsel that is being placed in the hands of the public by the Colorado Division of Highways and
Division of Wildlife, it appears that the public is not interested in the matter. The public is not interested in the fate of the future
existence of the area and the future of the wildlife there.

By James and Lily Dell

Address: P.O. Box 123

Representation: Divide Valley

Mailing Address: District Engineer
Colorado Division of Highways
P.O. Box 2127
Grand Junction, CO 81501

DISTRIBUTE ENGINEER
Colorado Division of Highways
P.O. Box 2127

Grand Junction, CO 81501

James Dell

Lily Dell

10-14-78

108
The Highway Dept. is to be congratulated on the care used along I-70, as now constructed, to preserve the scenic beauty. The Oct 13, 1974 Denver Post carries a story that “about half of the $60 million spent on the Vail Pass highway is related to environment.” Also that “$600 to $700 per acre is spent on revegetation work.” This is all commendable, but so far as Grand Valley is concerned, these expenditures should be subordinate to those necessary to 1) Give children safe access by foot or bicycle to the schools and playgrounds without long detours being required to access I-70. 2) Avoid cutting water lines and erosion control structures and disturb existing habitats. 3) INCUR all plans, surveys, etc., for a second interchange to be built, where industrial development required.

By (Mrs.) Joanne Fowkes, Vice President
THE GRAND VALLEY PARK ASSOC.
Box 211
Grand Valley, Colo. 81635

(The land in question is deeded to the Park Association.)

By (Mrs.) Joanne Fowkes
Address
Representing
THE GRAND VALLEY PARK ASSOC.

MAILING ADDRESS: District Engineer
Colorado Division of Highways
F. O. Box 2107
Grand Junction, CO 81501

(representing a group of concerned citizens)
Comment No. 30

ALVIN A. BURTON

9 CHADIMA COURT
PLEASANT HILL, CALIF. 94523
TELEPHONE 934-5716

October 15, 1974

Mr. R. A. Presences, District Engineer
Highway Department State of Colorado
P. O. Box 2107
Grand Junction, Colorado 81501

Dear Mr. Presences:

We own a house and eighteen acres of land just west of Grand Valley. Last night a telephone call from a friend alerted us to the possibility of a frontage road being routed through our property. We had heard nothing of this previously. We have been living at a temporary address here in Arcata for the last two months and some of our mail has not been recourted properly.

We phoned your office this morning to get more information and to give notice of our protest. This property was acquired over eighteen years ago as an investment in the future. It would be demonstrated that the road through our property would be of benefit to us we would be most reluctant to sell in the near future.

Any diagrams or other information on proposed highway routings will be appreciated. Our permanent address is in Pleasant Hill. However, for the next several weeks our mailing address will be c/o Rocco Tedesco, P. O. Box 4550, Arcata, California 95521 (Tel. 415-822-2161). Your cooperation in keeping us informed of any developments effecting our property will be much appreciated.

Sincerely,

Alvin A. Burton
UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

Rifle 011 Shale Project
P.O. Box 392, UNIVERSITY STATION
Rifle, Colorado

P. O. BOX 2107, UNIVERSITY STATION
LARAMIE, WYOMING 82070

October 16, 1974

District Engineer
Colorado Division of Highways
P.O. Box 2107
Grand Junction, Colorado 81501

Reference: Project I70-1 (19) & (36)

Gentlemen:

We have examined the project map at your recent hearings and would like to offer the following recommendations.

We note in Section V that interchanges are provided at Rifle and Rulison. There is no provision shown for either a service road between the aforementioned interchanges or access to the interstate from the Bureau of Mines Experimental Plant at Anvil Points.

Our firm has leased the Anvil Points oil shale plant from the Bureau of Mines and has on-going work at the site. We require the ingress and egress of heavy equipment for both the plant to the experimental plant north of the highway and the water plant on the south side of the highway and railroad tracks. Also we are in the planning stage of an expansion that will require bringing in process equipment larger than has been used before in oil shale work. We are also discussing with the railroad the possibility of installing a spur to handle oil shipments from the project.

We recommend a service road connect the Rifle and Rulison interchanges and that the road bed be suitable for handling heavy trucks and construction equipment.

Very truly yours,

Malcolm D. Smith
Project Manager

cc: G. U. Dinneen, Research Director - Laramie, Wyoming
H. N. Smith, Superintendent - Laramie, Wyoming
Also we recommend provisions be made at Anvil Points so trucks and heavy equipment can be moved between plant site to railroad or water plant either by overpass or underpass.

Very truly yours,

[Signature]

John B. Jones, Jr.
President

1) Comment by Mrs. Alma Harris against Alternate 1-D and desiring a number of rest areas. (Comment Letter No. 1.)

Answer: Note recommended alignment on page 58 and rest area discussion on page 29.

2) Comment by Mr. Carter Elliott favoring Alternate 2-A and the incorporation of Alternate 2-E on the east end of Section 2. (Comment Letter No. 2.)

Answer: The recommended alignment for Section 2 is discussed on pages 61 - 62.

3) Comment by Mr. David Galinat representing the Audubon Society of Western Colorado which states they are opposed to cutting the canyon walls in DeBeque Canyon and opposed Alternate 2-C. Also, he made corrections on bird listings in the Draft Environmental Impact Statement. (Comment Letter No. 3.)

Answer: The discussion of Section 1 alternates is on pages 53 - 58 along with recommendations. The species bird list on which the corrections were offered has been deleted from this Final Statement.

4) Mrs. Cynthia Truitt (Comment Letter No. 4) and Mr. Donald Truitt (Comment Letter No. 5) expressed desires to have Interstate 70 follow the existing U.S. 6 alignment on the east end of Section 2.

Answer: The recommended alignment for Section 2 is discussed on pages 58 - 61.

5) A total of 16 letters were received which requested that an interchange and/or grade separated railroad crossing be included at Uda in Section 3. (See Comment Letters 6 - 10.)

Answer: The recommended alternate for Section 3 is discussed in detail on pages 61 - 62.

6) A total of 13 letters were received which favored Alternate 4-A in the Grand Valley area. (See Comment Letters 11 - 23.)
Answer: The recommended alignment in Section 4 - the Grand Valley area - is discussed in detail on pages 62 - 66. Specific comments have been individually evaluated in the recommendation.

7) Two letters, a Town Resolution, and a petition were received which favored an Interstate 70 alignment located farther north of the Division’s originally proposed Alternate 4-B. (See Comment Letters 24 - 26.)

Answer: The recommended alignment in Section 4 is discussed in detail on pages 62 - 66. Each specific comment raised in the letter from Mrs. Minnie Wilson has been addressed in the discussion of the recommendation for Section 4. It should be noted here that the Town Resolution was presented and passed on October 4, 1971, prior to the environmental, social, and economic impacts being studied and evaluated in the Draft Environmental Impact Statement or at the Corridor Public Hearing. No recent correspondence has been received by the Division as a result of recent review and comment proceedings. The Division did not attempt to verify or authenticate the 122 signatures on the petition. The action taken by the Division as a result of these two documents was a complete thorough, and in-depth analysis of the alternates available in the Grand Valley area and an objective analysis of the impacts on the community as a result of these alternates. What resulted from this in-depth analysis was that any alternate in the area would have a detrimental affect on the community of Grand Valley; however, far more benefits can be derived for the community from the proposed Interstate 70 construction with the recommended 4-A Alternate as opposed to the northern alignment. (Refer specifically to pages 62 - 66.)

8) A comment was received from Mrs. Joanne Fowkes representing the Grand Valley Park Association wanting to know how a frontage road south of the railroad tracks will affect the Grand Valley Park grounds. (Comment Letter 28.)

Answer: The question is discussed specifically on page 66. It might be noted here that a frontage road displayed at the Corridor Public Hearing on an aerial photograph of Grand Valley was erroneously drawn through a small portion of the parkland. This was an error in the display’s preparation, and there will be no affect on or land taken from the Grand Valley Park grounds.

9) A comment from Mrs. Everett Baldwin suggested a new alternate should be located somewhere between the railroad and the Colorado River south of Grand Valley. Reference was also made to the affect on water and sewer lines and loss of tax revenues. (Comment Letter 29.)

Answer: This question is discussed on page 66. This idea received some attention by the Division during the very early stages of the project and during alternative formulation. Because of additional costs associated with two crossings of the railroad tracks and impacts on agricultural lands and other community facilities south of the railroad tracks, this idea was abandoned. The only affect on Grand Valley water and sewer lines would be a relocation of surface taps and outlets and a crossing of the lines with Interstate 70. This topic will be thoroughly evaluated during the Final Design phase of this project after right-of-way and utility authorizations have been received.

10) A comment from Mr. Alvin A. Burton was received concerning acquisition of some of his property west of Grand Valley for transportation uses. (Comment Letter 30.)

Answer: At this stage of project development, it is impossible for the Division to assess the impact on your property as a result of proposed interstate construction in the Grand Valley area. When final design authorization is received for this project, right-of-way plans have been prepared, it is learned where your property lies, and that it would be directly affected, you will be personally contacted by the Division.

11) Two letters were received requesting frontage road connections from the west Rifle Interchange and the Rulison Interchange to the Bureau of Mines facilities
Located at Anvil Points. Requests for an overpass or underpass in this area were also made to service their water treatment facilities near the Colorado River. (Comment Letters 31 and 32.)

Answer: These recommendations are discussed on page 66 of this Statement. The Division will maintain existing access to the Anvil Points Experimental Plant by frontage road and will provide a grade separated bridge crossing of the interstate in this area.

SECTION C
LATE COMMENT LETTERS

The following letters were received after the closing date for the comment period on the Draft Environmental Impact Statement (October 4, 1974), and the Official Corridor Public Hearing (October 7, 1974), but have been answered by the Colorado Division of Highways.
Mr. Richard A. Presence, District Engineer, District 3
Colorado Division of Highways
606 South 9th Street
Grand Junction, Colorado 81501

Dear Mr. Presence:

This is in response to your request of August 12, 1974 for the
Department of the Interior’s comments on the draft environmental
statement for Project I 70-1(29) & (36), DeBeque-Grand Valley.

General Comments

The Colorado Division of Highways should be commended for this
comprehensive and well organized document. Although excellent
coverage is given to most topics, particularly wildlife, there are
several points which deserve further discussion in the final statement.
The maps provide an excellent basis for total project orientation;
however, they are somewhat difficult to read for purposes of specific
alternatives. If the maps were divided by sections of the highway,
the alternatives would be more easily understood and evaluated.

Nearly all alternatives considered in the draft environmental state­
ment will require right-of-way across BLM-managed national resource
lands. The draft statement should recognize that issuance of a right­
of-way permit by the Bureau of Land Management is a Federal action
which is required prior to beginning project construction. The state­
ment to this effect should be included in the description of proposed
Federal actions, probably in the "Introduction."

Specific Comments

1. Probable Impact of the Proposed Development or Improvement on
the Environment

In discussing social impacts which would extend into other com­

munities in Mesa and Garfield Counties, the draft states (p. 35)
that "Provisions have been made through land use planning and land
acquisition for facilities to accommodate growth." The specifics
of these "provisions" should be included in the final statement to
insure that the secondary impacts occurring to Grand Junction and
similar surrounding areas are recognized and adequately mitigated.

The statement should recognize that a streamflow gauging station
exists on the Colorado River near Cameo (0909600) and that this
gauge could possibly be impacted by the project. The station is not
provided with access from the proposed Interstate. We understand
that the Highway Department has plans to relocate this gauge; however,
the final statement should confirm these plans. If no reasonable
alternative for the location of this gauge can be found, it may have
to be removed after discussion with the cooperator, the Colorado
Water Conservation board.

Possibilities exist for the construction of Una Reservoir and
powerplant on the Colorado River about four miles east of the town
of DeBeque. This reservoir has been investigated in reconnaissance
scope as a possible extension of the Bureau of Reclamation’s
Bluestone Project, on which feasibility studies have been completed.
Una Reservoir would have a total capacity of 196,000 acre-feet and
a surface area of 4,230 acres at normal water surface elevation of
5,070 feet. The statement should recognize that the construction of
the Una Reservoir would necessitate the relocation of approximately
six miles of Interstate 70 (presently U.S. 6 and 24) as all the
alternatives considered for Sections 2 and 3 would travel through
portions of the Una Reservoir basin.

On page 17, the statement mentions that the Bureau of Reclamation’s
Una Dam proposal includes a recreational-residential planned
development. While the project’s purposes include development of
municipal and industrial water along with the generation of hydro­
electric power, there are no plans for a recreational-residential
development. The discussion on page 17 should be revised to
reflect this fact.

A part of Section 3, commencing on page 36, is titled "Geological
Impacts." Some aspects of the local geology are discussed and some
restrictions imposed on the project by the geology are mentioned,
but there is no mention of any project impacts on the geology of
the area. We note this section also mentions potential gravel sources
for the project; however, the impacts of this project on the sand
and gravel resources of the area should be described.
Garfield and Mesa Counties produce uranium, vanadium, natural gas, natural gas liquids, coal, stone, sand and gravel, and pumice. Significant quantities of coal occur in the Mt. Garfield Formation which crops out in the project area. These resources have been overlooked in the "Earth Resource Impacts" portion of the environmental statement. This portion discusses only the potential impacts of the proposed project on vegetation and wildlife; there is no mention of any mineral resource, no discussion of important water resources, and no discussion of project impacts on these resources.

The statement should recognize that gravel mining, removal of islands and sandbars will destroy the spawning and resting areas of fish in this area. It should also indicate that the project area lies within the range of two endangered species of fish, the Colorado River squaw fish and the humpback chub. The humpback squaw and the bonytail chub, while not on the endangered list at this time are also very rare.

Other significant environmental features which should be included in the report are transmission lines, pipelines, and railroads. The impact of the proposed I-70 alternatives on these facilities must be considered in the total planning process.

The statement mentions the Denver and Rio Grande railroad and discusses the present services provided; however, it does not indicate what impact, if any, the new roadway will have on the existing railroad, where crossings will be required, or if the railroad alignment will be affected.

No established or studied units of the National Park System appear to be adversely affected by the proposal. The proposal also does not appear to adversely affect any site registered as a National Historic, Natural or Environmental Education Landmark, or any site listed as eligible for such registration.

Since all properties on the National Register of Historic Places are published in the Federal Register, the final statement should reflect consultation with the issue for February 19, 1974, and all subsequent monthly supplements. The supplementary listings of sites added to the National Register, subsequent to publication of the previous supplement, are cited in the Federal Register appearing on the first Tuesday of each month. The statement should also establish whether a proposed project will have an effect upon a National Register listing. Where this is found to be the case, the statement should reflect compliance with Section 106 of the National Historic Preservation Act of 1966 (Public Law 89-665) and Executive Order 11593.

The final environmental statement should also reflect consultation with the State Historic Preservation Officer, Mr. Stephen H. Hart, Chairman, State Historical Society, Colorado State Museum, 200 Fourteenth Avenue, Denver, Colorado 80203, with respect to cultural values in the project area (including borrow and fill areas) which may be eligible for inclusion in the National Register, and include a copy of his letter of comment.

2. Alternatives

The discussion of the "No Action" alternative and its impacts considers only the adverse effects which could result if the project were not implemented. Beneficial impacts (i.e., no loss of farmland acreage in right-of-way, no relocations, no disruption to wildlife, etc.) occurring from this alternative should also be discussed in the final statement.

Since there are several alternative corridors proposed for the alignment of the highway, we wish to point out those which would be most favorable to the fish and wildlife interests and related responsibilities of this Department.

Section I is seven miles long and largely confined to the narrow reaches of DeBeque Canyon. Alternate I-A and I-B are similar with the exception that I-B has more encroachment into the Colorado River with a reduction in cost of about $8.3 million (32% less). We believe that if channel changes are kept to an absolute minimum, corridor I-B with the tunnel would be acceptable.

Alternative I-F should be given more attention than it has received, as construction on the north side of the Colorado River in Section I would not be necessary, and river crossings would not be necessary. The major stream encroachments occurring under I-F should be compared quantitatively to other alternatives.

Section II extends from the east end of DeBeque Canyon easterly about 13 miles. There are five alternate routes through this area. Alternate II-A appears to offer the least damage to wildlife resources. While II-B would avoid some encroachment into the Colorado River, it would destroy some critical deer winter range.
increase deer-auto accidents and encroach on the blue heron rookery. The only place we would suggest deviating from II-A would be in the east part of this section, where II-E is slightly south of II-A. In this area II-E follows the existing alignment of U.S. 6 and would be less damaging to wildlife. We strongly urge that Alternate II-C be rejected due to the severe detrimental impact on critical big game winter habitat, higher construction costs, added length and steep grades required in this alternative.

The alignment for alternative I-A would be most favorable in Section III due to the subdivision development at Una Junction.

Section IV involves the alignment in and around Grand Valley, a distance of about two and a half miles. Alternate IV-C would follow the existing alignment through Grand Valley and therefore would be less damaging to wildlife. However, the cost of relocating the telephone facility ($3.5 million) will have to be considered in the final decision.

3. Minimization of Harm

More specific mitigation plans should be presented in the final statement, especially with regard to the various alternatives. Each alternative alignment should include specific mitigating measures necessary to retain visual, aesthetic and natural integrity of the area.

We believe that the discussion on page 32 under "Esthetic Impacts" beginning with "as stated by the State Historical Society..." should be inserted under the "Minimization of Harm" section. Page 32 also includes the statement "The construction of this proposed interstate facility will not directly impact or affect any parks, historic or cultural sites, or landmarks." However, necessary documentation of cultural resources is lacking.

