

WA-NM - 880252-D sup -

900367

DRAFT ENVIRONMENTAL IMPACT STATEMENT

**SANTA FE - LOS ALAMOS
CORRIDOR STUDY**

**FEDERAL HIGHWAY
ADMINISTRATION
AND
NEW MEXICO STATE
HIGHWAY & TRANSPORTATION
DEPARTMENT**

**Prepared By
H.W. LOCHNER, INC.**



FHWA-NM-EIS-90-01-DS

Federal Aid Project LASF-86(1)/NWT(1)
New Mexico State Road 594
SANTA FE-LOS ALAMOS CORRIDOR STUDY-PHASE C
Santa Fe/Los Alamos Counties, New Mexico


SUPPLEMENTAL DRAFT
ENVIRONMENTAL IMPACT STATEMENT

Submitted Pursuant to 42 U.S.C. 4332 (2) (c)

U. S. Department of Transportation
Federal Highway Administration
and
New Mexico State Highway and Transportation Department

Cooperating Agencies:
U. S. Forest Service
Bureau of Indian Affairs
Corps of Engineers
Bureau of Land Management
National Park Service
Department of Energy

9/18/90
Date of Approval


New Mexico State Highway and
Transportation Department

9/18/90
Date of Approval


Federal Highway Administration

The following persons may be contacted for additional information concerning this document:

Gerald L. Eller
Assistant Division Administrator
Federal Highway Administration
117 U.S. Court House
Santa Fe, New Mexico 87501
Telephone (505) 988-6569

W. L. Taylor
Environmental Program Manager
New Mexico State Highway and
Transportation Department
Post Office Box 1149 - Room 115
Santa Fe, New Mexico 87504
Telephone (505) 827-5232

This project evaluates the engineering aspects and social, economic, and environmental impacts associated with the construction of a four-lane facility between Santa Fe and Los Alamos. This project would require the bridging of the Rio Grande and White Rock Canyon.

Comments on this supplemental draft EIS are due by November 19, 1990 and should be sent to W. L. Taylor, address above.

TABLE OF CONTENTS

| | <u>PAGE</u> |
|---|-------------|
| SUMMARY | |
| A. Proposed Action | S-1 |
| B. Other Major Government Actions | S-2 |
| C. Alternatives Considered | S-3 |
| D. Major Environmental Impacts | S-4 |
| E. Areas of Controversy | S-6 |
| F. List of Other Government Actions Required | S-6 |
| | |
| I. PURPOSE OF AND NEED FOR ACTION | |
| A. Project History and Status | I- 1 |
| B. System Linkage | I-12 |
| 1. Existing System Linkage | I-12 |
| 2. Ongoing and Planned Improvements | I-14 |
| C. Capacity and Level of Service | I-17 |
| 1. Existing Conditions | I-17 |
| 2. Traffic Growth on SR 502 and US 84/285 | I-19 |
| D. Transportation Demand | I-22 |
| E. Social Demand and Economic Development | I-23 |
| F. Modal Interrelationships | I-25 |
| G. Roadway Deficiencies and Safety | I-26 |
| | |
| II. ALTERNATIVES CONSIDERED | |
| A. Development of Alternatives | II- 1 |
| B. Alternatives Considered but Eliminated | II- 1 |
| 1. Transportation Systems Management (TSM) Alternative | II- 2 |
| 2. Mass Transit Alternative | II- 3 |
| 3. Improved Roadway Alternative | II- 4 |
| C. Alternatives Considered For Additional Study | II- 5 |
| 1. No-Build Alternative | II- 6 |
| 2. Development of the Build Alternative | II- 6 |
| 3. Build Alternates | II-18 |

TABLE OF CONTENTS (Cont.)

| | <u>PAGE</u> |
|--|-------------|
| III. AFFECTED ENVIRONMENT | |
| A. Natural Environment | III- 1 |
| 1. Physiography and Geology | III- 1 |
| 2. Soils | III- 5 |
| 3. Vegetation | III- 6 |
| 4. Wildlife | III- 8 |
| 5. Threatened and Endangered Species | III- 9 |
| 6. Water Quality | III- 9 |
| B. Social Environment | III- 9 |
| 1. Population Characteristics | III- 9 |
| 2. Land Use and Comprehensive Planning | III-13 |
| 3. Communities and Neighborhoods | III-22 |
| 4. Community Facilities and Services | III-23 |
| 5. Public Utilities | III-24 |
| 6. Transportation Facilities | III-24 |
| 7. Cultural Resources | III-25 |
| C. Economic Environment | III-27 |
| 1. Employment | III-27 |
| 2. Income | III-30 |
| 3. Unemployment | III-30 |
| IV. ENVIRONMENTAL CONSEQUENCES | |
| A. Traffic and Transportation Impacts | IV- 1 |
| 1. Traffic Volumes | IV- 1 |
| 2. Level of Service | IV- 1 |
| 3. Travel Distance | IV-13 |
| 4. Commuting Patterns | IV-16 |
| 5. Access Considerations | IV-16 |

TABLE OF CONTENTS (Cont.)

| | <u>PAGE</u> |
|--|-------------|
| B. Design Elements and Costs | IV-18 |
| 1. Right of Way and Construction Costs | IV-18 |
| 2. Intersections and Interchanges | IV-22 |
| 3. Pedestrian and Bicycle Facilities | IV-23 |
| 4. Utilities | IV-23 |
| C. Relocation Impacts | IV-25 |
| D. Land Use Impacts | IV-26 |
| 1. Santa Fe National Forest | IV-26 |
| 2. Bureau of Land Management (BLM) | IV-28 |
| 3. National Park Service | IV-29 |
| 4. Department of Energy | IV-30 |
| 5. Santa Fe County and City | IV-30 |
| 6. Los Alamos County | IV-31 |
| 7. San Ildefonso Pueblo | IV-32 |
| E. Farmland Impacts | IV-32 |
| F. Social Impacts | IV-33 |
| 1. Community Cohesion | IV-32 |
| 2. Travel Patterns and Accessibility | IV-33 |
| 3. Community Facilities and Services | IV-34 |
| 4. Traffic and Public Safety | IV-35 |
| 5. Minority or Ethnic Group Impacts | IV-36 |
| G. Economic Impacts | IV-36 |
| H. Air Quality Impacts | IV-38 |
| I. Noise Impacts | IV-39 |
| 1. Existing Conditions | IV-41 |
| 2. Design Year Noise Levels | IV-47 |
| 3. Evaluation of Noise Impacts | IV-47 |
| 4. Supplemental Analysis | IV-55 |
| J. Water Quality Impacts | IV-58 |
| 1. Groundwater | IV-58 |
| 2. Surface Water | IV-58 |
| K. Permits | IV-59 |

TABLE OF CONTENTS (Cont.)

| | <u>PAGE</u> |
|--|-------------|
| L. Wetland Impacts | IV- 60 |
| M. Water Body Modification | IV- 61 |
| N. Floodplain Impacts | IV- 62 |
| 1. Floodplain Encroachments and Risk | IV- 62 |
| 2. Floodplain Values | IV- 71 |
| 3. Floodplain Development | IV- 71 |
| 4. Mitigation | IV- 72 |
| O. Wild and Scenic Rivers | IV- 72 |
| P. Ecological Impacts | IV- 72 |
| 1. Terrestrial Ecology | IV- 72 |
| 2. Aquatic Ecology | IV- 74 |
| 3. Coordination | IV- 75 |
| 4. Mitigation | IV- 75 |
| Q. Threatened and Endangered Species | IV- 75 |
| 1. Animal Species | IV- 78 |
| 2. Plant Species | IV- 82 |
| 3. Recommendations and Mitigation | IV- 83 |
| R. Historic and Archaeological Preservation | IV- 84 |
| S. Visual Impacts | IV- 90 |
| 1. Public Access to the Study Area | IV- 90 |
| 2. Viewer Sensitivity | IV- 91 |
| 3. Visual Impacts | IV- 91 |
| 4. Mitigation Measures | IV-103 |
| T. Impacts on Publicly-Owned Parklands, Recreational Areas, Wildlife and Waterfowl Refuges, and Historic Sites | IV-105 |
| 1. Bandelier National Monument | IV-106 |
| 2. Tsankawi | IV-108 |
| 3. Local Parks | IV-110 |
| U. Hazardous Waste and Materials | IV-110 |
| 1. Hazardous Waste Sites | IV-110 |
| 2. Transport of Hazardous Materials and Waste | IV-113 |

TABLE OF CONTENTS (Cont.)