In addition, we noted the following comment on page 32: "Through knowledgeable contacts in the archeological field, the Colorado Division of Highways will determine whether or not a survey of the area would be advisable." However, the letter from the State Historical Society of Colorado on page 118 recommends that an archeological survey be conducted. Therefore, we suggest that the Acting State Archeologist, Dr. James Hester, Department of Anthropology, University of Colorado, Boulder, Colorado 80304, be consulted with regard to details leading to a comprehensive archeological survey of the project area. This survey should be conducted subsequent to corridor selection but prior to any construction work. Details relating to appropriate follow-up for any necessary preservation or mitigation that may be recommended as a result of such work should be presented in the final environmental statement.

Since Federal lands will be involved, the statement should indicate measures that have been taken to inventory cultural resources within the area under consideration in compliance with Section 2(a) of Executive Order 11593, Protection and Enhancement of the Cultural Environment.

The statement should further reflect procedures to be followed should previously unknown archeological resources be encountered during project development. This will require the cessation of all work until previously unknown archeological or paleontological resources are professionally examined, evaluated, and recorded.

We note that the draft sections (p. 62) "the development of river-oriented rest areas and construction of a separate fishing and recreational trail through DeBeque Canyon will be mitigative measures..." The "Minimization of Harm" section should also include this type of statement along with more details such as specific location of these areas and facilities to be provided.

Gravel mining should take place outside of the channel and within the flood plain. Extreme care should be taken by the contractors to insure that habitat for the rare species of fish found in this area is not further degraded by gravel mining in the river and removal of islands and sandbars. Contract stipulations to this effect should preclude removal of gravel from the river. These should be included in the final statement. With adequate depth and inflow to prevent winterkill, the gravel pits can provide fishing ponds along the interstate. Public access should also be assured to these areas.

Sincerely,

[Signature]

Special Assistant to the Secretary

CC: Federal Highway Administration, Region 8, Denver, Colorado
Federal Highway Administration, Division Engineer, Denver, Colorado
THE STATE HISTORICAL SOCIETY OF COLORADO
Colorado State Museum, 200 Fourteenth Avenue, Denver 80203
October 11, 1974

Mr. Harvey Atchison
State Department of Highways
4201 East Arkansas Avenue
Denver, Colorado 80222

RE: Draft Environmental Statement for Project I 70-1(19)
and (36), DeBeque-Grand Valley

Dear Mr. Atchison:

We have currently on file your project proposal and letter of transmission dated August 12, 1974. Our review of the project as described has raised a few questions. These have been summarized and are attached. We would appreciate your attention to the clarification of these matters.

We hope that Dr. James Hester, the State Archaeologist, has received a copy of your report. His comments, in conjunction with ours, will constitute the State Historical Society's final clearance on this project.

We look forward to your reply. Your cooperation and compliance with the various federal preservation laws helps to provide Colorado's future with a past.

Sincerely,

Cynthia Emrick
Preservation Assistant

attachment:

PREPARED BY
Susan Treadway
Environmental Coordinator

cc: Senator Fay DeBerard
Representative Michael L. Strang
Mr. E. N. Haase
Chief Engineer
State Department of Highways
4201 East Arkansas Avenue
Denver, Colorado 80222

Dear Mr. Haase:

Thank you for the opportunity to comment on the draft environmental statement prepared for Highway Projects I-70-1(19) and (36), DeBeque-Grand Valley segment in Colorado.

The statement provides a good overview of alternatives, resource characteristics and socio-economic conditions in the project area. Graphic information provided does much to complement narrative portions of the statement.

In evaluating major east-west transportation routes in the United States, it would appear that when western segments of I-70 are completed, including the Colorado segment, there could be a significant shift in traffic to I-70 from adjacent interstate routes such as I-80. At present, the I-70 route is somewhat undesirable as a commercial vehicle route due to the traffic congestion problem at Vail Pass, congestion at the Straight Creek Tunnel and problems created by the remaining two-lane segments of Highways 6 and 24. It is not clear from our review of the statement that this transfer of traffic loadings from other interstate systems was considered in estimating future traffic volume for I-70 across Colorado. Such refined data would be necessary in the continued development of air pollution abatement strategies for Denver, maintenance of acceptable air quality levels in the Eisenhower Tunnel(s) and evaluating the air quality of Summit County.

As the statement indicates, there will be some noise impact areas, particularly if the highway is routed through or adjacent to the communities of Grand Valley and DeBeque. If such alternatives are selected, careful consideration should be given to design and landscaping of the highway at these points to mitigate, to the extent possible, noise impacts on the cited communities.

On page 69 of the statement it is noted that "Noise from construction equipment can only be controlled through State and Federal laws implemented by the regulating and enforcement authority." Compliance with all applicable laws is essential; however, contract provisions should also be consistent with FHWA guideline documents such as PPM 90-2. We would suggest further that in developing contract provisions and assessing noise impacts associated with the completed project, consideration be given to a 1973 publication entitled "Guidelines For Review of Environmental Impact Statements - Volume 1, Highway Projects." The proper siting of construction camps could mitigate localized noise and dust impacts during the construction phase of the project.

In evaluating the alternatives for Section 4 of the proposed project, it appears that all alternatives presented would be quite disruptive to the community of Grand Valley. We suggest that, perhaps more consideration be given to routings which would completely bypass Grand Valley.

If the highway remains in DeBeque Canyon the added highway capacity provided by the four-lane road and the increased use encouraged by the interstate system itself, (I-70), could increase noise levels in DeBeque Canyon even though overall traffic flow may be more constant. Sound reverberations are a problem within the confines of this restricted canyon and could possibly become more pronounced with the increased traffic loads anticipated with the DeBeque Canyon alternatives. Since rockslides are an existing problem that could be perpetuated with increased construction in the canyon, could the increased noise levels create additional slide problems which weren't fully considered in your alternative or subalternative analyses?

The potential of sediment loading to the Colorado River has been discussed with generalities both as to the amount that can be expected, and what measures can and will be used for prevention and control of the problem. The problems of prevention and control of sediment loading have become very apparent in light of recent problems encountered in the Vail Pass area. Sediments borne by storm runoff from exposed construction areas into nearby watercourses have degraded Gore and West Tenmile Creeks stream quality. Prevention and control of sediment loading in the Vail Pass area has not been adequate. A significant potential for occurrence of the same types of problems exists in the DeBeque-Grand Valley portion of I-70 unless specific measures are undertaken to anticipate sediment runoff from construction activities. It is recognized that soil and rainfall conditions are not the same as those in the Vail Pass area. However, these differences do not reduce the need for detailed analysis and planning for prevention and control measures.

Prevention of sediment loading requires that procedures be designed into appropriate areas and phases of the project and not be left to be handled by emergency type measures. If treatment
facilities such as sedimentation ponds or other treatment facilities are required, these should be planned and designed before construction begins. The project should plan for intense, flash-flood rainstorms. Such storms have been occurring relatively frequently year after year. These cannot be passed off as unusual or unforeseen.

We recognize that many erosion control measures are a standard part of the construction process. However, experience on Vail Pass has pointed out that present control techniques are not always sufficient. The draft impact statement should analyze erosion control needs in detail and specify how such needs will be met.

Water quality monitoring throughout the project area is vital and a necessary mechanism to determine the adequacy of control measures to meet water quality standards. That portion of the Colorado River that could be affected by the proposed project presently has a B3 classification (State Water Quality Standards). It is a requirement that these waters be protected for fishery, secondary contact recreation, and irrigation uses. Monitoring programs for the project should be outlined in detail in the final statement.

Channel encroachment could significantly impair or destroy the habitats of aquatic organisms. In addition, it could affect the capacity of the Colorado River Channel with a potential for localized flooding if encroachment is too severe.

The statement gives appropriate recognition to rare and endangered aquatic life that might be affected by the project. It would be desirable, in cooperation with State and Federal fishery experts to define quite specifically the habitat requirements of rare and endangered species prior to final selection of an alternative plan. In addition, the adequacy of mitigation measures to protect these species should be fully determined.

Completion of I-70 in Colorado, particularly segments closer to Denver will result in more recreation pressures on recreation facilities and resources located west of Denver; however, even with increased traffic volumes the completed four-lane system should alleviate some of the congestion problems which exist today.

The statement has been classified as Category 2 with environmental reservations. Our main concern in regard to air quality relates not necessarily to the subject I-70 developments, but to the possible impacts associated with the completion of all segments of I-70 across Colorado and the effect this completion would have on traffic volumes in sensitive air quality areas in Colorado.
Mr. Richard A. Prosence  
District Engineer  
Colorado Division of Highways  
606 South 9th Street  
Grand Junction, Colorado 81501  

Dear Mr. Prosence:  

The Colorado State Clearinghouse has reviewed the above-referenced Draft Environmental Impact Statement (DES). This letter is to supersede the Clearinghouse letter of October 10, 1974. I appreciate the opportunity to revise our comments after conference with your staff. Our letter of October 10 focused on the need to evaluate the overall, cumulative impacts of the proposed action and its alternatives. It is our understanding that this kind of evaluation is inherent in the transportation systems planning process stipulated in the Colorado Action Plan. It is the recommendation of the Clearinghouse that the proposed project be evaluated through the Action Plan process by presenting the project to the regionwide review team. The Clearinghouse will be pleased to assist you in this evaluation.

The Clearinghouse hopes that the concerns listed below can be addressed through application of the Action Plan. Although the Department of Transportation guidelines referred to below are not applicable to environmental impact statements submitted to the Council on Environmental Quality before September 30, 1974, they will apply to the final environmental impact statement for the project, and the comments below will be applicable to the preparation of the FES.

1. DOT guidelines point out that a "rigorous exploration and objective evaluation of the environmental impacts of all reasonable alternative actions, particularly those that might enhance environmental quality or avoid some or all of the adverse environmental effects, are essential" (39 FR 35243). The discussion of the "Null" or "Do Nothing" Alternative should be expanded in the FES to cover the following points:

   a. The discussion about the environmental impacts of this alternative is limited to suggestions that air pollution will be decreased if the project is implemented (p. 71).

   b. The economic and social costs of this alternative are discussed, but the environmental benefits should also be discussed.

   c. Methods to mitigate the economic and social costs of this alternative should be discussed, as are methods to mitigate the environmental costs of the other alternatives. These methods include lowering speed limits, increasing patrol, erecting a center median, building shoulders and turn-outs, and constructing passing lanes in critical areas.

2. Since the impact of the project would seem to be greatest in DeBeque Canyon, design concepts (p. 33) for the Canyon should have been part of the DES.

3. The significance of hydrocompaction (p. 39) and rockfall studies (p. 40), in the determination of alternatives could be explained.

4. Statements that attempt to minimize the impacts of the project by comparing them to those expected from oil shale development (pp. 15, 27) are not necessary, since the impacts of oil shale development are not known.

I hope these matters can be addressed and resolved in the final impact statement. Incidentally, there are now thirteen (13) planning and management regions in the State (p. 30). Thank you for providing the opportunity to comment on the DES. Please feel free to contact the Clearinghouse if we can assist you in the implementation of the Action Plan to evaluate this project.

Sincerely,

[Signature]

Philip H. Schmuck  
Director, State Clearinghouse  
PHS/JO/vt  
cc: See Attachment

* All page references are to the DES.
Mr. Charles E. Shumate
Executive Director
State Department of Highways
c/o R. A. Prosence, District Engineer
Post Office Box 2107
606 South 9th
Grand Junction, Colorado 81501

Dear Mr. Shumate:

It has been brought to my attention that a number of my constituents, representing a variety of interests, have testified at a public hearing in favor of the construction of an interchange at the so-called Una Crossing on Interstate 70 between Rifle and DeBeque Canyon.

I understand comments were to have been received by October 17th and I apologize for being tardy. However, because I have been travelling almost constantly, the information did not catch up with me until a very recent date.

While I am not prepared to make a judgment on this request, I do have confidence in a number of those who support the construction of such an interchange, and I urge you to give it every consideration, as you prepare your final environmental impact statement. The Una Crossing interchange has been pictured as being important to any potential oil shale development, and it seems to me it would be prudent to include in your planning all the possibilities that oil shale development would entail.

Sincerely,

James P. Johnson
Member of Congress

Letter No. 5
Office Address:
518 Cannon Building
Washington, D.C. 20515
(202) 225-0676

DataContract:
Federal Building
Fort Collins, Colorado 80525
(303) 493-2136

Personal:
Grand Junction, Colorado 81501
(970) 244-1726

Room 230 Main St.
Fort Morgan, Colorado 80701
(970) 547-8099

715 Grand Avenue
Glenwood Springs, Colorado 81601
(303) 645-6482

Utah State Department of Highways
State Office Building
Salt Lake City, Utah 84114

Mr. E. N. Haase, Chief Engineer
Colorado Division of Highways
4201 East Arkansas
Denver, Colorado 80222

Dear Mr. Haase:

Your Division should be commended on the fine work done on DeBeque to Grand Valley Draft Environmental Impact Statement. I would appreciate receiving a copy of this EIS for use in preparation of EIS's.

Thank you for your help and cooperation.

Sincerely,

Randall S. Isham
Wildlife Biologist
Environmental Section
Room 408, State Office Building

RSIsham/Lt

"safe today – alive tomorrow"
Comment No. 1-a: "The maps provide an excellent basis for total project orientation; however, they are somewhat difficult to read for purposes of specific alternatives. If the maps were divided by sections of the highway, the alternatives would be more easily understood and evaluated."

Answer: Because of the total length of this project (37 miles), the Division divided the project into five separate sections and provided a "clean" base map with nothing but the alternatives within each section on it - The Alternatives Map, Chapter 5, Figure 13. This was intended for clarity in reviewing the alternatives proposed in this 37 mile project. In this document, gravel sources and the recommended alignments have been added to Figure 13 for clarity.

Comment No. 1-b: "Nearly all alternatives considered in the draft environmental statement will require right-of-way across BLM managed national resource lands. The draft statement should recognize that issuance of a right-of-way permit by the Bureau of Land Management is a Federal action which is required prior to beginning project construction. The statement to this effect should be included in the description of proposed Federal actions, probably in the 'Introduction.'"

Answer: The construction of the recommended alignment for this 37 mile interstate will involve approximately 50 acres of BLM land. Your comment has been included in the discussion on page 7.

Comment No. 1-c: "In discussing social impacts which would extend into other communities in Mesa and Garfield Counties, the draft states (page 10) that 'Provisions have been made through land use planning and land acquisition for facilities to accommodate growth.' The expression of these 'provisions' should be included in the Final Statement to assure that the secondary impacts occurring to Grand Junction and similar surrounding areas are recognized and adequately mitigated."

Letter No. 1
U.S. Department of the Interior
October 8, 1974

Answer: The Division contacted the Grand Junction Planning Commission which originated the statement in 1971 to ask for clarification of this statement. The planning office stated that Grand Junction is planning for and working toward a population of 100,000 by 1980. They are planning the expansion of public utilities and facilities (gas, water, sewer, power, etc.) and zoning for commercial, residential, and industrial growth and development to handle this forecasted population increase. They will be prepared for increased growth which could be associated with future oil shale and energy development in western Colorado.

Comment No. 1-d: "The Statement should recognize that a streamflow gauging station exists on the Colorado River near Cameo (09 09500) and that this gauge could possibly be impacted by the project. The station is not provided with access from the proposed interstate. We understand that the Highway Department has plans to relocate this gauge; however, the Final Statement should confirm these plans. If no reasonable alternative for the location of this gauge can be found, it may have to be removed after discussion with the cooperating, the Colorado Water Conservation Board."

Answer: The Division again contacted the USGS who in turn contacted their cooperator, the Colorado State Water Engineer, and have agreed to relocate the gauging station to another suitable location, possibly just outside of the confines of DeBeque Canyon to the east. After the Division receives location approval and design approval, and prior to any construction, utilities will become actively involved on this project. As a matter of record, this gauging station will have to be relocated, but no matter where or when this gauging station is relocated, the Division will provide access to the facility. Note Chapter 2, page 7.
Comment No. 1-e: "The Statement should recognize that the construction of the Una Reservoir would necessitate the relocation of approximately six miles of Interstate 70 (presently U.S. 6 and 24) as all the alternatives for Sections 2 and 3 would travel through portions of the Una Reservoir basin."

Answer: Due to the high water line, if Una Reservoir is ever constructed, it will necessitate the relocation of small segments of Interstate 70 or a raising of the roadbed grades. The Division has designed the recommended interstate alternate for the Paradise Reservoir high water elevation of 5030 feet. At this time, the Division cannot justify the additional construction costs associated in realignment of the interstate highway in Sections 2 and 3 merely on the chance of some possible future reservoir construction, especially since both reservoirs (Paradise and Una) impound water over the same area. Therefore conflict, and both proposals have been in the preliminary stage for many years (10). Note discussion on page 16.

Comment No. 1-f: "On page 17, the statement mentions that the Bureau of Reclamation's Una Dam proposal includes a recreational-residential development. While the project's purposes include development of municipal and industrial water along with the generation of hydroelectric power, there are no plans for a recreational-residential development. The discussion on page 17 should be revised to reflect this fact."

Answer: The discussion concerning Una Reservoir has been revised to reflect this information. Note page 16.

Comment No. 1-g: "A part of Section 3, commencing on page 36, is titled 'Geological Impacts.' Some aspects of the local geology are discussed and some restrictions imposed on the project by the geology are mentioned, but there is no mention of any project impacts on the geology of the area. We note this section also mentions potential gravel sources for the project; however, the impacts of this project on the sand and gravel resources of the area should be described."

Answer: It is hard to conceive what was meant by your comment of what the project impacts on the geology of the area would be. The Statement explains present geology of the area, plus depicting problems which would be encountered by the Division such as roadbed stabilization, hydrocompaction, soil erosion, and falling rock within De-Beque Canyon. The real crux of the situation is that if the Division does not consider geology of the area, the question would become what impact would the geology of the area have on this project from such things as falling rock, crossing active landslides, poor soils which have to be properly stabilized, etc. Therefore, we refer you to the discussion on pages 34 and 35.