| | <u>PAGE</u> |
|---|-------------|
| V. Secondary Impacts | IV-115 |
| W. Construction Impacts | IV-117 |
| X. Relationship of Local Short-Term Uses Versus Long-Term Productivity | IV-128 |
| Y. Irreversible and Irretrievable Commitment of Resources | IV-128 |
| Z. Summary of Mitigation Measures | IV-129 |
| 1. Mitigation of Relocation Impacts | IV-129 |
| 2. Mitigation of Social Impacts | IV-129 |
| 3. Mitigation of Water Quality Impacts | IV-130 |
| 4. Mitigation of Wetland Impacts | IV-132 |
| 5. Mitigation of Floodplain Impacts | IV-132 |
| 6. Mitigation of Wildlife Impacts | IV-132 |
| 7. Mitigation of Threatened and Endangered Species Impacts | IV-133 |
| 8. Mitigation of Historic and Archaeo- logical Preservation Impacts | IV-134 |
| 9. Mitigation of Visual Impacts | IV-134 |
| 10. Hazardous Waste Site Mitigation | IV-136 |
| 11. Mitigation of Construction Impacts | IV-136 |
| V. SECTION 4(f) EVALUATION | |
| A. Proposed Action | V- 1 |
| B. Section 4(f) Properties | V- 2 |
| 1. Bandelier National Monument | V- 2 |
| 2. Tsankawi Ruins Unit Bandelier National Monument | V- 4 |
| 3. White Rock Overlook Park | V- 5 |
| 4. La Senda National Park and and Trail Head | V- 5 |
| 5. White Rock Canyon | V- 6 |
| 6. Rio Grande Tract | V- 6 |
| 7. Other Parks | V- 7 |

| | | |
|-------|--|---------|
| C. | Impacts on the Section 4(f) Properties | V- 8 |
| 1. | Montoso Peak Alternate | V-10 |
| 2. | Chino Mesa Alternate | V-11 |
| 3. | Mortandad Alternate | V-13 |
| 4. | Sandia Canyon Alternate | V-13 |
| D. | Avoidance Alternatives | V-16 |
| E. | Measures to Minimize Harm | V-17 |
| F. | Coordination | V-17 |
| VI. | LIST OF PREPARERS | VI- 1 |
| VII. | DISTRIBUTION OF SUPPLEMENTAL DRAFT ENVIRONMENTAL IMPACT STATEMENT | VII- 1 |
| VIII. | COMMENTS AND COORDINATION | |
| A. | Pre-DEIS Early Interagency Coordination | VIII- 1 |
| 1. | Scoping Process | VIII- 1 |
| 2. | Cooperating Agencies | VIII- 4 |
| 3. | Location Study Team | VIII- 4 |
| 4. | Technical Advisory Committee | VIII- 5 |
| 5. | Response to Early Comments | VIII- 6 |
| B. | Public Involvement Meetings | VIII-15 |
| C. | Response to Agency Comments on DEIS | VIII-19 |
| D. | Public Hearings | VIII-36 |
| E. | Post Hearing Public Involvement Activities | VIII-43 |
| F. | Pre-SDEIS Early Interagency Coordination | VIII-44 |
| G. | Pre-SDEIS Public Information Open Houses | VIII-60 |
| IX. | INDEX | IX- 1 |
| | APPENDICES | |
| A. | Pre-DEIS Early Coordination Correspondence | |
| B. | Agency Comments on DEIS | |
| C. | Pre-SDEIS Early Coordination Correspondence | |

LIST OF TABLES

| <u>NUMBER</u> | <u>TITLE</u> | <u>PAGE</u> |
|---------------|---|-------------|
| I- 1 | Distance Matrix of Existing Routes | I-15 |
| I- 2 | General Service Volumes for Rural Highways | I-18 |
| I- 3 | Estimated Existing and Future ADT Volumes and Level of Service | I-21 |
| I- 4 | Commuters to Los Alamos County | I-24 |
| II- 1 | Design Criteria | II- 8 |
| II- 2 | Evaluation of Eliminated Phase A Alignments | II-10 |
| II- 3 | Evaluation of Eliminated Mortandad Phase C Alignments | II-14 |
| III- 1 | Vegetation Zones in Relation to Altitude | III- 7 |
| III- 2 | Historic Population Growth | III-11 |
| III- 3 | Population Projections | III-12 |
| III- 4 | Race/Ethnic Distribution | III-14 |
| III- 5 | Current Jurisdictional Planning Documents | III-15 |
| III- 6 | Economic Impact of Travel | III-28 |
| III- 7 | Non-Agricultural Employment | III-29 |
| IV- 1 | Travel Distance Matrix by Alternative | IV-14 |
| IV- 2 | Right of Way Requirements | IV-19 |
| IV- 3 | Build Alternate Design Features | IV-20 |
| IV- 4 | Build Alternate Cost Comparison | IV-21 |
| IV- 5 | Intersection/Interchange Configuration | IV-24 |
| IV- 6 | Impact on Grazing Lands | IV-40 |
| IV- 7 | Summary of Air Quality Analysis | IV-42 |
| IV- 8 | Noise Analysis Sites and Areas They Represent | IV-48 |
| IV- 9 | Existing and Design Year Noise Levels | IV-51 |
| IV-10 | Noise Abatement Criteria (NAC) | IV-53 |
| IV-11 | Noise Levels Along Buckman Road and County Road 62 for Design Variants | IV-57 |
| IV-12 | 100 - Year Floodplain Encroachments | IV-66 |
| IV-13 | Historic and Archaeological Sites | IV-88 |
| V-1 | Section 4(f) Resources | V- 3 |

LIST OF EXHIBITS

| <u>NUMBER</u> | <u>TITLE</u> | <u>PAGE</u> |
|---------------|--|-------------|
| I- 1 | Project Vicinity | I- 3 |
| I- 2 | Project Study Area | I- 5 |
| I- 3 | DEIS Alternate Routes | I- 9 |
| II- 1 | Phase A Alignments | II-11 |
| II- 2 | Mortandad Phase C Alignments | II-15 |
| II- 3 | Chino Mesa Phase C Alignments | II-19 |
| II- 4 | Sandia Canyon Phase C Alignments | II-21 |
| II- 5 | SDEIS Build Alternates | II-23 |
| II- 6 | Montoso Peak Alternate: Steel Trussed Arch | II-29 |
| II- 7 | Montoso Peak Alternate: Steel Trussed Arch | II-31 |
| II- 8 | Chino Mesa Alternate: Concrete Segmental Box Girder | II-33 |
| II- 9 | Chino Mesa Alternate: Steel Trussed Arch | II-35 |
| II-10 | Mortandad Alternate: Concrete Arch | II-37 |
| II-11 | Mortandad Alternate: Concrete Segmental Box Girder | II-39 |
| II-12 | Sandia Canyon Alternate: Concrete Arch | II-41 |
| II-13 | Sandia Canyon Alternate: Concrete Segmental Box Girder | II-43 |
| II-14 | Typical Sections | II-47 |
| III- 1 | Natural Features | III- 3 |
| III- 2 | Property Ownership | III-17 |
| III- 3 | Existing and Proposed Land Use | III-19 |
| IV- 1 | 1995 and 2015 Traffic on Existing System - No-Build Alternative | IV- 3 |
| IV- 2 | 1995 and 2015 Traffic on Montoso Peak Alternate | IV- 5 |
| IV- 3 | 1995 and 2015 Traffic on Chino Mesa Alternate | IV- 7 |
| IV- 4 | 1995 and 2015 Traffic on Mortandad Alternate | IV- 9 |
| IV- 5 | 1995 and 2015 Traffic on Sandia Canyon Alternate | IV-11 |
| IV- 6 | Air Quality Analysis Locations | IV-43 |
| IV- 7 | Noise Analysis Locations | IV-45 |
| IV- 8 | Wetlands | IV-63 |
| IV- 9 | 100 - Year Floodplain | IV-67 |
| IV-10 | 100 - Year Floodplain Sites | IV-69 |

LIST OF EXHIBITS (Cont.)

| <u>NUMBER</u> | <u>TITLE</u> | <u>PAGE</u> |
|---------------|---------------------------------------|-------------|
| IV-11 | Sensitive Cacti Locations | IV- 85 |
| IV-12 | Visual Assessment Locations | IV- 93 |
| IV-13 | Segments with Large Cuts and/or Fills | IV-123 |
| IV-14 | Large Cut and/or Fill Details | IV-125 |
| V- 1 | Section 4(f) Resources | V- 3 |

x

SUMMARY

SUMMARY

A. PROPOSED ACTION

The proposed project, called the Santa Fe - Los Alamos Corridor, consists of constructing a shorter, more direct route between Santa Fe and Los Alamos, New Mexico. In addition, construction of this project is meant to provide additional access to and from the Los Alamos area, as well as improve highway safety for the transport of low-level nuclear waste from the Los Alamos National Laboratory. Exhibits I-1 and I-2 in Section I show the general vicinity of the proposed project and the specific project area, respectively.

The existing route from Los Alamos to Santa Fe is via SR 502 (formerly SR 4) which links to US 84/285 in Pojoaque, north of Santa Fe. US 84/285 links to I-25 via US 85 (Cerrillos Road) and US 285 (St. Francis Drive) in the southern portion of Santa Fe. This existing route, from Los Alamos to I-25, is approximately 47 miles in length. Exhibits I-1 and I-2 in Section I also identify this existing route.

The New Mexico State Highway and Transportation Department's (NMSHTD) 1990-1996 "Six-Year Plan" identifies the proposed project as a four-lane, divided highway on new location with limited access. Involved in this study are, depending on the build alternate, 19.2 to 22.3 miles of new construction between the proposed Santa Fe Relief Route near Santa Fe and SR 4 near Los Alamos. The project would require the construction of a major bridge across the Rio Grande as it passes through White Rock Canyon. This new facility is designated as SR 594 by the NMSHTD and could be constructed in seven to ten years following approval of the final Environmental Impact Statement.

For study purposes, the project termini extend beyond the construction limits noted above. The southern project terminus has been identified as the intersection of I-25 and the Santa Fe Relief

Route southwest of Santa Fe. The segment of the Santa Fe Relief Route between I-25 and the proposed construction limits of the Santa Fe - Los Alamos Corridor project was included in the Finding of No Significant Impact (February 19, 1988) for the Santa Fe Relief Route, and is currently under construction. The northern project terminus is at the intersection of Trinity Road (SR 502) and Diamond Drive (SR 501) in Los Alamos. Although SR 4 represents the construction limits for all the build alternates, SR 502, Pajarito Road, and East Jemez Road provide access to and from Los Alamos and are documented in this Supplemental Draft Environmental Impact Statement (SDEIS). Improvements to these connecting facilities are not part of the proposed action. The proposed construction project lies within the municipal boundaries of the City and County of Santa Fe and the County of Los Alamos.

B. OTHER MAJOR GOVERNMENT ACTIONS

The NMSHTD's 1990-1996 "Six-Year Plan" indicates there are three transportation projects planned in the vicinity of the study area; project control numbers 2307, 1787, and 2152. These three projects involve the reconstruction and rehabilitation of SR 502, from its intersection with SR 4 (known locally as the White Rock "Y") to its junction with SR 30. These projects are scheduled for construction between 1990 and 1994. The southernmost segment of the Santa Fe Relief Route, a new four-lane facility in the western Santa Fe area, is currently under construction.

The Los Alamos National Laboratory's (LANL) draft 1989 "Short Term Construction Plan: FY-90" indicates planned improvement of several roads in the vicinity of the study area. These improvements to LANL roads include the widening of East Jemez Road from two to four lanes and the realigning of Pajarito Road. Construction is scheduled to begin in fiscal year 1995.

Both the NMSHTD and LANL planned improvements are an integral part of the transportation network. The future development of this project would not conflict with but would complement these proposed

actions, by further enhancing traffic movement and access throughout the corridor.

C. ALTERNATIVES CONSIDERED

Various alternative actions were considered for this project. These included the Transportation Systems Management Alternative, the Mass Transit Alternative, the Improved Roadway Alternative, the No-Build or "Do-Nothing" Alternative, and the Build Alternative.

Only the Build Alternative would meet the requirements of the project. That is, the provision of additional access to and from Los Alamos, a shorter route between Los Alamos and Santa Fe, and the provision of improved highway safety for the transport of low-level transuranic material from Los Alamos. Although the No-Build Alternative would not meet the requirements of the project, it has been included for further consideration as a basis of comparison with the Build Alternative.

Within the Build Alternative, there are four build alternates. These build alternates are described in detail in Section II and are shown on Exhibit II-5. The typical sections and design criteria for this proposed highway would be the same among the four build alternates. However, the bridge types and heights would vary by alternate. The final bridge types would not be determined until the project is at the final design phase. Given the mountainous terrain, considerable earthwork would be associated with any of the build alternates in order to meet current highway design standards and to bridge the Rio Grande and White Rock Canyon. A comparison of build alternate design features is shown in Table IV-3.

The construction length of the Montoso Peak Alternate involves approximately 22 miles of roadway construction and would require three bridge crossings, ranging in length from 640 feet across Chaquehui Canyon to approximately 2,790 feet across the Rio Grande. The total cost of this alternate would be approximately \$183.7 million.

The construction length of the Chino Mesa Alternate involves approximately 19 miles of roadway construction and would require two bridge crossings, ranging in length from 1,923 feet across Ancho Canyon to 3,113 feet across the Rio Grande. The total cost of this alternate would be approximately \$205.5 million.

The construction length of the Mortandad Alternate involves approximately 21 miles of roadway construction and would require two bridge crossings, ranging in length from 500 feet across Canada Ancha, to 4,562 feet across the Rio Grande. This alternate would require a 300-foot temporary construction bridge. The total cost of this alternate would be approximately \$164.2 million.

The construction length of the Sandia Canyon Alternate involves approximately 22 miles of roadway construction and would require two bridge crossings, ranging in length from 400 feet across Canada Ancha, to 4,104 feet across the Rio Grande. This alternate would also require a 300-foot temporary construction bridge. The total cost of this alternate would be approximately \$150.8 million.

D. MAJOR ENVIRONMENTAL IMPACTS

Details of the four build alternates and the No-Build Alternative and their specific impacts to the social, economic, and natural environment are included in Section IV.

Results of the studies prepared for this project indicate that, under any of the build alternates, there will be large savings in travel time and associated costs because of the 10-mile shorter route provided by the proposed facility. Other major benefits resulting from the proposed action include a safer route, avoiding central Santa Fe, for the transportation of hazardous materials to and from LANL; additional transportation capacity within the area's roadway network; improved access to and from the Los Alamos area; and improved delivery of emergency services, including emergency evacuation and forest fire protection.

There will be no adverse long-term air, noise, water quality, wetland, farmland, or floodplain impacts. There would be no relocation of residences, businesses, farms, or public and institutional facilities. There would be no involvement with known hazardous waste sites in the areas of the project surveyed for this study, except for the Chino Mesa Alternate as it crosses Ancho Canyon on LANL property. The project would not directly impact any properties covered by the provisions of Section 4(f) of the Department of Transportation Act or Section 6(f) of the Land and Water Conservation Fund Act.

The temporary construction bridge would temporarily impact approximately one-half acre of wetland. However, the area disturbed would be revegetated with native plant species upon completion of construction. Floodplains associated with the area would be unavoidably crossed by all of the alternates under consideration. However, no risk of increased flood hazard would occur.

None of the build alternates would completely avoid sensitive plant or animal species. Several alternates would potentially impact the federally endangered bald eagle and peregrine falcon. Coordination with the U.S. Fish and Wildlife Service has been initiated for these alternates. State sensitive cacti, *Pediocactus papyracanthus*, which is also being evaluated for federal listing, and *Mammillaria wrightii*, would also be impacted. In the event avoidance of these cacti species is not feasible or practicable, transplanting the species impacted to a preservation area may be warranted.

Under any of the build alternates, the project would have an effect on the visual environment of the area. Where feasible and practicable, the design of the facility would include measures to make the facility blend into the surrounding area as much as possible.

Short-term construction impacts would include air, noise, and localized stormwater runoff, as well as the temporary effect of construction activities on the visual environment.

Traffic and transportation impacts would be the same under any build alternate. Year 2015 average daily traffic (ADT) volumes on the proposed facility would range from 8,800 to 14,300 vehicles, and would operate at Level of Service B. Under the No-Build Alternative, ADT volumes on existing SR 502 would range from 16,900 to 31,300 vehicles and would operate at Level of Service E and F. US 84/285 would have ADT volumes of approximately 55,000 vehicles and would operate at Level of Service F.

E. AREAS OF CONTROVERSY

Coordination with various governmental agencies, businesses, property owners, and local groups has identified the following areas of potential controversy: 1) potential proximity impacts (air quality, noise, visual intrusion, and increased visitation) on cultural resources in the vicinity of the build alternates and on Bandelier National Monument, including the Tsankawi Unit, and 2) secondary impacts on residential areas along SR 4 in Los Alamos and along Buckman Road and CR 62 in Santa Fe County.

F. LIST OF OTHER GOVERNMENT ACTIONS REQUIRED

A Section 404 permit may be required from the U.S. Army Corps of Engineers for temporary bridge construction activities at the Rio Grande under either the Mortandad or Sandia Canyon Alternate. All other construction activities can be completed with a general permit.

Right-of-way acquisition from various federal and state agencies will be required for each of the alternates. These agencies include the Department of Energy, Santa Fe National Forest, Bureau of Land Management, and the New Mexico State Land Office. Additionally, should either the Mortandad or Sandia Canyon Alternates be selected for implementation, the Bureau of Indian

Affairs would need to be involved with right of way acquisition from the San Ildefonso Pueblo.

SECTION I

PURPOSE OF & NEED FOR ACTION

I. PURPOSE OF AND NEED FOR ACTION

The purpose of this project is to improve roadway access and user safety between Santa Fe and Los Alamos, New Mexico. In addition, this project is meant to provide improved highway safety for the transport of low-level transuranic material from the Los Alamos National Laboratory (formerly Los Alamos Scientific Laboratory) in Los Alamos.²⁴ Exhibit I-1 shows the general location of the project within the State of New Mexico and Exhibit I-2 shows the project study area within Los Alamos, Santa Fe, and Sandoval Counties. The southern terminus of the corridor study area is at the intersection of I-25 and the Santa Fe Relief Route. The northern terminus is at the intersection of Trinity Road (SR 502) and Diamond Drive (SR 501) in Los Alamos.

The need for this improvement is based on seven primary factors: 1) the importance of the Santa Fe - Los Alamos Corridor in the local and regional transportation system, i.e. its system linkage; 2) the capacity and level of service within the existing transportation corridor; 3) the need for a more direct route and shorter travel time between the two areas and to points east and south of the study area; 4) transportation demands; 5) social demands and economic development considerations; 6) modal inter-relationships; and 7) existing roadway deficiencies and safety considerations, including the need for safer transport of hazardous materials from the Los Alamos National Laboratory.

A. PROJECT HISTORY AND STATUS

The history of providing access or a direct route from Santa Fe to what is now the Los Alamos area dates to the beginning of the early 20th century. Hal Rothman's book, Bandelier National Monument: An Administrative History (1988),¹⁹ provides a concise description of the background surrounding the issue of access to and from Santa Fe to the Pajarito Plateau. Rothman notes that, prior to the construction of SR 4 and SR 502, earlier roads connecting the two areas were built for specific enterprises.

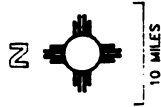
The original modern road to the plateau that Harry Buckman built to facilitate his timber cutting wound up White Rock Canyon. It stretched from the town of Buckman on the east side of the Rio Grande in Canada Ancha to the Buckman sawmills in Water Canyon.... After the demise of the post office in the town of Buckman during the early 1920's, the Los Alamos Ranch School (now the site of the Los Alamos National Laboratory) received its mail at Otowi Crossing, and the emphasis shifted away from the trail that Buckman constructed. The school received an easement from the Forest Service to build a road between the crossing and the school, and soon there were two ways to take an automobile to the Pajarito Plateau. The Ranch School road was the antecedent of New Mexico Highway 4 (recently renumbered, in part, to SR 501 and 502) that began in Pojoaque and finished at the Ranch School. Yet both roads were unpaved, cumbersome, and rutted, and often discouraged travel to the region.¹⁹

The isolated location of the Los Alamos Ranch School made it an ideal place for the Atomic Energy Commission to establish its nuclear weapons and research facility, the Los Alamos Scientific Laboratory (LASL), which was established in 1943. Due to the sensitive nature of the activities within LASL at the time, the entire area was closed to the public and access was intentionally limited.