The construction of this project will require approximately two million cubic yards of sand and gravel for roadbed stabilization and surfacing materials. Note discussions on pages 35 and 36.

Comment No. 1-h: "Garfield and Mesa Counties produce uranium, vanadium, natural gas, natural gas liquids, coal, stone, sand, gravel, and pumice. Significant quantities of coal occur in the Mt. Garfield Formation which crops out in the project area. These resources have been overlooked in the 'Earth Resource Impacts' portion of the environmental statement. This portion discussed only the potential impacts of the proposed project on vegetation and wildlife; there is no mention of any mineral resources, no discussion of important water resources, and no discussion of project impacts on these resources."

Answer: These resources have not been "overlooked" in this Statement as references to development were made by using the terminology "oil shale and other energy related developments in western Colorado." This project will have no direct impact on any mineral resources mentioned above with the exception of stone, sand, and gravel. These
are covered under more specific sections of the Statement. Note sand and gravel discussion on page 35 and water quality discussions on pages 31 and 32. As stated in the Statement, page 1, the construction of this section of interstate freeway will provide a more efficient, safer, and faster means of moving goods and services, including minerals, to their respective markets. The Division does not plan to utilize or develop important water resources within the project limits, but will implement measures to prevent adverse sedimentation problems within existing water courses. Note Chapter 3, pages 31 and 32, and Chapter 9, page 140.

Comment No. 1-i: "The Statement should recognize that gravel mining, removal of islands and sandbars will destroy the spawning and resting areas of fish in this area. It should also indicate that the project area lies within the range of two endangered species of fish, the Colorado River Squawfish and the humpback Chub. The humpback sucker and the bonytail chub, while not on the endangered list at this time, are also very rare."

Answer: Rare and endangered fish species received extensive coverage in both the Draft Environmental Impact Statement (pages 62 - 65) and this Final Environmental Impact Statement (pages 45 - 46). The Division will not mine gravel from within the actual Colorado River channel, but will mine gravel from the floodplain areas as depicted in Figure 13 and discussed on pages 35 and 36.

Comment No. 1-j: "Other significant environmental features which should be included in the report are transmission lines, pipelines, and railroads. The impact of the proposed I 70 alternatives on these facilities must be considered in the total planning process."

Answer: These facilities have been included in the total planning process and were discussed in the Draft EIS on page 7. Until the Division receives location and design approval, it would be impractical to discuss specific impacts on these facilities, especially in a Draft Statement. Because we are recommending specific alignments in the Final Environmental Impact Statement, we can get more specific as it relates to impacts on these specific utilities. Construction of the interstate facility in DeBeque Canyon will require some relocations of Public Service transmission lines. These areas can be noted on Illustrations 1-16. The only pipeline affected will be Western Slope Gas's natural gas pipeline which crosses the proposed interstate alignment just east of DeBeque. A railroad overpass east of DeBeque will be designed utilizing input from the Denver and Rio Grande Western Railroad. During the final design phase of this project, each utility owner will be directly contacted for input and recommendations on relocating portions of their facilities. This will be done when all necessary authorizations are received and preliminary interstate roadway plans have been prepared.

Comment No. 1-k: "The statement mentions the Denver and Rio Grande Western Railroad and discusses the present services provided; however, it does not indicate what impact, if any, the new roadway will have on the existing railroad, where crossings will be required, or if the railroad alignment will be affected."

Answer: Construction of the proposed interstate will require only one crossing of the Denver and Rio Grande Western Railroad, just east of DeBeque, where an overpass will be constructed. No interruption of rail traffic will be required or allowed. Details of bridge designs will be reviewed and approved by railroad officials prior to start of construction.
Comment No. 1-1: "Since all properties on the National Register of Historic Places are published in the Federal Register, the Final Statement should reflect consultation with the issue for February 19, 1974, and all subsequent monthly supplements. The Statement should also establish whether a proposed project will have an effect upon a National Register listing. Where this is found to be the case, the Statement should reflect compliance with Section 106 of the National Historic Preservation Act of 1966 (Public Law 89-665) and Executive Order 11593."

Answer: The Division maintains continuous contact with the Colorado State Historical Society as well as the Environmental Division in Denver continuously checking the National Register listings and supplements. Documentation within this Final EIS from the State Historical Society (page 147) and the Office of State Archaeologist (page 148), states there are no National Register listings within this proposed project limits. The Office of State Archaeologist lists one site for possible inclusion to the National Register. In the Bureau of Land Management's attempt to reconstruct the Dominguez - Escalante Trail, a site has been discovered near the Una Bridge, south of the Colorado River. The Division is recommending an alignment as far to the north as possible in this particular area (note Figure 21) in order to miss platted subdivisions and industrial parks in this area. Therefore, the Division's recommended interstate alignment in this area will not affect this potential site.

Comment No. 1-2: "The Final Environmental Statement should also reflect consultation with the State Historic Preservation Officer, Mr. Stephen H. Hart, Chairman, State Historical Society, Colorado State Museum, 200 Fourteenth Avenue, Denver, Colorado 80203, with respect to cultural values in the project area (including borrow and fill areas) which may be eligible for inclusion in the National Register and include a copy of his letter of comment."

Answer: Mr. Stephen H. Hart receives copies of all correspondence and Environmental Impact Statements circulated by the Division. This District has yet to receive any correspondence from Mr. Stephen Hart. It is our understanding that Ms. Cynthia Emrick and Mr. Stephen Hartman are Mr. Hart's representatives, and his letters are always answered through the Colorado State Historical Society. However, to comply with this comment request, a letter was prepared on October 10, 1974, and sent directly to Mr. Stephen H. Hart (note page 148). No response was ever received to this request. Therefore, please refer to pages 147 and 148 which are letters from the State Historical Society and Office of State Archaeologist. The Division is presently continuing activity with BLM and the Office of State Archaeologist relating to significance and mitigative measure recommendations for nine small archaeological sites in the interstate corridor.

Comment No. 1-3: "The discussion of the 'No Action' alternative and its impacts considers only the adverse effects which could result if the project were not implemented. Beneficial impacts (i.e., no loss of farmland acreage in right of way, no relocations, no disruption to wildlife, etc.) occurring from this alternative should also be discussed in the final statement."

Answer: The "Null" or "Do Nothing" Alternative has been expanded to include the suggested topics. Note page 52.

Comment No. 1-4: "Since there are several alternative corridors proposed for the alignment of the highway, we wish to point out those which would be most favorable to the fish and wildlife interests and related responsibilities of this Department.

"Section I is seven miles long and largely confined to the narrow reaches of DeBeque Canyon. Alternate 1-A and 1-B are similar with the exception that 1-B has more
encroachment into the Colorado River with a reduction in cost of about $8.3 million (12% less). We believe that if channel changes are kept to an absolute minimum, corridor 1-E with the tunnel would be acceptable."

Answer: Refer to section on Alternates, pages 54 - 56.

Comment No. 1-p: "Alternate 1-F should be given more attention than it has received, as construction on the north side of the Colorado River in Section 1 would not be necessary, and river crossings would not be necessary. The major stream encroachment occurring under 1-F should be compared quantitively to other alternatives."

Answer: Refer to section on Alternates, pages 57 and 58.

Comment No. 1-q: "Alternate 2-A appears to offer the least damage to wildlife resources. While 2-B would avoid some encroachment into the Colorado River, it would destroy some critical deer winter range, increase deer auto accidents and encroach on the blue heron rookery. The only place we would suggest deviating from 2-A would be in the east part of this section where 2-E is slightly south of 2-A. In this area, 2-E follows the existing alignment of U.S. 6 and would be less damaging to wildlife. We strongly urge that Alternate 2-C be rejected due to the severe detrimental impact on artificial big game winter habitat, higher construction costs, added length and steep grades required in this alternative."

Answer: Refer to "Alternates" page 58.

Comment No. 1-r: "The alignment for Alternative III-A would be most favorable in Section III due to the subdivision development at Una Junction."

Answer: Refer to "Alternates" pages 61 and 62.

Comments No. 1-s: "Alternative IV-C would follow the existing alignment through Grand Valley and therefore would be less damaging to wildlife. However, the cost of relocating the telephone facility ($3.5 million) will have to be considered in the final decision."

Answer: Refer to "Alternates" page 62.

Comment No. 1-t: "More specific mitigation plans should be presented in the Final Statement, especially with regard to the various alternatives. Each alternative alignment should include specific mitigating measures necessary to retain visual, aesthetic, and natural integrity of the area."

Answer: Until a location is approved and a specific alternative is recommended, this would be a misdirected waste of time, money, and effort. Until a specific corridor is chosen, and an alignment is recommended, the Division feels there are more severe constraints placed on the alignments simply retaining "visual, aesthetic, and natural integrity of the area." However, these considerations begin to weigh heavily during the design phases of proposed highway projects. It is redundant and wasteful to get into proposing mitigative measures for corridors and alignments in which no construction activity will be undertaken. In Chapters 3, 5, and 9, these subjects have been expanded and relate specifically to the recommended alignments and alternatives.

Comment No. 1-u: "We believe that the discussion on page 38 under 'Esthetic Impacts' beginning with 'as stated by the State Historical Society . . .' should be inserted under the 'Minimization of Harm' section. Page 38 also includes the statement, 'The construction of this proposed interstate facility will not directly impact or affect any parks, historic or cultural sites, or landmarks.' However, necessary documentation of cultural resources is lacking."

Answer: This is an opinion with which we do not entirely agree, so we have included it in both places.
Contained within this report is correspondence from the State Historical Society which has legal responsibility to comment on historic and cultural resources. On October 14, 1974, the Division mailed correspondence directly to Mr. Stephen Hart, State Preservation Officer, but did not receive return response. It was subsequently learned through the Historical Society that they make responses for Mr. Hart in almost all situations where no impact on historical or cultural resources is anticipated.

Comment No. 1-v: "In addition, we noted the following comment on page 32, 'Through knowledgeable contacts in the archaeological field, the Colorado Division of Highways will determine whether or not a survey of the area would be advisable.' However, the letter from the State Historical Society of Colorado on page 118 recommends that an archaeological survey be conducted. Therefore, we suggest that the Acting State Archaeologist, Dr. James Hester, Department of Anthropology, University of Colorado, Boulder, Colorado 80304, be consulted with regard to details leading to a comprehensive archaeological survey of the project area. This survey should be conducted subsequent to corridor selection, but prior to any construction work. Details relating to appropriate followup for any necessary preservation or mitigation that may be recommended as a result of such work should be presented in the final environmental statement."

Answer: Subsequent to preparation and circulation of the Draft EIS, the Colorado Division of Highways contracted the Office of State Archaeologist to conduct a field survey of the 37 mile proposed interstate corridor. Note discussion on pages 28 and 29 and a summary of this report is on page 148. It reflects the location of no significant archaeological sites within the 3½ mile corridor, with one exception. There is the possibility that the Dominguez - Escalante Trail crossed the Colorado River in the vicinity of Una. The crossing site is located south of the Colorado River just west of the Una Bridge. Alternatives recommended by the Division in this particular area are located north in order to bypass platted industrial parks and subdivisions in the area. Note Figure 21. Therefore, the proposed interstate will have no significant impact on this potential National Register listing.

Comment No. 1-w: "Since Federal lands will be involved, the Statement should indicate measures that have been taken to inventory cultural resources within the area under consideration in compliance with Section 3(a) of Executive Order 11593, Protection and Enhancement of the Cultural Environment."

Answer: Throughout the development of this project, the Division has on several occasions directly involved or been directly involved with the Bureau of Land Management who administers the public land on this highway project. We have asked their professional expertise on social, cultural, and archaeological resources in this area. In addition, the Division contacted the State Historical Society, State Preservation Officer, and Office of State Archaeologist for their expertise in assessing their legislative responsibilities. No response was received from Mr. Stephen H. Hart, but it was subsequently learned that people within the Historical Society have been assigned to address cultural resources. Therefore, the letter from Ms. Cynthia Emrick is our historic and cultural clearance for this proposed project. (Note page 118.)

Comment No. 1-x: "The Statement should further reflect procedures to be followed should previously unknown archaeological resources be encountered during project development. This will require the cessation of all work until previously unknown archaeological or paleontological resources are professionally examined, evaluated, and recorded."

Answer: The Division has a working Memorandum of Agreement with the Office of State Archaeologist for unknown archaeological or paleontological finds during
construction. When a find is made during construction, work will stop in the area of the find, and the Office of State Archaeologist will be notified. He in turn will immediately come to the site for examination, evaluation and recording. If the site is significant, an agreement for excavation and/or salvage will be drawn up for execution, and the site will be salvaged by competent archaeologists for the state at Division of Highways expense.

Comment No. 1-y:
"We note that the draft mentions (page 62) 'The development of river-oriented rest areas and construction of a separate fishing and recreational trail through DeBeque Canyon will be mitigative measures ...' The 'Minimization of Harm' section should also include this type of statement along with more details such as specific location of these areas and facilities to be provided."

Answer: At the time of the circulation of the Draft Environmental Impact Statement, the corridor and alignments have not been selected or recommended. Therefore, the specifics of the above-mentioned facilities have not been elaborated on because sites are available with one alternative but not with another. However, the Division is recommending a specific alignment and we can now address the rest areas and recreation trail in more detail as it relates to this recommended alignment. A rest area for eastbound traffic will be provided in DeBeque Canyon in the Beavertail area. (Note Figure 13.) A rest area for westbound traffic will be provided at the east end of DeBeque Canyon where Alternate 2-B deviates from the 2-A alignment, if arrangements can be made with the Bureau of Land Management, owner of a 40 acre tract of land north of the Colorado River. (Note Figure 13.) A combination bicycle-recreational trail will be constructed throughout the Canyon adjacent to the Colorado River. (Note Illustrations 1-16.) Also, note discussion on pages 27-29 and additions to Chapter 3, Minimization of Harm.

Comment No. 1-2:
"Gravel mining should take place outside of the channel and within the floodplain. Extreme care should be taken by the contractors to ensure that habitat for the rare species of fish found in this area is not further degraded by gravel mining in the river and removal of islands and sandbars. Contract stipulations to this effect should preclude removal of gravel from the river. These should be included in the final statement. With adequate depth and inflow to prevent winterkill, the gravel pits can provide fishing ponds along the interstate. Public access should also be assured to these areas."

Answer: The Division has carefully laid plans for gravel excavation on this proposed 37 mile project. No gravel will be excavated from the channel of the Colorado River. Gravel pit excavation areas will be in the floodplain as outlined in Figure 13 and discussion on pages 35 and 36. This District will recommend contract stipulations which will preclude gravel excavation in the channel and removal of islands and sandbars. The Division will work closely with the Colorado Division of Wildlife in establishing fishing ponds in gravel excavation areas and follow their recommendations where practical.
Comment No. 2-a: "A site was found which seems to indicate that the Dominguez-Escalante expedition crossed the Colorado River near the Una Bridge. It is approximately 200 meters west of the bridge on the south bank of the Colorado River. The site is listed on the State Inventory and should be considered for nomination to the National Register."

Answer: As a result of the Office of State Archaeologist and Historical Society comments, this subject has been addressed in this Final Statement on pages 28 and 29. This potential National Register listing will in no way be affected by the proposed interstate construction in the Una area. The recommended alternate in Section 3 is 3-A which is north of the Colorado River on the northern edge of the Colorado River Valley. (Note Figure 13.) However, proper procedures to meet legal responsibilities and the President's Executive Order have been initiated by the Division.

Comment No. 4-a: "In evaluating major east-west transportation routes in the United States, it would appear that when western segments of I 70 are completed, including the Colorado segment, there could be a significant shift in traffic to I 70 from adjacent interstate routes such as I 80. At present, the I 70 route is somewhat undesirable as a commercial vehicle route due to the traffic congestion problem at Vail Pass, congestion at the Straight Creek Tunnel and problems created by the remaining two-lane segments of Highways 6 and 24. It is not clear from our review of the statement that this transfer of traffic loadings from other interstate systems was considered in estimating future traffic volume for I 70 across Colorado. Such refined data would be necessary in the continued development of air pollution control strategies for Denver, maintenance of acceptable air quality levels in the Eisenhower Tunnel(s) and evaluating the air quality of Summit County."

Answer: Traffic projections are assembled by the Planning and Research Division, Traffic Investigation Section in Denver, and take into account the most recent information possible in estimating future projections. In discussing this with Planning and Research, it was the general consensus that I 70 would never draw large numbers of Interstate travelers from I 80 because of significant problems experienced in crossing a considerable amount of mountainous terrain (Georgetown to Eagle) along Interstate 70, especially during the winter months. Even expanded traffic volumes on this section of I 70 are relatively low. The improved facility will be relatively unloaded, capable of carrying much higher volumes without congestion. Smooth flowing traffic should contribute insignificant amounts of pollution especially with improved vehicular emission standards.

Comment No. 3-a: "As the statement indicates, there will be some noise impact areas, particularly if the highway is routed through or adjacent to the communities..."
of Grand Valley and DeBeque. If such alternatives are selected, careful consideration should be given to design and landscaping of the highway at these points to mitigate, to the extent possible, noise impacts on the cited communities.

Answer: As a result of this comment and the Division's awareness of a potential noise problem in the Grand Valley area, we have extensively evaluated this situation. As a result, we are recommending the construction of a noise barrier between Grand Valley and the Interstate. Note pages 63 and 64 and Figure 22. This noise structure will not only mitigate highway generated noise, but will significantly reduce noise generated by the Denver and Rio Grande Western Railroad. This will definitely enhance the living environment of Grand Valley.

Comment No. 3-c: "On page 69 of the Statement, it is noted that 'Noise from construction equipment can only be controlled through State and Federal law implemented by the regulating and enforcement authority.' Compliance with all applicable laws is essential; however, contract provisions should also be consistent with FHWA guideline document such as PPM 90-2. We would suggest further that in developing contract provisions and assessing noise impacts associated with the completed project, consideration be given to a 1973 publication entitled 'Guidelines for Review of Environmental Impact Statements - Volume 1, Highway Projects.' The proper siting of construction camps could mitigate localized noise and dust impacts during the construction phase of the project."