The establishment of LASL caused substantial development on the plateau, including both research and related support facilities, and residential areas to house LASL employees. Increased growth brought increased transportation demands and congestion on what is now designated as SR 4, SR 502, and US 84/285; the only access between Santa Fe and Los Alamos.

In 1949, the New Mexico State Legislature created the County of Los Alamos. In this same year, the Los Alamos and Santa Fe Boards of County Commissioners submitted concurrent resolutions to the New Mexico State Highway Department (Department) requesting a study of the feasibility of constructing a shorter route

SANTA FE LOS ALAMOS CORRIDOR STUDY



LEGEND

--- COUNTY LINE

(4) STATE ROUTES

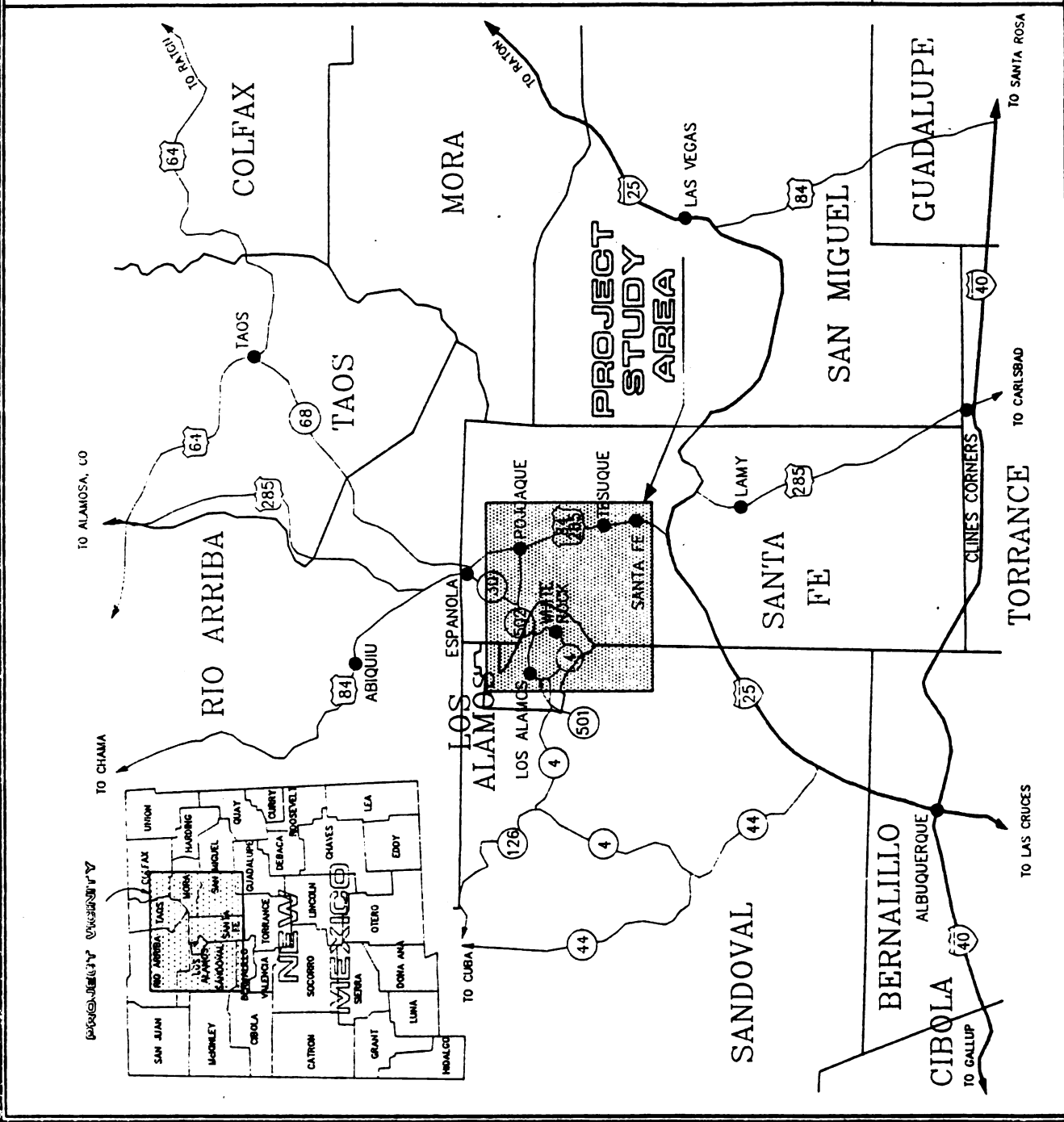
(64) U.S. HIGHWAYS

(25) INTERSTATE ROUTES

SOURCE: NEW MEXICO STATE HIGHWAY & TRANSPORTATION DEPARTMENT

PROJECT VICINITY

ENCLOSURE [10]

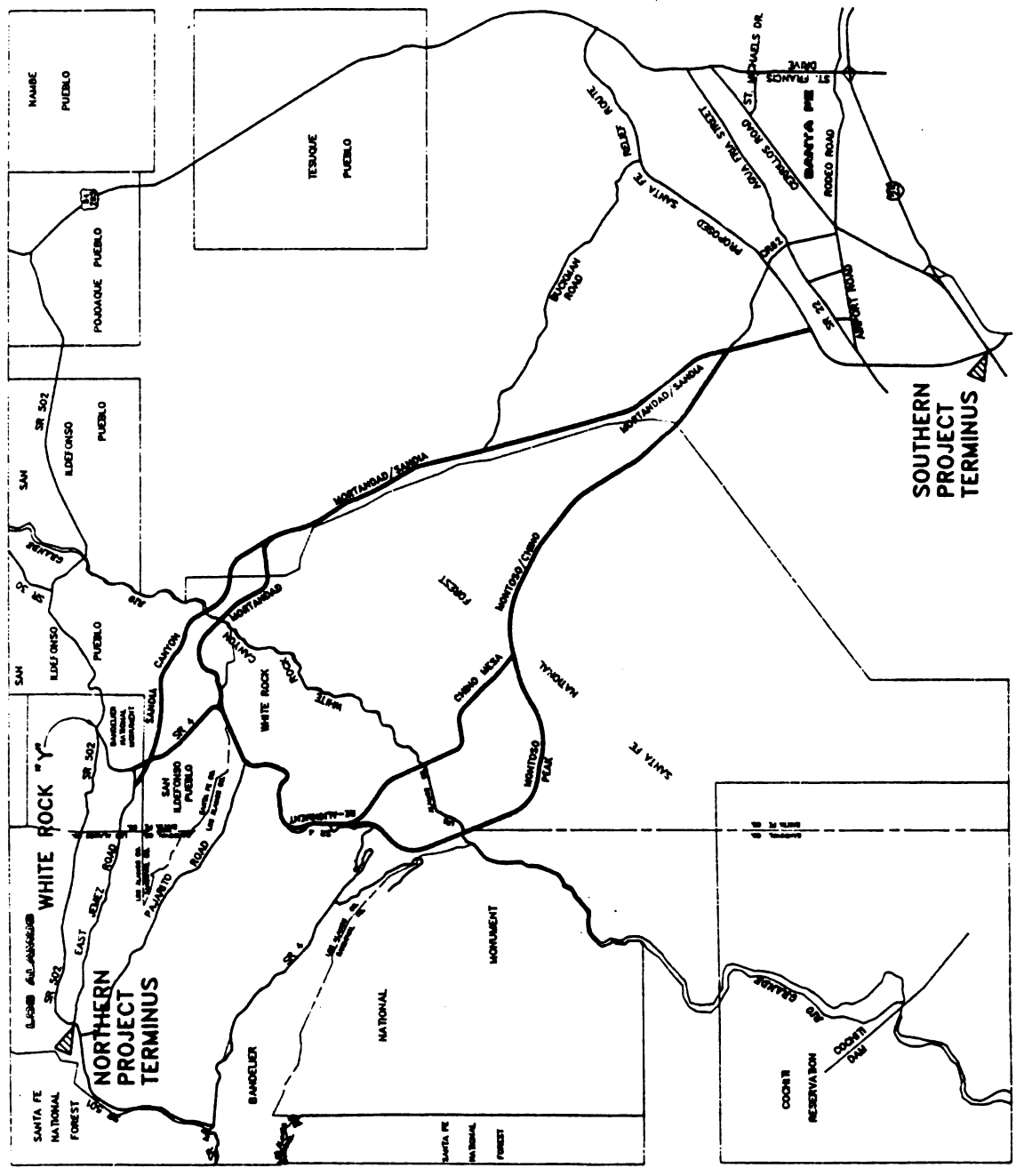


SANTA FE- LOS ALAMOS CORRIDOR STUDY



PROJECT TERMINI

EXHIBIT 1-2



between the two areas.^{1,7} The actions by the County Commissioners were taken in response to the increasing number of residents and employees within Los Alamos County who commuted between the two areas, the existing poor roadway conditions, the increasing traffic congestion, and the length of the existing route.

A similar request was presented to the Department in December of 1950 by the U.S. Army District Engineer of the Fourth Army Headquarters and the Transportation Officer for the Atomic Energy Commission in Los Alamos.¹⁸ In addition to the needs identified by the County Boards of Commissioners; the District Engineer identified the need for a second primary emergency escape route out of Los Alamos, and the need to reduce the potential hazard of transporting hazardous materials by routing shipments away from the populated downtown Santa Fe area.