Answer: Contract guidelines and special provisions are established from and are consistent with FHWA guidelines in PPM 90-2. The actual siting of construction camps is presently left up to the contractor so that they are convenient to and support his construction effort. The Division views potential haul roads as much more of a problem for dust and noise than the actual construction camps. Special provisions require mitigative measures on haul roads to control fugitive dust through wetting and/or priming. In this remote area of western Colorado, noise will not be a factor unless construction is near Grand Valley. In this particular case, the Division will incorporate measures to minimize this short-term construction impact, as well as mitigate future highway and railroad generated noise.

Comment No. 3-d: "In evaluating the alternatives for Section 4 of the proposed project, it appears that all alternatives presented would be quite disruptive to the community of Grand Valley. We suggest that perhaps more consideration be given to routings which would completely bypass Grand Valley."

Answer: Refer to chapter on alternatives, pages 62 - 66.

Comment No. 3-e: "If the highway remains in DeBeque Canyon, the added highway capacity provided by the four-lane road and the increased use encouraged by the interstate system itself, I-70, could increase noise levels in DeBeque Canyon even though overall traffic flow may be more constant. Sound reverberations are a problem within the confines of this restricted canyon and would possibly become more pronounced with the increased traffic loads anticipated with the DeBeque Canyon alternatives. Since rock slides are an existing problem that could be perpetuated with increased construction in the canyon, could the increased noise levels create additional slide problems which weren't fully considered in your alternative or subalternative analyses?"

Answer: This question was referred to the District Geologist and the District Materials Section and it was their professional opinion that it would not increase the potential for rock slides in the canyon. This professional opinion was based on considerable knowledge of the area, type formations, structure of rock formations, type rock cuts proposed, and other pertinent information. Minor rock fall would be possible, but the possibility of a major rockslide triggered by sound is exceedingly remote.
Letter No. 3
United States Environmental Protection Agency
October 22, 1974

Comment No. 3-f: "The potential of sediment loading to the Colorado River has been dismissed with generalities both as to the amount that can be expected and what measures can and will be used for prevention and control of the problem. The problems of prevention and control of sediment loading in the Vail Pass area has been adequate. A significant potential for occurrence of the same type of problems exists in the DeBeque-Grand Valley portion of I 70 unless specific measures are undertaken to anticipate sediment runoff from construction activities. It is recognized that soil and rainfall conditions are not the same as those in the Vail Pass area. However, these differences do not reduce the need for detailed analysis and planning for prevention and control measures."

Answer: Subsequent to the printing of the Draft EIS, the State adopted water quality standards for Colorado. The Division has since conducted an extensive water quality analysis for this project. However, it must first be noted that the problems on Vail Pass with water quality cannot be fairly compared with or to this proposed project for the following reasons:

1) Very notable differences in the soil structure and characteristics
2) Notable differences in slope and runoff characteristics
3) Large differences in annual precipitation
4) Significant differences in existing water quality of Colorado River in DeBeque Canyon compared to Gore, Black Gore, and Temmle Creeks near Vail
5) Completely different uses of the water course - Black Gore - domestic, and Colorado River - irrigation
6) Completely different type fishery present at the two locations - trout in Vail area, warm water fish at DeBeque
7) Substantial differences in elevation which affect time involved in revegetation efforts and resulting soil erosion, length of growing season, and potential winterkill of reseeded areas

Letter No. 3
United States Environmental Protection Agency
October 22, 1974

8) Considerable difference in location of the water courses with reference to size watershed drainage basin and source, which in itself affects water quality - in that the further from its source and more land area drained, the poorer the water quality.

After putting the problems into proper perspective, the Division can correctly address water quality of the Colorado River in DeBeque Canyon. As a result, this Division conducted a water quality analysis and have included portions of the analysis in this Final EIS. Note page 163.

Comment No. 3-g: "Prevention of sediment loading requires that procedures be designed into appropriate areas and phases of the project and not be left to be handled by emergency type measures. If treatment facilities such as sedimentation ponds or other treatment facilities are required, these should be planned and designed before construction begins. The project should plan for intense, flashflood rainstorms. Such rainstorms have been occurring relatively frequently year after year. These cannot be passed off as unusual or unforeseen."

Answer: As a result of the analysis performed, recommendations to maintain the existing water quality have been included. Due to the existing water quality of the Colorado River, the measures recommended are not as elaborate as those proposed for the Vail area. Plans for flashflood or emergency situations are also discussed. (Note pages 31 and 32.)

Comment No. 3-h: "We recognize that many erosion control measures are a standard part of the construction process. However, experience on Vail Pass has pointed out that present control techniques are not always sufficient. The draft impact statement should analyze erosion control needs in detail and specify how such needs will be met."
Answer: Refer to answer to Comment No. 3-f. Also, as a result of the water quality analysis, a set of specifications for this project have been prepared and will be included in the standard specs for this proposed project in Sections 1 and 2 so that the contractor will be fully aware of the water quality stipulations associated with this construction project.

Comment No. 3-i: "Water quality monitoring throughout the project area is vital and a necessary mechanism to determine the adequacy of control measures to meet water quality standards. That portion of the Colorado River that could be affected by the proposed project presently has a B2 classification (State Water Quality Standards). It is a requirement that these waters be protected for fishery, secondary contact recreation, and irrigation uses. Monitoring programs for the project should be outlined in detail in the final statement."

Answer: A water quality monitoring program has been proposed and initiated to supplement USGS information available through their Glenwood Springs and Cameo gauging stations and provide preconstruction baseline data as well as construction water quality data. This water quality monitoring program is outlined in detail in the Appendix, Exhibit F.

Comment No. 3-j: "Channel encroachment could significantly impair or destroy the habitat of aquatic organisms. In addition, it could affect the capacity of the Colorado River channel with a potential for localised flooding if encroachment is too severe."

Answer: Colorado River encroachment areas have been specifically pinpointed on Illustrations 1-16. These encroachments have been held to a bare minimum and are only proposed in tight areas where otherwise significant physical and esthetic damage to the canyon walls would be the consequence of not encroaching. Once design has progressed to a point where exact extent of encroachment is known, a detailed hydraulic study will evaluate channel characteristics to ensure that sufficient channel width has been provided. Note the Department of Interior letter (Fish and Wildlife Service), page 115, and the Colorado Division of Wildlife letter, page 78.

Comment No. 3-k: "The statement gives appropriate recognition to rare and endangered aquatic life that might be affected by the project. It would be desirable, in cooperation with State and Federal fishery experts to define quite specifically the habitat requirements of rare and endangered species prior to final selection of an alternative plan. In addition, the adequacy of mitigation measures to protect these species should be fully determined."

Answer: The Colorado Division of Wildlife conducted the Wildlife and Fishery analysis for the Division as noted in the Draft EIS. The Division of Wildlife are the state experts, who in turn coordinate through the Fish and Wildlife Service, the Federal experts. At present, very little is known about these rare or endangered species or the limits of their range or existence and habitat requirements. It is known that they require muddy water, high temperature, shallow or backwater spawning areas, and islands and sandbars. The narrative material presented in the Draft EIS on pages 62 through 64 and Figure 12 were prepared by the Colorado Division of Wildlife Fishery Biologists. Any encroachment areas into the Colorado River will be reviewed prior to construction with Division of Wildlife personnel, and their recommendations concerning river enhancement and river habitat improvement will be followed where practical.
Letter No. 3
United States Environmental Protection Agency
October 22, 1974

Comment No. 3-I: "Completion of I 70 in Colorado, particularly segments closer to Denver, will result in more recreation pressures on recreation facilities and resources located west of Denver; however, even with increased traffic volumes, the completed four-lane system should alleviate some of the congestion problems which exist today."

Answer: This assessment is true.

Comment No. 3-m: "The statement has been classified as Category 2 with environmental reservations. Our main concern in regard to air quality relates not necessarily to the subject I 70 developments, but to the possible impacts associated with the completion of all segments of I 70 across Colorado and the effect this completion would have on traffic volumes in sensitive air quality areas in Colorado."

Answer: Refer to answer to Comment No. 3-a.

Comment No. 3-n: "Water quality impacts could be significant with potential effects on rare and endangered aquatic life."

Answer: Refer to answer to Comment No. 3-j.

Letter No. 4
Colorado Division of Planning
February 6, 1975

Comment No. 4-a: "It is the recommendation of the Clearinghouse that the proposed project be evaluated through the Action Plan process by presenting the project to the region-wide review team. The Clearinghouse will be pleased to assist you in this evaluation."

Answer: The Division is presently working to implement all phases of the Action Plan. However, Phase I, the Systematic Planning Phase (marked as Future on Illustration VII), is the last portion of the Action Plan to be implemented, as it requires affirmative action by the Planning and Management Regional Directors. This District deals with four Planning and Management Regions (10, 11, 12, and 13) and all have a Memorandum of Understanding in effect except Region 11 in which this particular project is located. Therefore, until the preliminary functions of the Planning and Management Region have been evaluated and formulated, the Division cannot proceed with action and activities prescribed in the Action Plan. There presently exists no formulated Regional Review Team (Action Plan) in Planning and Management Region 11. However, the project has been presented individually to the members of this review team as prescribed by the Action Plan, including state and local officials, the Division of Planning, the Colorado West Area Council of Governments, and this District’s Environmental Section. In the future and when the systematic planning phase of the Action Plan (Phase I) is in full operation, a project proposed by the Division would involve the Regional Review Team from the very beginning of a proposed project. The implementation of a new process (Action Plan) to ongoing and old projects (DeBeque - Grand Valley has been in the planning and development stages since 1965) is a very difficult and sometimes impossible situation. The Division has made every attempt to comply with the intent of the Action Plan, even though the complex mechanisms of the Action Plan have not yet been officially formulated or accepted by some Planning and Management Regions.
Comment No. 4-b: "The discussion about the 'Null or Do Nothing' Alternative is limited to suggestions that air pollution will be decreased if the project is implemented (page 71)."

Answer: On page 71 of the Draft EIS, there are some discussion of auto-deer accidents, the accident history of existing U.S. 6, and air pollution. This point was not belabored in the DEIS or FEIS because if the "Do Nothing Alternative" were selected as the course of action of the Division, none of the environmental benefits or adverse impacts associated with this total project would take place. No land would be taken, no vegetation removed, no sedimentation in the Colorado River, no disturbance to wildlife populations, no disturbance to DeBeque Canyon, and no use of natural resources (sand and gravel), no loss resulting from auto accidents, no improvements of auto-deer accident conditions, no chance for a better-looking, well-landscaped highway facility, no increase in highway efficiency for traveling public, no increase in roadway volume capacities, no economic stimulus to the area, no park or recreation (rest) areas, no improvement of esthetic qualities, no habitat improvement.

Comment No. 4-c: "The economic and social costs of the 'Do Nothing' Alternative are discussed, but the environmental benefits should also be discussed."  

Answer: The economic and social benefits are discussed and the environmental benefits of reducing the number of deer-auto accidents are also discussed. The actual environmental benefits of "doing nothing" are few and hard to conceptualize. (Note answer to previous comment.)

Comment No. 4-d: "Methods to mitigate the economic and social costs of this alternative should be discussed, as are methods to mitigate the environmental costs of the other alternatives. These methods include lowering speed limits, increasing patrol, erecting a center median, building shoulders and turnouts, and constructing passing lanes in critical areas."

Answer: The comment implies that the "Do Nothing" alternative should include minimum improvements to the existing highway which is, in fact, "doing something." Since the terrain traversed by the project is relatively flat, except for DeBeque Canyon, enforcement of speed limits of less than the nationally adapted 55 mph maximum would be very difficult. The existing road is driveable comfortably at 60 mph through DeBeque Canyon and at 70 mph outside of DeBeque Canyon. Courts have consistently held that unreasonable speed limits are not enforceable. Even if something could be gained by lowering the speed limit, the courts would, no doubt, hold that any speed limit less than 55 mph is unreasonable. That anything could be gained by further lowering of the speed limit is extremely doubtful.

Increasing enforcement by the state patrol would add to the burden placed on taxpayers supporting that organization. This could only be done by adding personnel to the patrol organization. Doubt exists that in areas of low traffic volumes, significant benefits accrue from increased patrol activity.

A center median cannot be erected on a two-lane highway since passing maneuvers are required, as well as access to accident scenes.

Shoulders and turnouts are generally adequate along the existing highway, making it difficult to see how social and economic costs could be mitigated by adding shoulders or turnouts.

Passing lanes already exist in one area. Capacity would be increased by adding a third lane where passing opportunities are limited or grades cause trucks to slow down and restrict traffic flow. However, construction of long stretches of three-lane highway would be ill advised since those type facilities have gained notoriety as "death strips" in past years. Interstate safety standards demand that opposing
traffic lanes be separated by at least 30 feet or by a nonmountable barrier.

Comment No. 4-e: "Since the impact of the project would seem to be greatest in DeBeque Canyon, design concepts (page 33) for the Canyon should have been part of the DES."

Answer: The Draft EIS is a document which presents all corridors and alternatives in rather general terms to give all interested agencies and individuals a chance to become familiar with the project and draw a general conclusion on the best route to be taken. Until a corridor is agreed on and an alternate is recommended, it would be economically inadvisable to get into design concepts for all corridors and alternates presented. In this document, the Colorado Division of Highways is recommending specific alternatives for construction and have greatly increased detail of design concepts relating to these alternates. DeBeque Canyon received considerable study during the interim period between circulation of the Draft EIS and this document. (Note discussion on pages 53 to 58 and photos and Illustration 1 through 16 in Chapter 5, Section 1.)

Comment No. 4-f: "The significance of hydrocompaction (page 39) and rockfall studies (page 40), in the determination of alternatives could be explained."

Answer: Hydrocompaction and rockfall have been effectively covered in the DEIS and this Final EIS. Both were identified as potential adverse geological conditions which exist in this particular area of western Colorado. These were mentioned in the Geological Investigations to acquaint not only the public, but design engineers within the Division that these two conditions do prevail. In the design phase of this project, there will have to be further studies performed to specifically locate and mitigate these areas through available soils, geological, and design technology. These studies are performed during final design in order to provide data on which decisions can be made. Physically and structurally sound roadways have consistently been constructed by the Division of Highways.

Comment No. 4-g: "Statements that attempt to minimize the impacts of the project by comparing them to those expected from oil shale development (pages 15, 27) are not necessary, since the impacts of oil shale development are not known."

Answer: The Division of Planning may feel these statements are unnecessary, but for this Division to consider total regional planning and future traffic volumes, we feel this comparison is both reasonable and necessary. The statements made on pages 15 and 27 are by well-qualified professional sociologists and economists and are well supported by volumes of studies and reports dealing with oil shale development. The statements are made as a comparison only, as the actual effects (good and bad) attributed to the proposed interstate freeway construction are discussed and evaluated throughout both the DEIS and FEIS. It is our understanding that planning must continually deal with unknowns, uncertainties, and educated guesswork; therefore, oil shale must be addressed in any regional transportation consideration. Most of the 17 companies involved in oil shale development and research are still very active. The Colony group slowed its plans to construct the first commercial oil shale plant on Parachute Creek Plateau until the nation's economy and the national energy policies change. President Ford's announcement in January 1975 in his State of the Union message imposing a significant import tax on foreign oil and supporting a million barrel a day oil shale industry, recent Congressional activity pertaining to the Oil Depletion Allowance, and a fixed price for domestic oil, seem to meet the criteria for commitment and policy change. Therefore, the discussion and comparison concerning oil shale development have not been deleted.
Comment No. 4-h: "Incidentally, there are now thirteen (13) Planning and Management Regions in the State (page 30)."

Answer: This has been corrected (page 26).
minimization of harm

chapter 9

Photo by Leonard Lee Rue III
Implementation of this proposed highway transportation improvement project will require continued care in all phases of this project to minimize all harmful impacts. In many cases, an impact on or to the total environment cannot be completely eliminated, but it can be controlled and minimized. Therefore, the Colorado Division of Highways will concentrate efforts in the following areas:

1) With construction of the recommended alternates for this 37 miles of interstate freeway as described in Chapter 5, there would be approximately 18 homes and trailers and nine businesses relocated. (The exact number will not be known until location and final design approvals are received and roadway right-of-way plans are prepared.) There will be approximately 36 individuals and families displaced, primarily in the town of Grand Valley (31). All persons being affected by this relocation activity will receive full and continued relocation assistance and grant payments for damage and relocation expenses as provided by governing laws and regulations. This assistance will come during the final design phase of this project and after right-of-way authorizations and plans are received but before any construction work begins. A recent preliminary right-of-way study indicates there is not sufficient replacement housing available for replacement. If this condition prevails up to the time of the proposed construction of this project, the Colorado Division of Highways will provide, arrange for, or construct replacement housing under an approved plan. This will insure that all persons displaced as a result of this project will be relocated in safe and sanitary replacement housing prior to construction.

2) Increased siltation in the Colorado River during construction will be a problem; however, this will be largely a temporary condition associated with the actual construction activity. This problem will occur entirely in Section 1 (DeBeque Canyon) and the extreme west end of Section 2 because of the closeness of the Colorado River to the existing highway and the lack of room to provide elaborate control measures. The consideration of water quality was one of the main reasons why this Division is recommending Alternate 1-B rather than Alternate 1-A. A continuous heavy cut of the canyon walls required by Alternate 1-A would have presented a continuous erosion and water quality problem for many years to come. With the recommended Alternate 1-B alignment, there will be a number of areas in DeBeque Canyon which will require encroachment into the Colorado River. These were previously discussed in Chapters 3 and 5 and specifically outlined on Illustrations 1 - 16. Every effort has been made to keep river encroachments to a minimum. Where encroachment is necessary, the contractor will be required to follow the water quality specifications governing this project which will be a part of the special provisions. (Appendix, Exhibit E.) Where physically possible (because of terrain restrictions) he will be required to install facilities such as settling ponds, temporary dikes, dams, or berms to help control and reduce the sediments reaching the Colorado River. These facilities would be constructed on a day to day or hour to hour basis, depending on the need and climatic conditions. Also, the contractor will not be allowed to make continued or unnecessary crossings of the live channel with construction equipment. In encroachment areas and at bridge crossings, the Division will consult with and rely on recommendations from the Colorado Division of Wildlife concerning encroachment problems and minimizing possibilities to those planned and proposed in the special provisions and specifications proposed by the Division.