In January of 1951, in response to these requests, the Department completed a study entitled, "Report on a Proposed Alternate Highway from Los Alamos to Santa Fe".^{14,16} This report included locating, surveying, and estimating costs for a shorter route from the Buckman area and Otowi to the old Bruns Hospital, which was then outside the southern city limits of Santa Fe. The outcome of this effort was the reconstruction and two-lane addition to the existing alignment of US 84/285.

As the number of commuters between Los Alamos and Santa Fe continued to increase throughout the 1950's and 1960's, so did the demand for improved access between the two areas. In 1970, a committee representing the City of Santa Fe and the Counties of Santa Fe and Los Alamos was formed to study the need for and the feasibility of a shorter route between the areas. In November of 1971, this committee, called the Los Alamos Highway Study Committee, presented a report of its findings to the Governor of New Mexico and to the New Mexico Congressional Delegation.²¹ The Committee requested the construction of a new route north of White Rock, across the old Buckman Road crossing, and into Santa Fe near the city's northwest boundary. Support for the route presented in

the report included the need for a shorter route, the need to reduce congestion on the existing route, and the need to improve access between the two areas, including access to other transportation facilities in Santa Fe and Albuquerque such as railroad and airport facilities. High construction costs and the lack of a funding source prevented any action from being taken on the shorter alternate route between the two areas.

In January of 1981, the Los Alamos Scientific Laboratory became one of the country's national laboratories and subsequently changed its name to the Los Alamos National Laboratory (LANL). In September of 1982, LANL published its "Long-Range Site Development Plan", in which it promoted a direct state highway link between the White Rock area and Santa Fe.⁸ LANL subsequently prepared the report, "Preliminary Study of a Proposed Highway: Los Alamos to Santa Fe," in June of 1983.¹⁰ The needs identified within this report were similar to those needs identified in previous LANL reports and reports prepared by local city and county officials.

In 1985, the New Mexico State Legislature directed the Department to study the feasibility of constructing a White Rock to Santa Fe relief route. The Department was directed to report their findings and recommendations to the second session of the 37th Legislature.¹⁷ At this point, the project was completely state funded. In 1986, the U.S. Congress appropriated funds for the Santa Fe - Los Alamos project from the Highway Trust Fund. Funding for the project was made available through the Nuclear Waste Transportation Safety Demonstration Project.²⁴ Low-level nuclear waste from LANL is expected to be shipped to the storage facilities at the Waste Isolation Pilot Project (WIPP) site near Carlsbad, New Mexico. Funding was made possible because the project would provide for transport of nuclear waste along a safer alternate route.

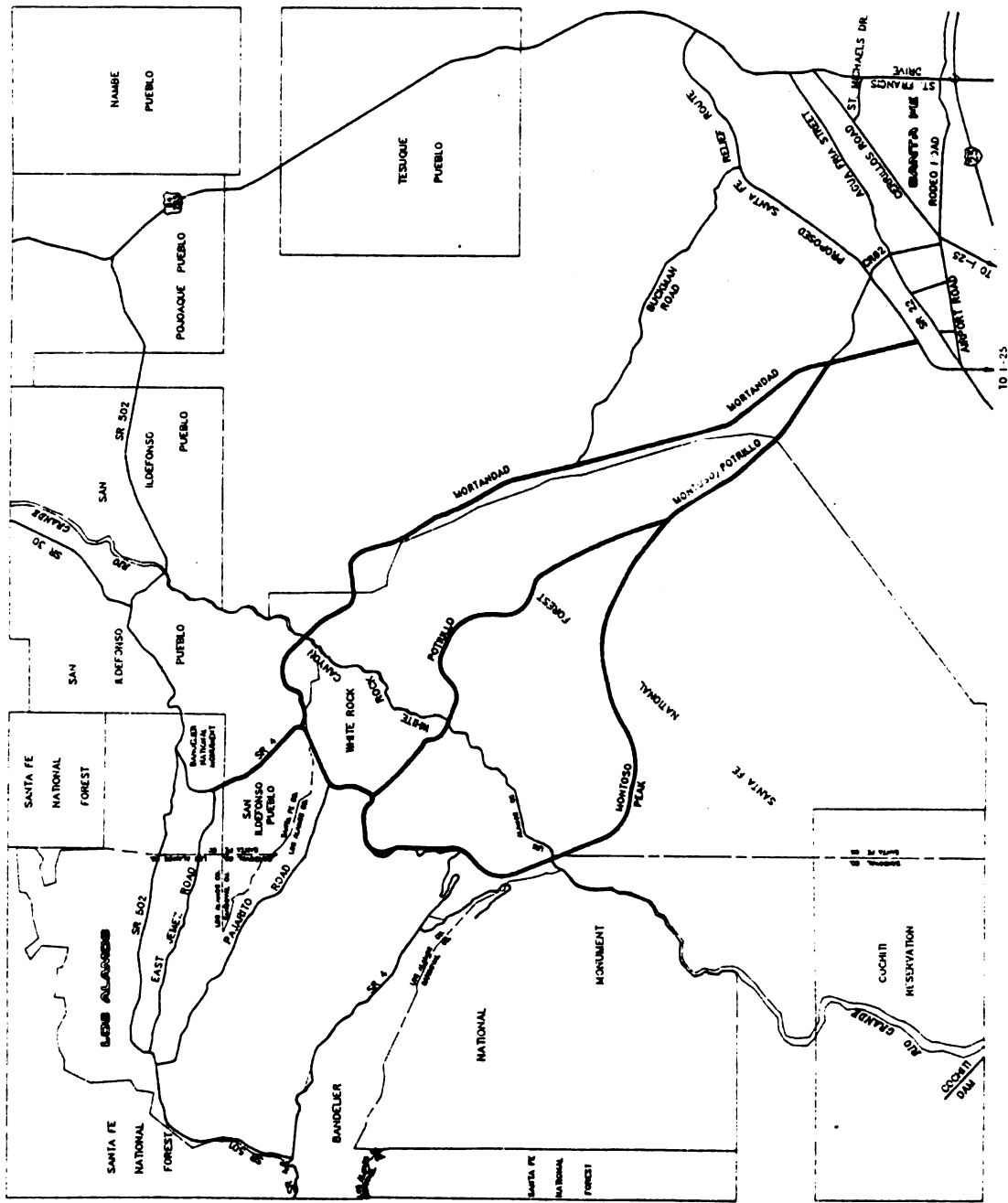
Funding for the proposed project has been appropriated by the U.S. Congress for a total of \$38,100,000. The following indicates the sources of the legislative funding:

SANTA FE- LOS ALAMOS CORRIDOR STUDY



DEIS ALTERNATE ROUTES

1-60-60-000-000-000



- Los Alamos/Santa Fe Route feasibility/environmental studies; Sum of \$500,000 appropriated 3/24/86.
- Nuclear Waste Transportation Demonstration funds for preliminary engineering and right-of-way acquisition; Sum of \$2,000,000 appropriated 12/22/86.²⁴
- 1987 Surface Transportation and Uniform Relocation Assistance Act (STURAA) - Section 149, Demonstration/Discretionary funding; Sum of \$6,400,000 per year for five years appropriated 4/02/87.
- Nuclear Waste Transportation Demonstration funds; Sum of \$3,600,000 appropriated 12/18/88.²³

In 1986, in conjunction with the Federal Highway Administration (FHWA), the Department continued the project study with these needs and objectives taken into consideration. The study effort included a series of environmental and engineering investigations; coordination activities with federal, state, and local agencies and organizations; and various local public involvement efforts.¹⁷ In July of 1988, following these efforts, the Department and FHWA issued the results of the study findings in the "Draft Environmental Impact Statement (DEIS): Santa Fe - Los Alamos Corridor Study".²⁵ Of the numerous alternate routes initially identified, the DEIS presented detailed engineering, socioeconomic, and environmental assessments of three viable alternates which were determined to merit additional evaluation. These three alternates were named the Montoso Peak, Potrillo, and Mortandad Alternates and are shown on Exhibit I-3.

Following circulation of the DEIS in August of 1988, two Location Public Hearings were held. Federal, state, and local

agencies and interested groups and individuals were requested by the Department to provide comments on the DEIS. Based on the DEIS comments received through the circulation of the DEIS and the public hearing process, the Department eliminated the Potrillo Alternate from further consideration because of the alternate's impact on a county park which has been identified as a Section 4(f) property. A Section 4(f) property refers to Section 4(f) of the 1966 Department of Transportation Act which states that the Secretary of Transportation will not approve any project which requires the use of any publicly owned land from a public park, recreation area, or wildlife and waterfowl refuge, or any land from an historic site of national, state, or local significance unless there is no feasible and prudent alternative to the use of such land and all efforts to minimize harm have been incorporated into the project. Since there are other alternates considered to be prudent and feasible, the Potrillo Alternate has been eliminated as a viable alternate. Also, as the result of public and agency comments on the DEIS, two other alternates were identified for additional study and evaluation.

In July of 1989, as a result of these changes and other issues raised, the Department and FHWA agreed to prepare a Supplemental Draft Environmental Impact Statement (SDEIS) for the project in order to evaluate the two new alternates and to reassess the engineering, socioeconomic, and environmental concerns associated with the project. Another purpose was to address comments received and issues raised following the publication of the DEIS. This SDEIS documents the additional studies undertaken for the project in Sections II, III and IV. Public and agency involvement is documented in Section VII.