Once location approval has been received and final design is authorized, there are several design alternatives which are also available to
further limit the amount and impact of encroachment necessary in DeBeque Canyon. The design alternatives include the use of retaining walls in encroachment areas to keep the roadway fill out of the river, using cantilevered bridge structures over the river in encroachment areas, or elevating and terracing lanes.

3) Increased soil erosion problems resulting from newly exposed cut and fill slopes.

To help minimize this erosion situation, all permanent and temporary erosion control devices (i.e. riprap, slope ditch paving, contouring, benching, gabions, cross culverts, slope mattresses, seeding, mulching, etc.) will be installed as soon as possible after construction begins to reduce and control the erosion potential of these newly exposed slopes. Complete measures are being written into the contract provisions to control all potential soil erosion problems.

4) Increased noise, dust, and inconvenience during the construction phase.

These impacts will be minimized through proper traffic regulation (proper placement of flagmen, watering of detour roads and dusty cut slopes, public awareness of construction schedules, keeping stop time for blasting or drilling work to a minimum, etc.) and this Division requiring contractors' compliance with all state and federal regulations and laws regarding air, noise, and water pollution subject to enforcement by regulatory and enforcement agencies and authorities. State and Federal laws pertaining to water, air, and noise have been incorporated into the Standard Specifications and special provisions pertaining to this proposed project. The most significant noise sensitive area which would be affected by this project is in the town of Grand Valley. This Division is proposing the construction of a noise barrier between the town and the interstate to keep noise levels within acceptable limits. (Note pages 30, 63, and 64.)

5) Disturbance to the ecosystems of the area.

This condition will be temporary and largely the result of clearing right of way for placement of the interstate roadway. Only that vegetation which must be removed will be, and the Division field engineers will make sure the contractor stays within right-of-way and/or easement limits. All vegetation outside of construction limits will be preserved. Cut and fill slopes will be benched, rounded, and made irregular, and the right-of-way limits will be landscaped to include topsoiling, seeding, and mulching when and where necessary to induce faster regrowth of these disturbed areas. Disturbed areas will be replanted with native (if seed is available) or adapted species of grasses and shrubs to get the fastest regrowth possible to protect these denuded areas against prolonged weathering and erosion effects.

The Division of Highways has received word from Dr. William Weber of the University of Colorado at Boulder that an endemic plant species is located within the proposed interstate corridor. The species (Phacelia submutica) is a small one or two inch high annual with a very short flowering period in mid May. Its only known locality is on seleniferous clay knolls on the northeast edge of DeBeque, just north of the junction of the old main highway with the new one.

By reviewing the recommended alignment (Figure 13) for the DeBeque area (Section 2), the alignment will not be located in the above mentioned area. Therefore, construction of this interstate freeway will in no way affect or jeopardize the scarce endemic species known to exist in this area.

6) Gravel Excavation

This total project will require approximately two million cubic yards of gravel material for stabilization purposes. To mitigate water quality and
fishery resource damage, all gravel sources will be located out of and away from the live channel of the Colorado River as previously stated. The contractor and/or subcontractor will be required to cover, bury, screen, level, revegetate, or otherwise rehabilitate all gravel borrow areas to minimize any lasting harmful impacts on these areas. If deemed desirable by controlling authorities, these areas can be developed as recreation areas by creating ponds for fish and waterfowl. These ponds should be at least ten feet deep to prevent complete freezing of the pond and winter-killing of the fishery resource. If the ponds are in public ownership, access can be acquired and maintained for public use.

7) Physical and esthetic damage to DeBeque Canyon

Great care and sound judgement will be instituted within the confines of DeBeque Canyon to minimize any unnecessary disturbance of this area. Considerable study and evaluation have gone into the selection of the best feasible alternate alignment (1-8) to minimize necessary rock cuts and river-encroachments. (Note Illustrations 1-16.) Some latest design concepts which were developed for Glenwood Canyon have been proposed for use in DeBeque Canyon to minimize visual impact within the canyon area. Special techniques in cutting and blasting rock cliffs will be utilizing such methods as offset drilling to leave them as natural looking as possible. Then where practical, newly exposed rock faces will be stained with resins to give them the appearance of old rock cliffs. Several design alternatives are also available to limit the encroachment areas and the affect on these areas such as retaining walls, more bridge or elevated structures and cantilevering the highway out over the river. These are decisions which will be incorporated and made during the final design phase of this project. The Division is committed to leaving the DeBeque Canyon area as natural looking as possible by using all available information and technology to minimize both the physical and esthetic damage in the canyon area.

8) Effect on wildlife populations

Implementation of the proposed interstate project will cause some disturbance of wildlife populations as well as some loss of habitat. The disturbance of the wildlife will be largely due to the construction process and increased human activity in the project area. This will largely be a temporary situation lasting until construction has been completed. Wildlife populations are highly mobile and tend to relocate when they feel harassed or uneasy. This is not felt to be entirely adverse by the Division of Wildlife because wildlife communities are often forced to move or relocate because of natural conditions (disease, complete utilization of food within their home range, competition, predators, mining, and other man-inspired projects, etc.). There is an adverse effect associated with taking or removing habitat from use by wildlife. This is most critical when big game (elk, deer) range is taken. This will have to be classed as detrimental and adverse to wildlife. The recommended alternates in Sections 1, 2, 3, 4, and 5 (Figure 13) are along or very near the existing U.S. 6 alignment which will tend to lessen the impact because all of the existing U.S. 6 right of way will be utilized for the interstate freeway construction, thus reducing the total amount of new right of way which would be normally taken.

The Division of Highways will cooperate with and ask for recommendations from the Colorado Division of Wildlife concerning methods to lessen impact on wildlife populations. The Division of Highways will construct deer fencing or underpasses for deer and elk in areas where a definite need is shown, primarily in Section 5, the area east of Grand Valley. Right of way will be seeded and
revegetated with native species (or adapted) where practical to replace some habitat lost as a result of the placement of the interstate roadbed and the construction process. All of the existing U.S. 6 right of way will be utilized to reduce the total amount of new right of way needed and the amount of right of way taken from big game winter range. Impacts to wildlife populations will be held to minimums in all areas and situations possible on this interstate project.

9) Archaeological sites
The Division is presently working with the Bureau of Land Management and the Office of State Archaeologist to determine significance of nine archaeological sites in the Interstate 70 corridor. All but one of the sites have been tentatively classed insignificant, but may require some action on the part of the Division if they will be directly affected by proposed construction. The Bureau of Land Management is determining significance and will recommend mitigative measures for sites on lands administered by them. The Historical Society through the Office of State Archaeologist is making recommendations for the sites on other land. The Division will institute mitigative measures to incorporate these recommendations prior to construction on this project.

10) In Section 2, Alternates 2-A, 2-B, and 2-E would provide the opportunity to acquire scenic river frontage and access for potential use by the public for camping, picnicking, sight-seeing, boating, or fishing. If adjacent frontage and remainder parcels were acquired as a portion of the interstate right of way, with eventual public access allowed for recreational use, there will be a significant beneficial impact. These river areas are also important wildlife habitat which could be acquired and protected from future development. Therefore, it will be initiated whenever possible in this section.

11) Presently, the Division of Highways is planning a rest area at Beavertail for eastbound traffic. We are also recommending the incorporation of Alternate 2-B on the east end of DeBeque Canyon which will allow for the construction of a rest area for westbound traffic on a 40 acre tract of BLM land which is landlocked by lands in private ownership. The design of rest areas will include, where conditions will permit, public boat launching and loading ramps.

12) To maintain existing recreational access within the DeBeque Canyon area, the Division is recommending the construction of a separate bicycle-recreation trail throughout the approximate nine miles of the canyon. This facility would maintain access for a wide range of recreationists, including fishermen.

SUMMATION
It is the policy and practice of the Division to ensure that all standard specifications, operating procedures (M-Standards) special provisions and State and Federal laws are closely adhered to by the contractor or subcontractor to minimize the effect or impact of construction on the natural and human environment.

Considerable evidence exists of the Colorado Division of Highways commitment to reduce the impacts associated with highway construction on the environment. The technique of flattening cut and fill slopes (east of Eagle, west of Grand Junction) encourages better and faster revegetation of the disturbed areas. They have been topsoiled and seeded with native vegetation and presently support heavy vegetative cover. Rock cuts west of Mack were blasted along offset drill hole lines in order to produce a natural appearing columnar type structure face, and then it was stained with resins to produce the appearance of old rock cliffs. Natural appearing ponds have been created.
in many areas, resulting from gravel operations. These provide additional habitat for fish and waterfowl as well as a valuable water resource in the semi-arid portions of western Colorado. The best examples are south of the Loma interchange, in the northeast quadrant of the Wolcott interchange, and just west of Grand Junction.

Presently, extraordinary efforts are underway on Vail Pass construction projects to prevent degradation of water quality in Gore and Tenmile Creeks and the environment in general. Entire cut and fill slopes are being covered with jute mesh after topsoiling and seeding in order to enhance and speed revegetation and prevent unnecessary soil erosion and sedimentation.

Additional evidence of the Division's commitment to environmentally acceptable highways is the recent first place awarded to a western Colorado Interstate 70 project in the Federal Highway Administration annual competition, "Highway and the Environment."
appendix
EXHIBIT A
CHRONOLOGY OF MEETINGS AND EVENTS

September 27, 1965  Project studies authorized (under Project I 70-1(16)51).
January 26, 1966  Route location Study Report for easterly 19 miles issued.
February 9, 1966  Field view of eastern 19 mile segment.
June 1, 1966  Public Hearing in Grand Valley to acquaint residents with proposed project.
October 27, 1966  Field view of westerly 19 miles of project.
December 15, 1966  Public Hearing, DeBeque, Colorado, to describe features of westerly 19 miles of project.
April 10, 1967  Route Location Study Report for westerly 19 mile segment issued.
January 24, 1968  Geological report, Beavertail area, issued.
June 1969  Talbott's thesis covering DeQuake Canyon landslide published.
September 17, 1971  Questionnaire sent to residents of Grand Valley and DeBeque to gain sociological data about project area.
October 1, 1971  Meeting with Colorado State Division of Game and Fish to discuss impact of proposed project on wildlife. Field investigations made.
November 1, 1971  Meeting with Grand Valley Town Board.
December 16, 1971  Public Meeting held in Grand Valley to make area residents aware of project status.
April 12, 1972  Walking field view by FHWA and Division of Highways personnel of preliminary alignment of Project I 70-1(36), Grand Valley - East and West.
October 17, 1972  Field view of possible alternates by Bureau of Land Management, Division of Wildlife, and Division of Highways.
November 29, 1972  Meeting held to acquaint Division of Wildlife with proposed alternate alignments.
February 25, 1973  Beginning of many field trips attended by personnel of the Division of Wildlife and District EDA Unit to gather report data on wildlife and fisheries populations.
April 25, 1973  Preliminary field view of project area by Denver Staff.
May 15, 1973  Meeting sponsored by Division of Wildlife to report on data compiled to date on the Environmental Study.
June 16, 1973  Field Review of proposed project by Division of Highways with several agencies, organizations, and individuals participating, including BLM, EPA, Division of Wildlife, Sierra Club, Audubon Society, PWA, Planning Commissions, etc.
June 26, 1973  Presentation by Division of Wildlife of the Wildlife Analysis Environmental Report material at Division of Highways in Denver.
August 1973 through March 1974  Research and evaluation of all study data and reports and the transformation of this data into a Draft Environmental Impact Statement.
April 12, 1974  Draft Environmental Impact Statement sent to a contract printing firm.
May 13, 1974  Meeting with the newly formed Grand Valley Planning Commission to discuss possible I 70 alternates in the Grand Valley area.
August 8, 1974  Draft Environmental Impact Statement made available to the Council on Environmental Quality and the public.
September 3, 1974  Regularly scheduled Council of Governments meeting in Rifle to review the Draft Environmental Impact Statement.
September 23, 1974  Prehearing display opened in Grand Valley, Colorado.
October 7, 1974  Corridor Public Hearing held at the high school in Grand Valley, Colorado, with approximately 215 people in attendance.
October 17, 1974

Official end of the Corridor Public Hearing comment period.

October 18, 1974

Colorado Division of Highways, District 3, began to answer questions and comments resulting from the circulation of the Draft Environmental Impact Statement and the Corridor Public Hearing.

October 1974 through January 1975

Preparation of the Final Environmental Impact Statement

December 3, 1974

A-95 review of the proposed I 70-1(19)8(36) project was performed by Colorado West Area Council of Governments (Planning and Management Region 11). Project is not in conflict with any COG plans or programs and was unanimously adopted.

December 5, 1974

Meeting held in Denver with FHWA and CDOT personnel to review comments and formulate recommendations.

January 1975

Final Environmental Impact Statement started through internal review process and final review by FHWA.

March 1975

Colorado Division of Highways and FHWA internal review process completed.

April 1975

Final Statement submitted for printing.

December 11, 1974

Mr. Richard A. Prosence, District Engineer
Colorado Division of Highways
606 South 9th St.
Grand Junction, Colorado 81501

RE: Project Notification (A-95)

Project: COLORADO DIVISION OF HIGHWAYS - Draft Environmental Impact Statement
DeBeque-Grand Valley

Dear Mr. Prosence:

This is to advise you that the Colorado West Area Council of Governments at its regular meeting in Rifle on December 3, 1974 reviewed the above referenced project under the provisions of OMB Circular A-95.

The following action was taken: This project does not conflict with any plans or programs of the Council of Governments and was unanimously passed by the Council.

Transmitted herewith is a copy of COG's Project Review.

Sincerely,

John P. Mulligan, Executive Director

xc: Dick Brown
Gene Allen
Larry Schmueser
PROJECT REVIEW
(Under provisions of OMB Circular A-95)

APPLICANT: Colorado Division of Highways
606 South 9th Street
Grand Junction, Colorado 81501

CONTACT: Mr. Richard A. Presence, District Engineer

PROJECT DESCRIPTION: Draft Environmental Impact Statement - De Beque-Grand Valley

The Environmental Impact Statement is for the construction of highway I-70 from the mouth of Plateau Creek through the DeBeque Canyon east to about 4 miles west of Rifle, the end of present construction.

FUNDING INFORMATION: Through normal budgets of Colorado, Highway Department and the U.S. Bureau of Public Roads

FUNDING AGENCY: N.A.

STAFF COMMENTS: This project does not conflict with any plans or programs of the Council of Governments. The preparation of an Environmental Impact Statement is a Federal requirement for projects of this nature. Approval is recommended.

Jack L. Sparks, P.E.
December 2, 1974

THE STATE HISTORICAL SOCIETY OF COLORADO
Colorado State Museum, 200 Fourteenth Avenue, Denver 80203
July 23, 1973

Mr. L. R. Abbott
Environmental Coordinator
State Department of Highways
District Number 3
Post Office Box 2107
Grand Junction, Colorado 81501

Re: Project: Plateau Creek to 4 miles west of Rifle I70 - L(19) and I70 - L(36)

Dear Mr. Abbott,

Our records show no known significant historic or archaeological sites or structures in the area of the above referenced proposed project. However, prehistoric Indians utilized the river valleys (just as we do today) and we recommend that the project include provisions for an archaeological survey of the route and salvage work for any significant sites discovered.

Sincerely,

W. E. Marshall
Executive Director
Dear Harvey,

I have read the highway survey report prepared by John Gooding on the Debeque-Grand Valley project I 70-1(19 & 36). According to that report the costs of mitigation of the various alternate routes is as follows:

<table>
<thead>
<tr>
<th>Section</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-A, 2-B</td>
<td>$4038.63</td>
</tr>
<tr>
<td>1-C</td>
<td>$1273.52</td>
</tr>
<tr>
<td>1-D</td>
<td>$2653.43</td>
</tr>
<tr>
<td>2-A, 2-B</td>
<td>.00</td>
</tr>
<tr>
<td>2-C</td>
<td>$877.50</td>
</tr>
<tr>
<td>2-D</td>
<td>$2651.02</td>
</tr>
</tbody>
</table>

No sites were recorded in sections 3, 4, and 5. Therefore, depending upon which alternate routes are selected, the mitigation costs range from a low of $2761.02 for route C to a high of $4761.02 for route D. Routes A and B would cost $4038.63. I believe these cost estimates to be reasonable. From the perspective of the protection of archaeological resources the alternate requiring the least mitigation is preferred to this office.

Please note that the budgets are computed on a different cost rate for specific tasks to be completed rather than the flat $50. per man day. This change in budgeting represents a considerable saving for the Highway Department.

Sincerely,

James J. Geyer
Acting State Archaeologist

For three weeks in the month of July in 1974 an archaeological reconnaissance was conducted along the proposed routes of Interstate I 70, between Rifle and the confluence of Plateau Creek and the Colorado River. Eleven sites were recorded during the survey, nine of which may be directly affected by the project. One of the nine appears to be a historic site, two show evidence of prehistoric as well as historic use. Two prehistoric sites are petroglyph panels. The remainder of the sites are rock shelters or brief camps. One site located at this Bridge may merit nomination to the National Registry of Historic Places.

John Gooding
Highway Salvage Archaeologist

Mr. Stephen H. Hart
State Historical Preservation Officer
State Historical Society
Colorado State Museum
200 Fourteenth Avenue
Denver, CO 80203

Dear Mr. Hart:

I am writing this letter in direct response to a comment received by this office from the Department of the Interior, Office of the Secretary, on recent circulation of our Draft Environmental Impact Statement for Highway Project I 70-1(19 & 36), Debeque - Grand Valley. The Department of the Interior's main concern is with cultural resources which could possibly be affected by this proposed 37 mile interstate freeway project. I have enclosed the portion of their letter which deals with your response and it seems they want your specific comment on this project.

Therefore, if you would make a cursory review of the copy of the Draft Environmental Impact Statement supplied your office, or the enclosed public hearing handout, and return your comment to this office, it would be greatly appreciated. Your letter of comment will become an official part of the Final Environmental Impact Statement for this project, which is currently being assembled.

Thank you for your time and assistance.

Sincerely,

R. A. Prosece
District Engineer

LRA/Bev

Enclosures (2)

cc: Province - Leonard Atchison
     W. E. Marshall
     LPA
May 13, 1974

Mr. E. N. Haase
Chief Engineer
Division of Highways
4201 East Arkansas Avenue
Denver, Colorado 80222

Dear Mr. Haase:

Attached is a copy of the review of the Air Quality Analysis for the above project.

Your questions or comments are solicited and should be returned to me within five (5) working days.

Sincerely,

[Signature]

Joseph Palomba, Jr., Assistant Director
Division of Air Pollution Control

cc: John Green, EPA
Air Pollution Control Commission
APCD - Colorado Department of Health
Highway Department Projects No.: I 70-1(19) & (36)
Short Form Review: Grand Valley - DeBeque
File No.: 74-02-008
Date: May 13, 1974

Summary of Position and Recommendations:
This general safety and improvement project will have minimal impact on air quality and is in general compliance with the Colorado Air Quality Implementation Plan. Approval of this project is recommended.

Review Criteria
General Compliance with existing formal policies:

1. Complex sources
N/A

2. Construction Regulations - The rules and regulations of the State Highway Department have been approved.

3. Other
N/A

Specific Considerations:

I. Air Quality

A. Meteorology/Ambient Data - The available data and supporting meteorological data show no immediate or projected violation of standards and will produce a minimal impact on the air quality of the area.

B. Topography - Although it can be shown that the restrictive topography of the canyons restrict air pollution dispersion, the predicted ambient air quality differences in alternative highway locations are not significant enough to warrant recommendations for alternative siting.

II. Demography
Avoidance of population concentration
It is not anticipated that this project will induce population growth.

III. Safety and Improvement Considerations
N/A

IV. General Traffic System

A. Limited access
Yes

B. Mean route speed effects
Increased

V. Transportation Systems

A. Transportation Plans
1. RTD
N/A

2. JRPP, UACOG, etc.
N/A

B. Alternative Transportation Modes

Bus and train systems were discussed.

VI. Detailed Recommendations

Recommend initiation of this project.

VII. Additional Information Required:
None

WRgb
TO:  H. R. Atchison  
FROM:  M. A. Kahm  
SUBJECT:  Air Quality Analysis, Project I 70-1(19) & (36)  
Grand Valley - DeBeque

In compliance with PPM 90-7 an air quality analysis has been performed by the Division as part of the location phase study for the above project.

A. Project Description

From Glenwood Springs west, I 70 has been constructed along the Colorado River following the existing route on U. S. 6 (a two lane undivided roadway). In this area I 70 is a four lane facility with at least a thirty foot median. The proposed projects will extend this same type configuration along the river valley starting three miles west of Rifle westward to DeBeque Canyon. In DeBeque Canyon, the road will have a narrow median with median barrier until it connects with existing I 70 at the SH 65 junction near Plateau Creek. The project area is shown on Figure 1.

The only existing developments along the proposed route are Grand Valley, population 270, and DeBeque (approximately 1.5 miles north), population 255. The only other pollution sensitive areas along the proposed route are scattered farms and ranches.

B. Topography

These projects have several different geographical configurations from an air pollution standpoint, therefore, this analysis is broken down into the following:

(1) A wide river valley as in proposed routes 2-A, 3, 4, and 5, with variations only in traffic volume.

(2) A narrow deep valley in DeBeque Canyon, routes 1-A, B, & C.

(3) A mesa top with wide open terrain as in Alternates 1-D and 2-C.

These alternates will be discussed further in the air quality projections sections of this analysis.

C. Meteorology

Part of the meteorological data used for this project was obtained from the Environmental Statement for the Rio Blanco Gas Stimulation project, located 30 miles north of the project area.

Wind direction and speed are probably the most important climatological feature of the project area due to their effect on the dispersing of
highway generated pollutants. The parallel valleys exert a controlling influence on surface winds; the most frequent wind direction is toward the north-northeast, as substantiated by ten months of continuous observations at four sites at and near the stimulation site. Upper air winds observed at Grand Junction, 52 miles to the south, have established that the most frequent wind direction 3000 feet above the surface is toward the northeast or east-northeast, an angle of 30 to 45 degrees from the orientation of the valleys and ridges. The surface wind speed is generally at minimum around sunrise and at maximum in the early afternoon. The direction is influenced by daytime heating, which causes an upslope component, and nighttime cooling, which causes a downslope component. These effects are most pronounced in summer but are only secondary effects in comparison to the channeling induced by topography. These mean winds and diurnal effects are the most likely conditions. On any particular day it is possible for the wind to blow in any direction; however, surface winds toward the NNE are by far the most prevalent.

The Grand Junction observations have been used to calculate atmospheric mixing depths, that is, the depth of vigorous vertical mixing due to convection from afternoon heating. The annual variation is nearly sinusoidal with a minimum average depth of 1100 feet in January and a maximum average of 11,700 feet in June. Substantial day to day variations are likely.

In the gas stimulation report the predominant stability class was reported as Class D approximately 50 percent of the time. The remaining time was reported as Class E 35 percent and Class C 15 percent.

The surface winds parallel to the valley were used in the dispersion calculations.

Below in Figure 1 is a frequency chart for the Rio Blanco project area.

Figure 1

<table>
<thead>
<tr>
<th>FREQUENCIES OF 700 mb (10,000 ft)</th>
<th>WINDS FOR RIO BLANCO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direction Wind</td>
<td>Frequency (%)</td>
</tr>
<tr>
<td>Winds From</td>
<td>N</td>
</tr>
<tr>
<td>Frequency</td>
<td>6.1</td>
</tr>
</tbody>
</table>

D. Air Quality Considerations

1. Existing ambient conditions.

Air samples were taken at various locations along the proposed projects on July 19, 1973. Ten minute samples were collected in Mylar bags and analyzed in the Highway Division instrument van which was set up at the DeBeque maintenance yard approximately one mile east of DeBeque. Background readings were also taken at this location. Samples were analyzed for carbon monoxide, total hydrocarbons, and oxides of nitrogen. A detailed location and analysis of both the sample and background readings are listed in Table 1.

Particulates and oxides of nitrogen are dealt with in this report since there is no reliable data to relate vehicle speed with emissions of oxides of nitrogen or particulates matter. If proposed reductions in vehicle emissions of oxides of nitrogen are met their ambient levels should be lowered to within acceptable limits. Particulates in this area averaged 114 micrograms per cubic meter in 1970, according to Colorado Department of Health records.

2. Future projections

Using the California mixing cell model (PWXMD), air qualities were calculated for the traffic volumes in 1972 and projected traffic volumes for 1993.

Emission factors used for the years 1972 and 1993 as well as the respective traffic volumes are listed in Table 2. Meteorological data used for the project were obtained from the Environmental Statement for the Rio Blanco Gas Stimulation project located 30 miles north of this project area. This data is also shown in Table 2.

Because of varying traffic volumes and terrain types, the projected pollution levels were calculated in the following groups. Alternates 1-A, 1-B, and 1-C were coded as narrow valley 1000 feet wide with a wind parallel to the roadway blowing up the canyon. Alternates 1-D and 2-C were coded as open country with a wind parallel to the roadway because of the prevailing wind direction in this area.

All the other alternates in areas 2, 3, 4 and 5 were coded as a wide river valley (5000') with a wind parallel to the roadway.

Table 3 contains the predicted concentrations of traffic generated carbon monoxide 100 feet from the roadway for the various alternates listed. The calculated values compare reasonably well with the measured values. The concentrations for carbon monoxide are well under the EPA standard of 35 ppm for both the measured and calculated values.
In addition to these average concentrations, the California mixing cell model was used to calculate 1 ppm CO isolines for each of the alternate in Sections 1 and 2. Isolines for Section 1 appear in Figure 5 and 4 and isolines for Section 2 appear in Figure 5. Appropriate topography and the peak 1972 traffic volume was used for these calculations. The same atmospheric conditions were used for each alternate. (Stability Class F, wind 2 mph from the WSW.)

For comparison, the lengths and grades of each alternate were determined and listed on Figures 3, 4 and 5.

Section 1

In DeBeque Canyon (Alternate 1-A and B) the 1 ppm isoline averages 155 feet from the edge of the road on the river side and 95 feet on the uphill side of the road. On Alternate 1-D, in the canyon section along Plateau Creek, the isoline averaged 55 feet on the uphill side of the road and 165 feet on the valley side. On the west half of Alternate 1-D, above the valley, the wind is nearly parallel to the road, and the isoline lies 165 feet from both sides of the road. On the east half of Alternate 1-D, the 1 ppm isoline is 500 feet from the edge of the road on the east, and at the edge of the road on the west.

In DeBeque Canyon, Alternate 1-C, traffic was divided on both sides of the canyon. Here the 1 ppm isoline averages 120 feet on the river side and 60 feet on the uphill side for each lane of travel.

The 1 ppm isolines were also calculated for 1973 peak traffic (1180 veh/hr). These calculations showed that the future 1 ppm isoline would be 30 feet from the edge of the road on both sides for Alternate 1-A and B. On Alternate 1-D in the Canyon section the isolines would be 15 feet from the road on the uphill side and 50 feet from the edge of the road on the valley side. On the west section of 1-D above the valley, the isolines would be 50 feet from the road on both sides, and on the east half the 1 ppm isoline is on the road with concentrations less than 1 ppm east of the highway.

On Alternate 1-C, the 1 ppm isoline is on the roadway for each direction of travel with lower concentrations away from the highway.

Using the emission factors listed on Figure 3 and the 1972 peak traffic volume (420 veh/hr) a comparison of the total CO output shows that there will be 33 percent less CO on Alternate 1-A and B than on 1-D, during a peak hour this is approximately 96,300 grams of CO.

Section 2

In this section the 1 ppm isolines for 1972 on Alternates 2-A, 2-B, 2-D and 2-E are in the side river valley and the average distance is 155 feet from the edge of the road on both sides. On Alternate 2-C the isolines were 155 feet on both sides on the flat west side and almost 175 feet on both sides in the portion north of DeBeque having steep grades, with the average being 163 feet from the edge of the road.

The calculations for 1993 show that in the flat sections for all alternatives the 1 ppm isoline is 30 feet from the edge of both sides of the road, and 50 feet from the edge of the road in the sections having steep grades on Alternate 2-C.

Through Section 2 using 1972 peak traffic, Alternate 2-A has has 25.7 percent less total CO than Alternate 2-C or approximately 93,700 grams of CO during a peak hour using the emission factors listed on Figure 5.

E. Demographic Considerations

The rapid development of the oil shale industry will have a tremendous impact on the growth in this area. Large increases in population are forecasted for the areas around Rifle, Grand Valley, and DeBeque.

Figure 6 shows some of the proposed pipelines, railroad spurs, and other industrial and transportation facilities that are presently being planned to service the oil shale development in northwest Colorado.

One area which should develop first is the Grand Valley area (see Figure 7). A planned community for 3,000-3,500 population is expected to be constructed on the south side of the Colorado River on Battlement Mesa. This community, in addition to the present town of Grand Valley, will gain access to I-70 at an interchange located east of Grand Valley.

A proposal has also been made to construct a road from this interchange up Parachute Creek to provide access to the oil shale operations. The Parachute Creek valley northwest of town is proposed to serve as a staging area for the oil shale industry.

Population projections for the Grand Valley area range from 3,500 to 25,000 within the next 10 to 15 years with the major portion of community development taking place on the south side of the river.

The DeBeque area is also projected for large population and industrial development but because the shale deposits in the Roan Creek area area are not as rich as those north of Grand Valley, the development is not expected to occur as rapidly. At present, detailed residential and industrial locations and projections are not available for this area.

F. Safety Measures, Improvements

The improvement of US 6 to a four lane facility will provide safer and quicker transportation all along the Colorado River Valley.
G. General Traffic System

I-70 will become a limited access highway and will provide faster transportation for vehicles throughout the project area. I-70 will also provide the main system which will connect the towns and cities in this region of Colorado to Grand Junction to the west and Denver to the east. This highway will be the main route for the movement of goods and services throughout the Colorado River Valley in western Colorado.

H. Transportation Systems

At present, mass transportation in this area is limited mainly to thru bus and train service. If the oil shale industry develops as projected, a mass transit (bus) system is being considered to connect cities in this region from Grand Junction to Rifle, and north to Meeker. I-70 would provide an invaluable link connecting the developments on the south side of this region and would undoubtedly be used in this system.

Other bus service in this area under consideration is commuter bus service from the residential areas south of Grand Valley to the industrial area along Parachute Creek when population growth makes such a system feasible.

M. A. KAUM
Planning and Research Engineer

M. R. Atchison
Air Quality Analysis, Project I 70-1(19) & (36)
Grand Valley - DeBeque

Page 6.

On July 19, 1973 air samples were taken along the proposed route of I 70 between Rifle and SH 65 in DeBeque Canyon. The purpose of this analysis is to establish background levels for this area to be compared with predicted pollutant concentrations. The samples were taken at various locations along the proposed route and analyzed in the Colorado Highway Division instrument van. The van was set up at the DeBeque maintenance yard approximately one mile east of DeBeque near the river. Ambient measurements were taken periodically at this location which is about 350 yards west of U. S. 6.

Below are listed the location and analysis of the samples and ambient readings.

<table>
<thead>
<tr>
<th>Sample Number</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>East Horseshoe Canyon Bridge, edge of road.</td>
</tr>
<tr>
<td>2</td>
<td>50 feet east of road at East Horseshoe Canyon Bridge, 10 feet below road.</td>
</tr>
<tr>
<td>3</td>
<td>West shoulder of U. S. 6, first house north of Ashmead Draw.</td>
</tr>
<tr>
<td>4</td>
<td>100 feet east of road on U Road at the intersection with 45 Road.</td>
</tr>
<tr>
<td>5</td>
<td>235 feet east of U. S. 6 on U Road at house trailer.</td>
</tr>
<tr>
<td>6</td>
<td>North shoulder of U. S. 6 at 45.5 Road.</td>
</tr>
<tr>
<td>7</td>
<td>100 feet north of U. S. 6 at 45.5 Road.</td>
</tr>
<tr>
<td>8</td>
<td>Background on east side of river 1/2 mile north of W Road on future alignment of I 70 (Alternate ZA).</td>
</tr>
<tr>
<td>9</td>
<td>North edge of road at Wilcox Street in Grand Valley.</td>
</tr>
<tr>
<td>10</td>
<td>100 feet north of U. S. 6 on Wilcox Street in Grand Valley.</td>
</tr>
<tr>
<td>11</td>
<td>North shoulder of U. S. 6 at Structure G-4-d, west of Grand Valley.</td>
</tr>
<tr>
<td>12</td>
<td>South shoulder of U. S. 6 near Union Carbide plant in Rifle.</td>
</tr>
<tr>
<td>13</td>
<td>West side of Union Carbide plant in Rifle.</td>
</tr>
</tbody>
</table>
Table 1 (continued)
Analysis of Data from I 70-1(19)&(36)
July 19, 1973

<table>
<thead>
<tr>
<th>Sample No.</th>
<th>Time</th>
<th>CO ppm</th>
<th>HC ppm</th>
<th>NO x ppm</th>
<th>NO2 ppm</th>
<th>Veh/10 min. on U, S, 6</th>
<th>Estimated Wind</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>9:22</td>
<td>2</td>
<td>2</td>
<td>.04</td>
<td>.03</td>
<td>48</td>
<td>SSW 2</td>
</tr>
<tr>
<td>2</td>
<td>9:22</td>
<td>1</td>
<td>2</td>
<td>.02</td>
<td>-</td>
<td>48</td>
<td>SSW 2</td>
</tr>
<tr>
<td>3</td>
<td>9:55</td>
<td>3</td>
<td>2</td>
<td>.04</td>
<td>.03</td>
<td>59</td>
<td>SSW 1</td>
</tr>
<tr>
<td>4</td>
<td>10:14</td>
<td>7</td>
<td>2</td>
<td>.02</td>
<td>.01</td>
<td>63</td>
<td>SSW 1</td>
</tr>
<tr>
<td>5</td>
<td>10:14</td>
<td>6</td>
<td>2</td>
<td>.02</td>
<td>.01</td>
<td>63</td>
<td>Calm</td>
</tr>
<tr>
<td>6</td>
<td>11:14</td>
<td>3</td>
<td>1</td>
<td>.06</td>
<td>-</td>
<td>70</td>
<td>Calm</td>
</tr>
<tr>
<td>7</td>
<td>11:14</td>
<td>3</td>
<td>1</td>
<td>.05</td>
<td>-</td>
<td>70</td>
<td>Calm</td>
</tr>
<tr>
<td>8</td>
<td>11:45</td>
<td>1</td>
<td>1</td>
<td>.02</td>
<td>.02</td>
<td>-</td>
<td>SW 2</td>
</tr>
<tr>
<td>9</td>
<td>12:00</td>
<td>1</td>
<td>1</td>
<td>.04</td>
<td>.03+</td>
<td>58</td>
<td>Calm</td>
</tr>
<tr>
<td>10</td>
<td>13:24</td>
<td>1</td>
<td>1</td>
<td>.05</td>
<td>-</td>
<td>58</td>
<td>Calm</td>
</tr>
<tr>
<td>11</td>
<td>14:02</td>
<td>2</td>
<td>2</td>
<td>.04</td>
<td>.04</td>
<td>58</td>
<td>WSW 5</td>
</tr>
<tr>
<td>12</td>
<td>15:11</td>
<td>2</td>
<td>1</td>
<td>.04</td>
<td>-</td>
<td>73</td>
<td>ENE 5</td>
</tr>
<tr>
<td>13</td>
<td>15:11</td>
<td>2</td>
<td>1</td>
<td>.04</td>
<td>-</td>
<td>73</td>
<td>ENE 5</td>
</tr>
</tbody>
</table>

Note: The normal background methane in Colorado is 2-3 ppm.
At this time equipment is not available to measure non-methane hydrocarbons, so all our measurements are in total hydrocarbons. The non-methane hydrocarbon concentrations in this area appear to be very low based on the information shown above.