B. SYSTEM LINKAGE

1. EXISTING SYSTEM LINKAGE

As shown on Exhibits I-1 and I-2, the primary access to Los Alamos is via SR 502 (formerly SR 4) which links to US 84/285 in Pojoaque, north of Santa Fe, and links to SR 30, south of Espanola. Interstate 25 is accessible to the south of Santa Fe via Cerrillos

Road and St. Francis Drive (US 285). Interstate 25 is New Mexico's only north/south facility in the interstate system. Interstate 40, the state's principal east/west facility, is accessible via I-25 in Albuquerque and via US 285 at Clines Corners.

From the west, access to Los Alamos is possible via SR 501 which connects with SR 4 and then SR 44. Between Los Alamos and its connection with SR 4, SR 501 is an arterial facility. West of its intersection with SR 501, SR 4 traverses mountainous terrain with steep grades and sharp curves. Travelling in a westerly direction, SR 4 crosses the Jemez Mountains then proceeds in a southerly direction to its intersection with SR 44. Continuing in a southeasterly direction, SR 44 intersects with I-25 at Bernalillo. The distance from Los Alamos to this point is approximately 81 miles. Santa Fe is approximately 44 miles north of Bernalillo, for a total distance of approximately 125 miles. Albuquerque is approximately 16 miles south of Bernalillo, for a total distance of 97 miles.

The existing primary route between Santa Fe and Los Alamos, US 84/285 and SR 502, is 33 to 47 miles in length, depending upon origin and destination, whereas the distance between Los Alamos and Albuquerque is approximately 95 miles. This is the most direct transportation corridor between these areas; nearly all traffic between these areas use this route.

Trucks with similar origins or destinations, including vehicles transporting hazardous materials to and from LANL, also travel the same route. Within Los Alamos County, trucks must enter and exit the Los Alamos townsite and LANL via East Jemez Road, which is the county's designated truck route.⁶ East Jemez Road is a two-lane facility with a truck climbing lane in the steep sections. As previously noted, motorists whose origins or destinations are south of Santa Fe, must travel US 84/285 through the Santa Fe metropolitan area, following either Cerrillos Road to its connection with I-25 southbound, or following US 285 (St. Francis Drive) to its connection with I-25 northbound. Approxi-

mately 50 to 60 miles to the south, both I-25 and US 285 connect with I-40, the state's principal east/west route. Table I-1 provides mileage comparisons for various destinations for the existing and proposed routes.

2. ONGOING AND PLANNED IMPROVEMENTS

One of the primary purposes of the proposed improvement is to satisfy the need for additional access between the Santa Fe and Los Alamos areas. This need has been formally recognized in the transportation plans and programs of the New Mexico State Highway and Transportation Department, the Counties of Los Alamos and Santa Fe, and the City of Santa Fe.^{6,15,20,22} The Department's 1990-96 "Six-Year Plan" identifies the proposed project as a four lane facility¹⁵. Both the County of Los Alamos and the County of Santa Fe, along with the City of Santa Fe have passed resolutions requesting the Department to consider specific corridor and access locations for the project.² The project construction limits have been located based on these requests, in conjunction with reasonable overall system linkage of the transportation network and minimization of impacts to existing neighborhoods.

Other efforts by the Department to improve the existing transportation network within the Santa Fe - Los Alamos Corridor which complement and support the proposed action include the recently completed four lane widening of SR 502, from US 84/285 to just west of its intersection with SR 30. The Department has also recently completed thereconstruction of the intersection of SR 502 and SR 4, commonly referred to as the White Rock "Y". This intersection was reconstructed as a grade-separated interchange in order to accommodate the anticipated traffic volumes associated with the scheduled widening of SR 502. This five-lane widening of the existing three-lane section of SR 502, from SR 4 to SR 30, will provide three lanes for westbound travel and two lanes for eastbound travel. Construction is expected to be complete by 1995¹⁵.

TABLE I-1

DISTANCE MATRIX OF EXISTING ROUTES
(Miles)

| ORIGIN | DESTINATION | | | | |
|--|--|--|--|----------------------|-------------|
| | I-25 & Santa Fe Relief Route* | Cerrillos Road and Rodeo/ Airport Road | I-25 & US 285 (St. Francis Drive) | Santa Fe Plaza | Albuquerque |
| Los Alamos -at SR 501 and SR 502 | 47 | 43 | 39 | 36 | 95 |
| White Rock -along SR 4 | 44 | 40 | 36 | 33 | 92 |
| Bandelier National Monument -at entrance off SR 4 | 52 | 48 | 44 | 41 | 100 |

* The Santa Fe Relief Route is presently under construction.

Other future projects in the Los Alamos area are included in LANL's "Short Term Construction Plan: FY-90".¹² LANL planned projects include the widening of East Jemez Road to four lanes and the realigning of Pajarito Road to make room for expansion of LANL technical areas. These projects are scheduled for fiscal year 1995.

Planned future projects by the Department include the construction of the Santa Fe Relief Route, shown on Exhibit I-2. This four-lane relief route will provide a thoroughfare around the western metropolitan Santa Fe area. Currently, drainage and grading operations are underway on the section of the Santa Fe Relief Route from I-25 to the vicinity of the Santa Fe River. This section of the Relief Route has been funded with Los Alamos - Santa Fe Demonstration/Discretionary Project funds. No funds have been allocated for the construction of the remaining portion of the Santa Fe Relief Route beyond the vicinity of the proposed Santa Fe - Los Alamos connection. The Department is also in the process of initiating a study of traffic along US 84/285 north of Santa Fe, as well as the "Pojoaque Area Traffic Study". The US 84/285 study is intended to evaluate the existing and future conditions along the route and possible solutions to identified problems. The Pojoaque traffic study is intended to evaluate the existing intersection of SR 502 and US 84/285 and to determine needed improvements.

Construction of an additional route between Santa Fe and Los Alamos, together with the widening of SR 502 and construction of the Santa Fe Relief Route, would improve transportation system linkage, both locally and regionally. The proposed project would provide a highway facility between 10 and 11 miles shorter than the existing Santa Fe/Los Alamos route. It would also reduce travel time and provide an alternate route away from populated areas for the transport of hazardous materials from LANL.

C. CAPACITY AND LEVEL OF SERVICE

1. EXISTING CONDITIONS

The most recent traffic counts for the project were obtained in 1987. In general, of the approximately 35 mile length of roadway between Santa Fe and Los Alamos, over 77 percent is currently operating at a Level of Service "D" or worse. Level of Service (LOS) is a qualitative measure which describes operational conditions of a traffic stream along a roadway. Six Levels of Service are defined from A to F, with Level of Service A the best, and Level of Service F the worst. In general, highway designers strive to provide the highest Level of Service feasible and consistent with anticipated conditions. For acceptable degrees of congestion, rural arterials and their auxiliary facilities (i.e., turning lanes, passing sections, weaving sections, intersections, and interchanges) should generally be designed for Level of Service B, except in mountainous areas where Level of Service C is acceptable. Table I-2 provides a general service volume guide for determining Level of Service on rural highways such as Pajarito Road, East Jemez Road, SR 4, SR 502, and US 84/285. The following descriptions detail the average daily traffic volumes and level of service along portions of the existing roadway between Los Alamos and Santa Fe.

In 1987, when the most recent traffic counts were taken, the average daily traffic (ADT) volume on SR 502, between SR 30 and SR 4, was approximately 13,600 vehicles per day. The existing condition of this section of SR 502, both then and today, consists of three lanes of travel with one lane eastbound and two lanes westbound. The morning peak hour volume along SR 502 averaged approximately 2,075 vehicles per hour (15 percent of the ADT)⁴, whereas the evening peak hour volume averaged approximately 2,300 vehicles (17 percent of the ADT)⁴. Approximately 85 percent of the peak hour volume is westbound along SR 502 in the morning and eastbound in the evening. This 85/15 percent directional split substantiates the high volumes of commuting traffic entering Los Alamos in the morning and exiting Los Alamos in the evening

TABLE I-2

GENERAL SERVICE VOLUMES FOR RURAL HIGHWAYS

| FACILITY TYPE | LEVEL OF SERVICE (ADT) | | | | |
|---------------------------|------------------------|--------|--------|--------|--------|
| | A | B | C | D | E |
| 2-Lane Arterial | 2,000 | 4,000 | 7,000 | 10,000 | 17,000 |
| 4-Lane Undivided Arterial | N/A | 10,000 | 13,000 | 17,000 | 22,000 |
| 4-Lane Divided Arterial | N/A | 11,000 | 15,000 | 19,000 | 25,000 |
| 6-Lane Divided Arterial | N/A | 17,000 | 22,000 | 28,000 | 37,000 |
| 4-Lane Freeway | 11,000 | 16,000 | 21,000 | 25,000 | 29,000 |
| 6-Lane Freeway | 16,000 | 24,000 | 31,000 | 38,000 | 44,000 |

- NOTE:
- 1) The above service volumes were developed utilizing the 1985 "Highway Capacity Manual" and are provided as a planning guide in determining relative volume limits of rural or semirural roadways. These service volumes may have wide variations depending on number of crossroads, intersection or interchange geometry, percentage of heavy trucks and recreational vehicles, lane widths, lateral clearance, horizontal and vertical alignment, and other traffic and roadway characteristics.
 - 2) The general service volumes in this table are maximum values. No values for LOS F are shown since, theoretically, volumes cannot exceed practical capacity (LOS E).
 - 3) Ideally, a rural highway should be designed to operate at Level of Service B. However, under certain circumstances, LOS C is acceptable.