Table 2
Air Quality Analysis
Projects I 70-1(19)&(36)
Factors Used for CO Calculations

<table>
<thead>
<tr>
<th>Traffic Volumes:</th>
<th>1972</th>
<th>1993</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alternate Sec. DHV A-HR DHV A-HR</td>
<td>420  179  1,140  485</td>
<td>396  168  1,098  467</td>
</tr>
<tr>
<td>Sec. 1 &amp; 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sec. 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sec. 4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sec. 5</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: ADT = Average Daily Traffic
DHV = Design Hour Traffic Volume (Peak Traffic)
A-HR = Average Daylight Hourly Traffic
A-HR = 0.75(ADT)-2(DHV)

Vehicle Emission Factors:

<table>
<thead>
<tr>
<th>Corrected for 5,000 feet</th>
<th>CO</th>
<th>CO</th>
</tr>
</thead>
<tbody>
<tr>
<td>1972</td>
<td>50</td>
<td>70</td>
</tr>
<tr>
<td>1993</td>
<td>1.8</td>
<td>3.3</td>
</tr>
</tbody>
</table>

Meteorology:

Most Probable Condition
Stability Class D
Wind 7 MPH WSW

Worst Condition
Stability Class F
Wind 3 MPH WSW

Distance from Roadway:
Concentrations were determined at 100 feet from the roadway for comparison of all locations.
TABLE 3
AVERAGE CONCENTRATIONS AT 100 FEET FROM THE ROADWAY

<table>
<thead>
<tr>
<th>Alternate</th>
<th>Peak Traffic (Design Hour)</th>
<th>Normal Daylight Traffic</th>
<th>Year 1972</th>
<th>Year 1993</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Most Probable Condition (ppm)</td>
<td>Worst Condition (ppm)</td>
<td>Most Probable Condition (ppm)</td>
<td>Worst Condition (ppm)</td>
</tr>
<tr>
<td>1a, b, &amp; c</td>
<td>.67</td>
<td>2.44</td>
<td>.29</td>
<td>1.04</td>
</tr>
<tr>
<td>1d</td>
<td>.67</td>
<td>2.44</td>
<td>.29</td>
<td>1.04</td>
</tr>
<tr>
<td>2a, b, d, &amp; e</td>
<td>.63</td>
<td>2.30</td>
<td>.27</td>
<td>.98</td>
</tr>
<tr>
<td>2c</td>
<td>.67</td>
<td>2.44</td>
<td>.29</td>
<td>1.04</td>
</tr>
<tr>
<td>3a, b</td>
<td>.63</td>
<td>2.30</td>
<td>.27</td>
<td>.98</td>
</tr>
<tr>
<td>4a, b, &amp; c</td>
<td>.68</td>
<td>2.48</td>
<td>.29</td>
<td>1.05</td>
</tr>
<tr>
<td>5a</td>
<td>.68</td>
<td>2.48</td>
<td>.29</td>
<td>1.05</td>
</tr>
</tbody>
</table>

- CARBON MONOXIDE (EPA limit for 1 hour period = 35 ppm)

Additional information regarding the above project has been developed in reply to your request. Box model calculations were run for the 0.12 mile section of DeBeque Canyon between the Plateau Creek Interchange to the upper end of DeBeque Canyon. Calculations were also made for the 2.58 mile section of Plateau Creek Canyon from the interchange northeast to where I-70 is proposed to leave the valley under Alternate 1-B.

FOR DEBEQUE CANYON NORTH (Alternate 1-A, 1-B and 1-C)

Canyon volume from Plateau Creek Interchange to the north border of Section 19 near the upper end of DeBeque Canyon

Length of canyon w/o tunnel 9.12 miles = 48,154 feet
Length of road with tunnel 8.12 miles (basis of VMT)

Factors Used in Calculations:

<table>
<thead>
<tr>
<th>CO</th>
<th>NOx</th>
<th>NO</th>
<th>Traffic Volumes Used</th>
</tr>
</thead>
<tbody>
<tr>
<td>1972</td>
<td>70 g/mi</td>
<td>3.8 g/mi</td>
<td>2.9 g/mi</td>
</tr>
<tr>
<td>1992</td>
<td>5 g/mi</td>
<td>0.9 g/mi</td>
<td>1.8 g/mi</td>
</tr>
</tbody>
</table>

To find canyon volume, it was considered to have a trapezoidal cross section. From U.S.G.S. topographical maps the width of the valley floor, top of the canyon, and depth of the canyon were scaled off and the average dimensions for the study section are as follows:
The area of this average cross section is 1,300,020 sq. ft. This area times the canyon length (48,154 feet) gives the canyon volume:

\[ 1.3000 \times 10^6 \times 4.8154 \times 10^4 = 6.26 \times 10^{10} \text{ ft}^3 \]

Assume 1 ft^3 air = 0.064 lbs at an elevation of 5,000 feet above sea level

\[ 6.26 \times 10^{10} \text{ ft}^3 \times 0.064 \text{ lbs/ft}^3 = 40.064 \times 10^8 \text{ lbs} \]

VMT

Since the tunnel shortens the length of roadway in the canyon, the length with the tunnel was used for VMT calculations.

1972 8.12 miles x 3,500 veh/day = 28,420 vmt/day
1992 8.12 miles x 9,500 veh/day = 77,140 vmt/day

Box Dispersion Model Calculations

Assuming no air movement into or out of box, and complete dispersion throughout box.

CO - 1972

\[ 28,420 \text{ vmt/day} \times 70 \text{ g/mi} = 1,989,400 \text{ g CO/day} \]
\[ = 4.382 \# \text{ CO/day} \]
\[ \frac{\text{CO}}{\text{Air}} \times \frac{43.82 \times 10^2 \# \text{ CO}}{40.064 \times 10^6 \# \text{ Air}} = \frac{1.09 \# \text{ CO}}{10^6 \# \text{ Air}} = 1.09 \text{ ppm CO} \]

CO - 1992

\[ 77,140 \text{ vmt/day} \times 5 \text{ g/mile} = 385,700 \text{ g CO/day} \]
\[ = 850 \# \text{ CO/day} \]
\[ \frac{\text{CO}}{\text{Air}} \times \frac{8.5 \times 10^3 \# \text{ CO}}{40.064 \times 10^6 \# \text{ Air}} = \frac{212 \# \text{ CO}}{10^6 \# \text{ Air}} = 0.212 \text{ ppm CO} \]

HC - 1972

\[ 28,420 \text{ vmt/day} \times 3.9 \text{ g HC/mi} = 110,838 \text{ g HC/day} \]
\[ = 244 \# \text{ HC/day} \]
\[ \frac{\text{HC}}{\text{Air}} \times \frac{2.44 \times 10^2 \# \text{ HC}}{40.064 \times 10^6 \# \text{ Air}} = \frac{0.061 \# \text{ HC}}{10^6 \# \text{ Air}} = 0.061 \text{ ppm HC} \]

HC - 1992

\[ 77,140 \text{ vmt/day} \times 0.9 \text{ g HC/mi} = 69,426 \text{ g HC/day} \]
\[ = 153 \# \text{ HC/day} \]
\[ \frac{\text{HC}}{\text{Air}} \times \frac{1.53 \times 10^2 \# \text{ HC}}{40.064 \times 10^6 \# \text{ Air}} = \frac{0.038 \# \text{ HC}}{10^6 \# \text{ Air}} = 0.038 \text{ ppm HC} \]

NO\text{x} - 1972

\[ 28,420 \text{ vmt/day} \times 2.9 \text{ g NO}/\text{mile} = 82,418 \text{ g NO}_x/\text{day} \]
\[ = 182 \# \text{ NO}_x/\text{day} \]
\[ \frac{\text{NO}_x}{\text{Air}} \times \frac{1.82 \times 10^2 \# \text{ NO}_x}{40.064 \times 10^6 \# \text{ Air}} = \frac{0.045 \# \text{ NO}_x}{10^6 \# \text{ Air}} = 0.045 \text{ ppm NO}_x \]

NO\text{x} - 1992

\[ 77,140 \text{ vmt/day} \times 1.8 \text{ g NO}_x/\text{mile} = 138,852 \text{ g NO}_x/\text{day} \]
\[ = 306 \# \text{ NO}_x/\text{day} \]
\[ \frac{\text{NO}_x}{\text{Air}} \times \frac{3.06 \times 10^2 \# \text{ NO}_x}{40.064 \times 10^6 \# \text{ Air}} = \frac{0.076 \# \text{ NO}_x}{10^6 \# \text{ Air}} = 0.076 \text{ ppm NO}_x \]
This is an idealized box mixing cell, and there would have to be no air movement for 24 hours to achieve the above calculated steady state conditions. In this canyon a 2 mph wind up or down the canyon would take approximately 4 1/2 hours to change all the air in the canyon (5 changes/24 hours). If this were an idealized wind that successively and uniformly diluted the air in the box model cell the steady concentrations would be approximately 1/5 the above concentrations.

### FOR PLATEAU CREEK CANYON (Alternate 1-D)

Alternate 1-D is located in the Plateau Creek Valley from approximately the Plateau Interchange northeast for 2 miles to where I 70 climbs out of the valley.

- **length of valley w/o tunnel**: 2.58 miles = 13,620 feet
- **length of road in valley**: 2.0 miles (basis of VMT calculations)

Factors Used in Calculations:

<table>
<thead>
<tr>
<th></th>
<th>1972</th>
<th>1992</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO</td>
<td>70 g/mi</td>
<td>5 g/mi</td>
</tr>
<tr>
<td>HC</td>
<td>3.9 g/mi</td>
<td>0.9 g/mi</td>
</tr>
<tr>
<td>NOx</td>
<td>2.9 g/mi</td>
<td>1.8 g/mi</td>
</tr>
</tbody>
</table>

Traffic Volumes Used: 3,500 v/h/day (1972), 9,500 v/h/day (1992)

To find the canyon volume, it was considered to have trapezoidal cross section. From U.S.G.S. topographical maps the width of the valley floor, top of the canyon, and depth of the canyon were scaled off and average dimensions for the study section are as follows:

![Trapezoidal Cross Section Diagram]

The area of this average cross section is 813,000 sq. feet. The area times the canyon length (13,620 feet) gives the canyon volume.

### Box dispersion model calculations

Assume no air movement into or out of the box, and complete dispersion throughout the box.

- **CO - 1972**
  
  \[
  7,000 \text{ vmt/day} \times 70 \text{ g CO/mile} = 490,000 \text{ g CO/day} 
  \]
  
  \[
  = 1,079 \# \text{ CO/day} 
  \]
  
  \[
  \frac{107.9 \times 10^3 \# \text{ CO}}{10^6 \# \text{ Air}} = 1.52 \# \text{ CO} = 1.52 \text{ ppm CO} 
  \]

- **CO - 1992**
  
  \[
  19,000 \text{ vmt/day} \times 5 \text{ g CO/mile} = 95,000 \text{ g CO/day} 
  \]
  
  \[
  = 209.25 \# \text{ CO/day} 
  \]
  
  \[
  \frac{209.25 \times 10^1 \# \text{ CO}}{10^6 \# \text{ Air}} = .295 \# \text{ CO} = .295 \text{ ppm CO} 
  \]

- **HC - 1972**
  
  \[
  7,000 \text{ vmt/day} \times 3.9 \text{ g HC/mile} = 27,300 \text{ g HC/day} 
  \]
  
  \[
  = 60.1 \# \text{ HC/day} 
  \]
  
  \[
  \frac{6.01 \times 10^4 \# \text{ HC}}{10^6 \# \text{ Air}} = .085 \# \text{ HC} = .085 \text{ ppm HC} 
  \]

Assume 1 ft³ air = 0.064 lbs at an elevation of 5,000 feet above sea level.

\[
11.07 \times 10^9 \text{ ft}^3 \times 0.064 \text{ lbs/ft}^3 = 70.85 \times 10^7 \# \text{ air} 
\]

VMT

Since the tunnel shortens the length of roadway in the canyon, the length with the tunnel was used for VMT calculations.

- **1972**
  
  \[
  2 \text{ miles} \times 3500 \text{ veh/day} = 7,000 \text{ VMT/day} 
  \]

- **1992**
  
  \[
  2 \text{ miles} \times 9500 \text{ veh/day} = 19,000 \text{ VMT/day} 
  \]
HC = 1992

19,000 vmt/day x 0.9 g HC/day = 17,100 g HC/day

= 37.7 # HC/day

# HC 3.77 x 10^4 # HC
# Air 70.85 x 10^7 # Air

= .053 # HC 10^6 # Air = .053 ppm HC

# !IC 3.77 x 10^1 ppm

70.85 x 10^7 # Air

Mr. Joseph Palomba, Jr.
Air Quality Analysis, DeBeque Canyon-Grand Valley
Page 7

HC - 1992

# NO 4.471 x 10^1 # NO
# Air 70.85 x 10^7 # Air

= .063 # NO 10^6 # Air = .063 ppm NO

NO_x = 1992

19,000 vmt/day x 1.8 g NO_x/mile = 34,200 g NO_x/day

= 75.33 # NO_x/day

# NO 7.533 x 10^1 # NO
# Air 70.85 x 10^7 # Air

= .106 # NO 10^6 # Air = .106 ppm NO_x

This is an idealized box mixing cell and there would have to be no air movement for 24 hours into or out of the cell to achieve the above calculated steady state conditions.

In this canyon, a 2 mph wind up or down the canyon would change the air in the canyon in approximately 1 hour. In the box model an idealized 2 mph wind would successively and uniformly dilute the above calculated concentrations to approximately 1/24 of their values.

<table>
<thead>
<tr>
<th>1972</th>
<th>1992</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO</td>
<td>.003</td>
</tr>
<tr>
<td>HC</td>
<td>.009</td>
</tr>
<tr>
<td>NO_x</td>
<td>.003</td>
</tr>
</tbody>
</table>

Mr. Joseph Palomba, Jr.
Air Quality Analysis, DeBeque Canyon-Grand Valley
I 70-1(19) and I 70-1(36)

Page 8

This same cell was used to estimate the impact of the highway on suspended particulate matter in these canyon areas.

DeBeque Canyon:

Canyon Volume 6.26 x 10^10 ft^3 x .02832 m^3/ft^3 = 17.73 x 10^3 m^3

Emission Factor 0.54 g Particulates/veh mile

VM'T = 1972 3500 veh/day x 8.12 = 28,420

Particulates

1972 28,420 vmt/day x 0.54 g Part/mile = 15,347 g Particulates/day

1992 19,000 vmt/day x 1.8 g Part/mile = 34,200 g Particulates/day

= 75.33 # Particulates/day

# NO 7.533 x 10^1 # NO
# Air 70.85 x 10^7 # Air

= .106 # NO 10^6 # Air = .106 ppm NO_x

Plateau Creek Canyon:

Canyon Volume 11.07 x 10^10 ft^3 x .02832 m^3/ft^3 = 31.35 x 10^3 m^3

Emission Factor 0.54 g Particulates/veh mile

VM'T 3500 veh/day x 2 miles = 7,000 vmt/day

Particulates

1972 7000 vmt/day x 0.54 g Part/mile = 3,780 g Particulates/day

1992 19,000 vmt/day x 1.8 g Part/mile = 34,200 g Particulates/day

= 75.33 # Particulates/day

# NO 7.533 x 10^1 # NO
# Air 70.85 x 10^7 # Air

= .106 # NO 10^6 # Air = .106 ppm NO_x

Calculations for all box models presented in this letter have been based on 1-2 mph air flow (wind), as being the worse condition. However, the attached windrose from the Rifle Municipal Airport approximately 15 miles east of this project, shows that winds in this area average 7 mph. There are, of course, possible errors in extrapolating meteorological data over mountainous terrain, but, the valley of the Colorado River is quite broad, and well known for the windy conditions along the open highway.

Very truly yours,

E. N. HAASE
Chief Engineer

By

M. A. KAHM

Planning and Research Engineer
RESEARCH
NOISE ANALYSIS
Project I 70-1(19)6(36)
Grand Valley East & West

In accordance with PPM 90-2, a noise analysis for Projects I 70-1(19)6(36),
Grand Valley East and West, was performed. The following is the summary of the location-based noise study for the proposed projects:

(a) Identification of noise sensitive areas that may be affected by the highway project. These projects begin at the junction of I 70 and U.S. 6 near Plateau Creek and extend northeast generally along the alignment of U.S. 6, through Grand Valley to join I 70 west of Rifle.

There are four sections along these projects, that contain different traffic volumes - Plateau Creek to Debeque, Debeque to Grand Valley, Grand Valley to Rifle, and Rifle to east of Rifle. Regardless of which alternate is chosen, the projected traffic volume is the same within a given traffic volume section. Traffic volumes used for each section are listed in Table 3.

The only noise sensitive areas along the proposed routes are the town of Grand Valley, some scattered farms and ranches, and a few small businesses (cafes and gas stations).

(b) Prediction of highway generated noise. Noise levels generated by traffic on the new highway were computed with the aid of the Michigan computer program. Noise levels were computed at various distances from the roadway at a typical area for each of the four different traffic volume sections. Traffic volumes used in the computations consist of the projected future design year (1993) traffic volume. Table 1 lists the results of these computations and Figure 1 contains a plot of noise level contour lines along the route. Contour lines are plotted on Figure 1 for L10 = 70 dBA (allowable noise level for residential areas).

(c) Determination of existing noise levels. Existing noise levels were determined in the field at typical noise sensitive areas along present U.S. 6 and in Grand Valley. Background readings were also taken at some points where the future alignment leaves the U.S. 6 roadway.

The existing noise levels were determined using the Electro-Sonic Control Model 2010 noise level meter with a series of 40 readings taken over a 3 1/2 minute period. Present traffic generated levels were determined using traffic measured in the field at the time of the noise measurement. The measured traffic on U.S. 6 and present design traffic volumes were used to adjust the noise level to the design traffic noise level. These determinations are listed on Table 2 and their locations are plotted on Figure 1.

(d) Comparison of predicted levels with the Standards. From Table 1 it can be seen that noise levels for residential areas meet the standards at approximately 135 feet from the edge of the roadway and that the standards for commercial areas are met at approximately 70 feet from the edge of the roadway.

Assuming that the right-of-way line is located at least 135 feet from the roadway, noise levels along the entire route should meet the standards for residential areas. Business standards should be met if the right-of-way is 70 feet from the edge of the road. From the predictions these limits should hold regardless of which alternate is adapted.

(e) Analysis of feasible noise abatement measures. In the area of Grand Valley, 1 Alternate A, South of the existing Main Street (US 6), is selected, it is possible that noise abatement measures will be required between the interstate and the remaining homes and businesses in Grand Valley. These requirements will be determined in the design phase study after a specific route and location have been selected.

Throughout the remainder of the project, no noise abatement measures should be needed along these routes.

(f) Situations where it appears that exceptions to the Standards are Justified. No exceptions to the Standards are requested for these projects.

T. M. Cox
Noise Analysis - Projects I 70-1(19)6(36)
Page 2

M. A. Kahn
Planning and Research Engineer

BBG:RALfnb
cc: Statewide-House-Zulian-Capron
M. A. Kahn - G. W. Fritts
R. A. Proense
H. Atchison
E. J. Halingsted - HUD
R. F. File

DENVER, COLORADO
4201 E. Arapahoe Ave.
DEPARTMENT OF HIGHWAYS
State of Colorado
Grand Valley East & West
November 12, 1973
### Table 1

**Predicted Noise Levels on the New Highway:**

<table>
<thead>
<tr>
<th>Station</th>
<th>Description of Test Point</th>
<th>Distance from Road Noise Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Project 170-1(19)-16</td>
<td>Platteau Centre to Deerway</td>
</tr>
<tr>
<td>2</td>
<td>Project 170-1(19)-16</td>
<td>Platteau Centre to Deerway</td>
</tr>
<tr>
<td>3</td>
<td>Project 170-1(19)-16</td>
<td>Platteau Centre to Deerway</td>
</tr>
<tr>
<td>4</td>
<td>Project 170-1(19)-16</td>
<td>Platteau Centre to Deerway</td>
</tr>
<tr>
<td>5</td>
<td>Project 170-1(19)-16</td>
<td>Platteau Centre to Deerway</td>
</tr>
<tr>
<td>6</td>
<td>Project 170-1(19)-16</td>
<td>Platteau Centre to Deerway</td>
</tr>
</tbody>
</table>

### Table 2

**Measured Existing Noise Levels:**

<table>
<thead>
<tr>
<th>Project 170-1(19-36) Grand Valley E and W</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Station</th>
<th>Location</th>
<th>Distance from Highway (Feet)</th>
<th>Measured Traffic (Veh/Min)</th>
<th>Measured Noise Level (Decibels)</th>
<th>Design Hour</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>House No of Ashmead Draw</td>
<td>70</td>
<td>135</td>
<td>75</td>
<td>70</td>
<td>1000 ft NO of Bridge</td>
</tr>
<tr>
<td>2</td>
<td>Trailer East of US 5</td>
<td>200</td>
<td>198</td>
<td>62</td>
<td>64</td>
<td>AT US 5 ROAD</td>
</tr>
<tr>
<td>3</td>
<td>House on North</td>
<td>200</td>
<td>180</td>
<td>61</td>
<td>64</td>
<td>-house on future alignmet</td>
</tr>
<tr>
<td>4</td>
<td>House on North</td>
<td>85</td>
<td>180</td>
<td>70</td>
<td>73</td>
<td>On Wilcox Street</td>
</tr>
<tr>
<td>5</td>
<td>House on North</td>
<td>85</td>
<td>180</td>
<td>70</td>
<td>76</td>
<td>North on Watson Ave</td>
</tr>
<tr>
<td>6</td>
<td>House on North</td>
<td>85</td>
<td>180</td>
<td>70</td>
<td>76</td>
<td>6-8 mi west of Grand, 4L</td>
</tr>
<tr>
<td>7</td>
<td>House on North</td>
<td>85</td>
<td>180</td>
<td>70</td>
<td>76</td>
<td>N Row with Train</td>
</tr>
</tbody>
</table>
TO: R. A. Presence
FROM: H. R. Atchison
SUBJECT: DeBeque-Grand Valley Water Quality Assessment

Enclosed is the water quality assessment for DeBeque-Grand Valley. Included in this assessment are rough plots for the water years 1969-73 for the parameters of discharge, dissolved solids and conductivity. The Graphics Section will be re-doing these graphs for the final statement in November.

HRA/tds
cc: ERA File
CP
RF

Introduction

The single waterway which will be most affected by the proposed Interstate 70 corridor between the Plateau Creek Interchange and Rifle is the Colorado River. One of the possible alternatives (I-N) could have significant impact on Plateau Creek as discussed below. The primary sectors for major river encroachment occur in Sections I and II for the proposed alternatives. In Sections III, IV, and V the corridor is significantly far enough away from the river to preclude any major water quality impact. Hence, the water quality assessment for this project will deal only with the alternatives proposed for Sections I and II.

Baseline Data

One of the more complete studies of water quality of the Colorado River Basin was initiated in January 1960 under authority of Section 8 of the Federal Water Pollution Control Act (33 U.S.C. 466 et seq.). This project began detailed studies of mineral quality of the Basin in 1963. The objectives of this study were many fold, but significant consideration was given to the salinity (synonymous with total dissolved solids-TDS) problem of the main stem of the Colorado River and its continuing implications. The agency which began this project in 1960 was the Federal Water Quality Administration, a forerunner to the presently existing Environmental Protection Agency (EPA). It is from an EPA summary report of this project completed in 1971 that some of the data below was extracted.

Some of the more pertinent conclusions drawn from this water quality study were:

1) Salinity is the major water quality problem existing in the Colorado River Basin.
Two processes contribute to the salinity concentration (a) salt loading, the addition of salts to the river from either natural or man-made sources (b) salt concentration, through evaporation, transpiration, and out-of-basin export.

Salinity (TDS) concentrations in the range of 500-700 mg/l have a deleterious effect on crops being irrigated with water of such saline quality due to increased operating costs and decreased crop yields.

The continuing theme throughout this summary report was consideration for the salinity problem in the Colorado River and means of reducing its level.

One of the major contributing sources of salinity to this drainage has been shown to be surface runoff, primarily agricultural runoff. One of the larger contributing areas of this surface runoff has been identified as the Upper Basin area of eastern Utah and western Colorado. Hence, it is imperative that projects within this region which will have major impacts on the Colorado River give appropriate consideration to this salinity problem as it applies to that project.

In conjunction with this consideration, data has been gathered concerning the salinity of the Colorado River between Glenwood Springs and Cameo, Colorado. This data is from an on-going monitoring program established by the United States Geological Survey (USGS). The USGS has numerous monitoring stations on various major drainages throughout Colorado, including ones at Glenwood Springs and Cameo. These stations consider physical parameters (e.g., discharge rates, temperature) for that drainage along with extensive chemical analyses of water samples collected either on a monthly or quarterly basis.

For the DeBeque-Grand Valley Projects, the relevant data for consideration has been plotted on the graphs below. The Glenwood Springs station is located approximately 35 miles east of the eastern edge of the project (upstream) above the confluence of the Roaring Fork and Colorado Rivers. The Cameo Station is approximately three miles west of the Plateau Creek Interchange. Thus, monitoring is essentially above and below the project's boundaries.

The three parameters considered in these plots are discharge rates (in CFS) total dissolved solid (in mg/l and tons/day) and conductivity (in micro-ohms/cm) for the water years in 1969-1973. The latter quantity, conductivity, is a measure of the ionizable constituents in the water. An explanation of the definition of conductivity is unimportant here but, rather, it is important to know that it typically gives one a handle on the amount of dissolved material in a water sample. Purer water in the upper reaches of the Colorado River below Granby, for example, is significantly lower in dissolved material (on the order 50-60 micro-ohms/cm) than Colorado River water near Grand Junction (about 900-1100 micro-ohms/cm).

The discharge data for these four years indicates the Colorado River has a flow increase of between 1.5 to 2 times between the Glenwood Springs and Cameo stations. Aside from spring runoffs, the Colorado River at Glenwood Springs runs between 1000 and 2000 cfs while at Cameo it is running between 1500 to 3000 cfs. The spring runoff volumes generally increase by a factor of 5-10 in June as compared to the months August through early April. The net effect of the spring runoff from mid-April through late July is to dilute the salinity concentration. Looking at the TDS plots for 1969-1973, the salinity concentration drops a factor of three to four at both stations during spring runoff. This same effect is also noted on the conductivity measurements.
The dilution in concentration of TDS during spring runoff does not lead, however, to a net drop in total salinity transport. The drop in concentration is more than compensated for by the increased river volume during runoff. This effect is shown in the plot in which the salinity is expressed in tons per day of TDS. The net amount of TDS being transported at Cameo as compared with Glenwood Springs is an increase on the order of two to three times. During spring runoff, the total TDS transport in June increases by a factor of two to three as compared to the months August through April.

Other baseline information concerning the Colorado River in this region pertains to pH and temperature. These two parameters have simply been tabulated for the water years 1969-1973. The pH, which is a measure of the acidity/alkalinity of the water, showed little variation for this four-year period. pH is measured in the range 1.0-14.0. By definition, 7.0 is said to be neutral. pH values of 1.0-6.9 are said to be acidic with 1.0 most acidic and 6.9 least acidic. pH values of 7.1-14.0 are said to be alkaline with 7.1 the least alkaline and 14.0 the most alkaline. The water samples collected at both Cameo and Glenwood Springs ranged in value between 7.1-8.5, weakly alkaline, from 1969-1973. Temperature for the two stations also were very comparable, ranging from wintertime lows of 0°C (32°F) to summertime highs of 18-23°C (65-73°F).

For Plateau Creek, similar data has been assembled as was collected from the Glenwood Springs and Cameo stations with data collection being quarterly rather than monthly. The discharge from Plateau Creek contributes about 5-15% of the discharge monitored at the Cameo station ranging in value between 76-182 cfs during the winter months to 700-900 cfs during spring runoff.

The quality of this discharge for the four years 1969-1973 ranged between 200-600 mg/l as compared with 200-700 mg/l for the Colorado River at Cameo. The net salinity discharge of Plateau Creek into the Colorado is about 10 percent of the total discharge monitored at Cameo as expressed in tons/day.

Discussion of Baseline Data and Impacts of Proposed Alternatives

From the baseline water quality data discussed above, two important conclusions can be drawn which are relevant to this proposed I 70 corridor. First, there is a significant increase in the Colorado River salinity over the approximately 70 miles between the Glenwood Springs and Cameo monitoring stations. The TDS concentration essentially doubles over this region due, in part, to contributions from the Roaring Fork and other drainages but also due to the highly erodible and saline nature of the sediments in this area. Secondly, the absolute value of TDS in the Colorado River is registering in the 500-800 mg/l range at the Cameo Station. It is this particular range which the EPA summary report indicated as being the lower level above which deleterious effects occur to agricultural crops using such water. From these two conclusions, it is imperative that any river encroachments from this project make minimal salinity contributions and that continuing, long-term salinity additions to the Colorado River be avoided.

As mentioned previously, the major sectors of impact of this I 70 corridor on the Colorado River will be Sections I and II of the project as Sections III-V are far enough away from the river to preclude adverse water quality impact. Alternate 1-A proposes no additional fill encroachment on the river, but considers digging back into the east side of the canyon walls with the removal of an excess of six million cubic yards of earth. The resulting large cut areas may be susceptible to continuing erosion and thus, continuing salinity
contributions to the Colorado River. Alternate 1-B calls for widening of
the present alignment resulting in moderate river encroachment. The net
impact of this alternate would be temporary salinity increases where encroachment occurs, but no long-term continuing contributions as suitable revegetation would reduce any possible long-term salinity contributions. Alternate 1-C calls for a split alignment with eastbound lanes being on the present highway alignment and the westbound lanes across the river on the west side of the canyon. This latter proposal would have significant river impact as many steep slopes would have to be altered during construction, leading to long-term, continuing erosion and salinity contributions to the river. Alternate 1-D essentially bypasses DeBeque Canyon and loops east through Plateau Creek Canyon. This alternate would create permanent adverse water quality impacts on Plateau Creek as soils in this region are highly erodible. This indicates that the major excavations which would be necessary for this alternative would significantly increase the salinity of this drainage. Reviewing the conductivity and TDS data for the Plateau Creek monitoring station shows ranges of 200-600 mg/l of TDS for 1969-1973 and 250-900 micro-ohms/cm conductivity. These values are just slightly lower than those ranges recorded at Cameo in the Colorado River. The net impact of Alternate 1-D would definitely cause significant increases in TDS on the Colorado at Cameo as a result of the Plateau Creek drainage. This adverse impact would probably be permanent both on Plateau Creek and the Colorado River. Alternate 1-E would be a suitable alternative from a water quality standpoint. This alternative calls for tunneling through Long Point and eliminating almost two miles of roadway adjacent to the Colorado River. However, it is questionable as to whether the significant cost of such a tunnel could be partially justified by the reduced river impact. Alternate 1-F would have a similar type of impact on the river, as would 1-B. The level of this impact would be greater due to the increased section of river being adjacent to the highway. Thus, summarizing strictly on water quality considerations, 1-B and 1-E would have least impacts on the Colorado River, 1-F and 1-A would have moderate impact on the water quality and 1-D and 1-C would have the greatest continuing adverse affects on this drainage.

In the western portion of Section II, Alternates 2-A and 2-B pose significant differences in water quality impact. Alternate 2-A calls for considerable channel change and river encroachment with accompanying water quality degradation. Alternate 2-B crosses to the west side of the river through an abandoned blue heron rookery. Aside from the two river crossings that the 2-B Alternate makes to cross over to the west side of the river and the third crossing it makes to return to the east side (see Figure 20), there are no other encroachments on the river for this alternative. Hence this alternative would have minor impact on the river through this region compared with 2-A. The 2-C Alternative runs to the north of DeBeque and avoids all possible river encroachment except to cross Roan Creek. This alternate would have little deleterious effects on water quality due to the corridor being far from the river drainage. The steep terrain and erodible nature of soils in this area could have some impact on Roan Creek in the event of flash flood conditions. Alternates 2-D and 2-E would have temporary, minor impact on water quality due to bridging across the river. These two alternatives would be located in the same area as has been proposed for the Paradise and Una Dam and Reservoir sites. A third dam is also being proposed near Mile 36 in Section V. This reservoir, should it be constructed, would leave the proposed alignment in that sector submerged.
Summarizing the net impacts of the proposed alternatives for Section II, alternative 2-B is preferred over 2-A on the eastern side of DeBeque Canyon to reduce the significant encroachment and channel changes required by 2-A. 2-C is less desirable due to the steep and erodible terrain on which it runs. Alternatives to the east of DeBeque are far enough away from the river to preclude significant water quality impact except at bridging sites.

Recommendations Concerning Water Quality

It is recommended that a monitoring program be initiated for those portions of Section I and II where water quality will be affected by construction, primarily Mile 1 - Mile 9. This monitoring program should consider turbidity which is not now being done by the USGS stations at Glenwood Springs and Cameo. It is suggested that samples be taken at one or two mile intervals weekly or bimonthly. Turbidity monitoring is recommended due to the recent water quality standards effective June 19, 1974, for Colorado which have stringent turbidity regulations for all Colorado watershed drainages.

A second recommendation involves formulation of water quality specifications for these projects in addition to subsection 107.23 of Standard Specifications. In these specifications should be outlined the new water quality regulations mentioned above and the criteria necessary for the contractor to abide by these regulations. The specifications should call for an overall water quality plan prior to construction for approval by the District Engineer. There should also be an erosion control/water quality officer working for the contractor and available to the Project Engineer on a daily basis. This officer should have suitable manual labor available to him whose sole responsibility it should be to implement necessary actions to reduce all possible salinity contributions to the Colorado River drainage. It is believed that conscientious effort during construction of these projects can avoid significant adverse impact on the Colorado and preclude additional increases in the salinity of this drainage.
discharge CFS in 1000's

Glenwood
Cameo

T.D.C. tons/day in 1000's

ONDJFMAMJJAS

ONDJFMAMJJAS

ONDJFMAMJJAS

ONDJFMAMJJAS
specific conductance (mohms/cm) in 100's

- Glenwood
- Cameo

dissolved solids (mg/l) in 100's

ONDJFMAMJJAS