Truck traffic comprised between 1 and 2 percent of the peak hour traffic volumes. The alignment of SR 502, between SR 30 and SR 4, is such that grades are steep and curves are sharp. At one point on this section of SR 502, the grade is approximately 8 percent and a horseshoe curve reduces the safe speed. Given the existing volumes and roadway conditions, this specific part of SR 502 was determined to be operating at a Level of Service F⁴.

SR 502 west of the White Rock "Y" is a two-lane roadway with an average daily traffic volume of 7,800 vehicles. This segment of the roadway currently operates at Level of Service D.

The remaining leg of the White Rock "Y" interchange (SR 4 to East Jemez Road) is also operating at Level of Service D. The traffic volume in 1987 along this roadway was approximately 8,500 vehicles per day.

North of Santa Fe to Pojoaque, US 84/285 is another element in the existing highway system that has traffic operational difficulties. This heavily travelled, four-lane divided roadway is operating at Level of Service E with approximately 25,200 vehicles per day.

2. TRAFFIC GROWTH ON SR 502 AND US 84/285

In order to estimate future year traffic volumes, a traffic study was undertaken in conjunction with the project⁴. An operational analysis of future traffic on the existing system was performed utilizing the procedures of the 1985 "Highway Capacity Manual"²⁶. Detailed results of the traffic analysis are documented in the 1988 "Traffic Analysis - Final Report"⁴, and in the 1990 "Supplemental Traffic Analysis"⁵, both of which are available from the Department.

From 1982 through 1989, traffic on US 84/285 north of Santa Fe has increased 56.2 percent. By the year 2015, the anticipated traffic volumes will represent additional growth of 100 percent and will exceed the capacity of this facility.

Substantial growth in traffic volumes has also been experienced along SR 502 between the White Rock "Y" and US 84/285. Average daily traffic volumes in the year 2015 are estimated to be 17,000 vehicles on SR 502 west of the White Rock "Y" and 30,000 vehicles east of the White Rock "Y". Average daily traffic volumes on US 84/285 in the year 2015 are expected to be 55,000. Even with the widening to four lanes, SR 502 is expected to be operating at LOS E by the year 2015. In this same design year, US 84/285 is expected to be operating at LOS F. Based on the general service volumes presented in Table I-2, Table I-3 presents the existing and projected volumes and LOS for various segments of the existing and currently proposed transportation network.

These projections are based on the assumption that all planned roadway improvements in the area have been completed with the exception of this project. This includes the four-laning of SR 502 from the White Rock "Y" to SR 30. As the projected traffic volumes indicate, even with the roadway improvements, SR 502 would be operating at LOS C during the morning peak hour and LOS E in the evening peak hour in 1995. By 2015, this section of SR 502 would be operating at LOS E and F, respectively. A major widening of SR 502 would be required to provide LOS C for the projected year 2015 traffic. Based on the service volumes shown in Table I-2, this widening would need to be either an eight-lane arterial highway or a six-lane freeway.

Capacity improvements needed for year 2015 traffic along existing US 84/285 would not be practicable. Current traffic projections along US 84/285 indicate that the average daily traffic would be approximately 55,000 vehicles and would be operating at

TABLE I-3

ESTIMATED EXISTING AND FUTURE ADT VOLUMES^c AND LEVEL OF SERVICE

| ROADWAY | LINK | 1987 | | 1995 ^a | | 2015 ^a | |
|--------------------|---------------------------------------|--------------------|-------------------|-------------------------------------|-----|-------------------------------------|-----|
| | | EXISTING Volume | CONDITIONS LOS | PROGRAMMED IMPROVEMENT Volume | LOS | PROGRAMMED IMPROVEMENT Volume | LOS |
| SR 502 | W. of White Rock Y | 7.8 | D | 9.7 | D | 16.9 | E |
| SR 502 | SR 4 to SR 30 | 13.6 | E | 17.1 | D | 30.0 | F |
| SR 502 | W. of US 84/285 | 14.3 | C | 17.9 | D | 31.3 | F |
| US 84/ 285 | SFRR ^b to SR 502 | 25.2 | E | 31.5 | F | 55.0 | F |
| SFRR ^b | I-25 to CR 62 | NA | NA | 14.5 | B | 25.3 | D |
| SFRR ^b | CR 62 to Buckman Road | NA | NA | 13.1 | B | 23.0 | D |
| SFRR ^b | Buckman Road to US 84/285 | NA | NA | 14.5 | B | 25.3 | D |
| SR 4 | Pajarito Rd. to East Jemez Road | 6.0 | C | 7.5 | D | 13.1 | E |
| SR 4 | East Jemez Road to SR 502 | 8.5 | D | 10.6 | E | 18.5 | F |
| Pajarito Road | W. of SR 4 | 6.8 | C | 8.5 | D | 14.5 | E |
| East Jemez Road | W. of SR 4 | 5.3 | C | 6.6 | C | 11.5 | E |

a Only programmed improvement is SR 502, from SR 4 to SR 30. Does not include possible improvements to East Jemez and Pajarito Roads.

b SFRR is the Santa Fe Relief Route. This highway has not been constructed to date and is considered a limited-access facility.

c Average link volumes in thousands.

Source: "Santa Fe - Los Alamos Corridor Study: Supplemental Traffic Analysis", May 1990.

LOS F without the implementation of this project. To bring the facility to LOS C, it would be necessary to widen the existing four-lane facility to eight lanes. There would be considerable business and residential acquisitions and relocation associated with this widening due to the necessary right-of-way requirements.

A new transportation facility is needed in the Santa Fe - Los Alamos Corridor to supplement the capacity of existing facilities. If the Santa Fe - Los Alamos Corridor project is implemented, demands on the existing transportation facilities would be reduced and improved traffic operations would result.

D. TRANSPORTATION DEMAND

Future transportation demands in the Santa Fe - Los Alamos Corridor are expected to continue to increase. The projected traffic volume increases are primarily a function of the economic growth and development occurring within the two areas. (See Section III for a discussion of regional growth trends.) In addition, much of the hazardous materials going to and from LANL continues to be shipped via the existing SR 502 and US 84/285 route through the metropolitan Santa Fe area. These materials are expected to be shipped along the Santa Fe Relief Route, when the project is completed.

In light of this growth and development and the issue of transporting hazardous materials in the area, local planning authorities have recognized the need for transportation improvements and have already incorporated the proposed project into their comprehensive transportation plans. The proposed project is included in the following comprehensive plans: "Los Alamos County: Comprehensive Plan", adopted by Los Alamos County in November 1986; "Santa Fe Comprehensive Extraterritorial Plan", adopted by the City and County of Santa Fe in August 1988; and the "Los Alamos National Laboratory Site Development Plan", a revised preliminary draft, completed by LANL in August 1989. All three documents indicate a need for the proposed project as a means to: 1) reduce travel time for the growing numbers of LANL commuters in the Santa Fe area and

beyond, 2) improve and increase traffic capacities of the existing transportation corridor, and 3) provide a safer alternate route for the transport of hazardous materials by avoiding the Santa Fe metropolitan area.

E. SOCIAL DEMAND AND ECONOMIC DEVELOPMENT

As a part of the traffic analysis performed for this study, traffic projections were determined in an effort to evaluate the degree of impact future growth would have on the existing transportation corridor. Due to the limited availability of housing within Los Alamos County, approximately 40 percent of the LANL jobs are held by persons who commute, primarily from the Espanola and Santa Fe areas. Projections for the year 2015 traffic were based on the location and magnitude of present and future population and employment, the projected continued growth of in-commuters to Los Alamos County, and the commuters' projected places of residence⁴.

Total employment and resident employment forecasts within Los Alamos County are based on the 1986 forecasts for the year 2005, prepared by the University of New Mexico Bureau of Business and Economic Research. The forecast of in-commuters to Los Alamos was determined as the difference between total non-agricultural employment and resident employment in Los Alamos County. Table I-4 shows that the number of future in-commuters is projected to increase at an annual average rate of 2.8 percent from 1990 to 2015. During this same period, the number of individuals who both reside and are employed within Los Alamos County is expected to increase 0.3 percent per year⁴. This would result in over 45 percent of the Los Alamos County workforce in 2015 commuting from outside the county.

The Los Alamos National Laboratory will continue to be a major economic force in the local, regional, and state economy. The primary mission of LANL continues to be that of an applied research laboratory using multidisciplinary approaches to solve a wide range of technical problems, especially in ensuring the United States

TABLE I-4
COMMUTERS TO LOS ALAMOS COUNTY

| YEAR | NON- AGRICULTURAL EMPLOYMENT | COUNTY RESIDENTS EMPLOYED | OUT OF COUNTY COMMUTERS |
|-------------|---|--|--|
| 1980 | 12,915 | 9,799 | 3,358 |
| 1985 | 15,494 | 10,816 | 4,948 |
| 1990 | 16,648 | 11,980 | 4,968 |
| 1995 | 18,354 | 12,287 | 6,374 |
| 2000 | 19,977 | 12,532 | 7,758 |
| 2005 | 21,331 | 12,932 | 8,722 |
| 2010 | 22,685 | 12,932 | 10,076 |
| 2015 | 24,039 | 12,932 | 11,430 |

Source: University of New Mexico, Bureau of Business and Economic Research, 1986.

nuclear deterrence and security⁹. The 1989 "Los Alamos National Laboratory Institutional Plan: FY 1989-FY 1994" indicates that, in addition to nuclear weapons research, LANL is expanding its areas of research in the scientific field, from nuclear and particle physics to the biosciences. This diversification is part of LANL's "technology transfer" efforts in which federally funded research and advanced technologies developed within LANL are being transferred into the nation's industrial base. As such, the total employment within LANL is expected to continue at a high level throughout the decade⁹. Services and industries established to take advantage of this technology transfer are expected to grow and expand. LANL's use of contractors to provide services is also expected to increase⁹.

Los Alamos County has limited area available to accommodate the residential demands associated with the projected expansion at LANL and other employers in the county. As a result, future employees within the county will likely find housing in surrounding areas such as Espanola, Pojoaque, Santa Fe, and Albuquerque. It is projected that, by the year 2015, approximately half of those employed within Los Alamos County will reside outside of the county¹³. With this growth in commuting traffic comes increasing demands on the existing facilities. Even with the planned improvements to SR 502 in place, commuting traffic volumes will be such that the existing facility would be operating at Level of Service E and F during the morning and evening peak hours, respectively.^{4,5}

F. MODAL INTERRELATIONSHIPS

In addition to the existing roadway network, the project area is also served by several airport facilities. A small airport is located in Los Alamos County along SR 502, near the eastern limits of the Los Alamos townsite. Operated by the Department of Energy, this airport generally serves LANL personnel via a small commuter air service with connections in Albuquerque. Due to topographical constraints, there is only one short runway, approximately 5000 feet in length. Airport expansion and a needed crosswind runway at Los

Alamos are inhibited by both the topography and the proximity of a residential area¹¹.

The Santa Fe Municipal Airport is a commercial airport and is larger than the Los Alamos Airport. It is located in southeastern Santa Fe, approximately 47 miles from the Los Alamos townsite. The Santa Fe Municipal Airport is accessible from Airport Road. Existing access to the airport would be improved upon completion of the proposed Santa Fe Relief Route. The Relief Route will have a connection with Airport Road and I-25. The major commercial airport in the state is in Albuquerque, approximately 95 miles from the Los Alamos townsite and approximately 60 miles from Santa Fe.

Because of the nature of activities at LANL, air service to and from Los Alamos is in continuous demand. Government officials, scientists, consultants, and visitors from around the world frequently use these air facilities as a means of getting to Los Alamos after traveling to Albuquerque or Santa Fe on air carriers. Construction of the project would provide a shorter and more expedient route to the Albuquerque airport. The proposed southern terminus of the project would be located in proximity to the Santa Fe Municipal Airport, at its intersection with the proposed Santa Fe Relief Route.

In addition, a high speed rail line is being studied to serve Santa Fe and Albuquerque. Should this rail line become a reality, the proposed Santa Fe - Los Alamos highway would provide easy access to this rail line.

G. ROADWAY DEFICIENCIES AND SAFETY

Due to the legislative mandate accompanying the funding of the project, one of the principal purposes of the proposed action is to provide for an improved highway facility for the transport of low-level nuclear waste from the Los Alamos National Laboratory. The proposed facility for the Santa Fe - Los Alamos Corridor study would be designed and constructed to meet or exceed current AASHTO and Department design standards to aid in the safe transport of

hazardous materials. Truck climbing lanes and escape ramps will be included as required by the terrain. The proposed road would be a limited access facility, thereby reducing the potential for accidents by limiting the number of intersections.

As one of the nation's foremost nuclear weapons and energy research facilities, LANL requires an average of 4,500 shipments each year, approximately 80 percent of which involve hazardous materials³. The transport of hazardous materials includes both radioactive material and chemical materials. Chemical materials, especially flammable materials such as gasoline, make up more than two-thirds of the hazardous materials transported. The shipment of these materials from Los Alamos is currently routed along Pajarito Road, north on SR 4, east on SR 502, then south on US 84/285 (St. Francis Drive through Santa Fe)³. Portions of this existing route are through precipitous mountain terrain. Shipment of these materials on this existing highway network passes through a number of communities, including Otowi, San Ildefonso Pueblo, Pojoaque, Tesuque, and the more urban areas of Santa Fe. The New Mexico State Highway and Transportation Department's Planning Bureau indicates in its "Ratings for Highway Improvements", a deficiency rating in the area of safety for the section of SR 502, from SR 30 to the townsite in Los Alamos, and for SR 4, from the White Rock "Y" to SR 501. The existing alignments of SR 502 and SR 4 in these sections are constrained with steep vertical grades and sharp horizontal curves, with marginal sight distance. Given current American Association of State Highway and Transportation Official's (AASHTO) and New Mexico State Highway and Transportation Department's design criteria, these sections of SR 502 and SR 4 are considered to be substandard for this type of facility. Current design criteria for a two-lane primary facility require a minimum 24-foot wide paved roadway with 10-foot wide paved outside shoulders. SR 502, west of SR 30, is a three-lane facility with two feet of unpaved shoulder width. SR 4, from the White Rock "Y" to SR 501, has a roadway width of 22 feet with two feet of unpaved shoulder width. There is currently no access control along SR 502 and SR 4.

As previously noted, the Department is currently planning to upgrade SR 502 to a five-lane facility between SR 30 and SR 4. The improvement to this segment of SR 502 would reduce the steepest vertical grade from 8% to 7.68% and would improve the sharpest horizontal curve from a 25 mph design speed to a 45 mph design speed curve. Even with this improvement, however, this portion of the existing route is expected to be operating at Level of Service E and F by the year 2015 without the construction of the Santa Fe - Los Alamos highway. This would indicate the likelihood of a congested route by which hazardous materials are to be shipped. In addition, this planned improvement to SR 502 alone would not eliminate the transport of hazardous materials through developed areas of Santa Fe.

As noted in the environmental documentation prepared for the Santa Fe Relief Route, the Relief Route was originally not intended to serve as part of the Santa Fe - Los Alamos Route. As both projects progressed and the southern portions of the routes became coincidental, it was recognized that the Santa Fe Relief Route from the Santa Fe - Los Alamos highway to I-25 could be used for the transport of hazardous materials³. The northern portion of the Santa Fe Relief Route would not be built to the same design standards as the Santa Fe - Los Alamos highway and would, therefore, not be as desirable a route for the transport of hazardous materials.

Public Hearings are currently underway which would officially designate the routes to be used for the transport of nuclear waste to the WIPP site near Carlsbad, New Mexico. The New Mexico State Highway and Transportation Department has recommended that the most reasonable, current route for transporting hazardous materials from Los Alamos to the WIPP site would be as follows: East Jemez Road to SR 4 north, east on SR 502, south on US 84/285 (St. Francis Drive through Santa Fe), then US 285 south to Carlsbad. Parts of this route are old, deficient in design, and congested. Should the Relief Route be constructed and the Santa Fe - Los Alamos project not implemented, these materials would likely be transported along

the Relief Route from the point where US 84/285 ties in with the Relief Route. This would redirect the transport of hazardous materials away from the central, metropolitan area of Santa Fe but would not be as far removed from populated areas as would the Santa Fe - Los Alamos Corridor. The Santa Fe Relief Route, like the Santa Fe - Los Alamos Corridor, is proposed to be a four-lane divided arterial and a limited access facility. This would mean that the number of points for vehicular access would be limited to designated intersections.

In addition to providing an improved highway for the safer transport of hazardous materials and avoiding the major metropolitan area of Santa Fe, the project would also address other safety concerns within the Los Alamos area. An additional evacuation route out of Los Alamos is needed based on three safety-related reasons: 1) the potential for a nuclear accident or an accident involving hazardous materials; 2) the potential for forest fires; and 3) civil defense purposes. Any of these could necessitate the immediate evacuation of the Los Alamos area.

The Los Alamos area is unique in that the transportation network is not interwoven with various connections to primary and secondary roadway facilities. The numerous canyons and finger-like mesas upon which the townsite of Los Alamos has been developed inhibit the establishment of a transportation network typical of other developed areas. In the event of an emergency on the Pajarito Plateau, evacuation routes are limited to SR 502, a primary three-lane facility, and to SR 501, a secondary two-lane facility. In an emergency in which the Los Alamos area must be evacuated, traffic dispersion is limited because 1) there are only two possible escape routes and 2) the capacity of these escape routes cannot adequately accommodate the volume of evacuating traffic. Once the routes are blocked by traffic, the system is clogged because there are no other routes by which to disperse the traffic back-up. Not only is egress limited but so too is access in the event of an emergency. In the event of a forest fire, response crews are typically dispatched from Santa Fe and Albuquerque. If the two roads are blocked by traffic

leaving Los Alamos, it would be difficult for these fire-fighting teams to get to any fire on the Pajarito Plateau. The same holds true for outside emergency response teams responding to a nuclear or hazardous materials accident.

Neither LANL, Los Alamos County nor the Office of Civil Emergency Preparedness have an evacuation plan for Los Alamos. Preliminary emergency evacuation evaluations done by LANL indicate that, under existing conditions evacuation of Los Alamos would be a difficult and lengthy process. An additional access route out of Los Alamos would help to reduce the time required to evacuate the area.

Implementation of the project would provide an additional escape route as well as increase the capacity of the transportation system to accommodate evacuating traffic. In addition, because the proposed corridor would avoid the metropolitan areas of Santa Fe, the risk from a potential transportation-related hazardous materials accident would be reduced.

SECTION I. REFERENCES

- 1 Board of County Commissioners of Los Alamos County, New Mexico, "Special Meeting", September 28, 1949.
- 2 City of Santa Fe, Resolution No. 1987-52, passed, approved, and adopted July 8, 1987.
- 3 Federal Highway Administration, City of Santa Fe, and New Mexico State Highway Department, "Environmental Assessment: Northwest Santa Fe Relief Route", Project ST-7649 (203) 1, 2, 3, July 17, 1987.
- 4 New Mexico State Highway and Transportation Department, "Phase C Traffic Analysis: Santa Fe - Los Alamos Corridor Study", Final Report, Volume I, July 1988.
- 5 New Mexico State Highway and Transportation Department, "Supplemental Traffic Analysis: Santa Fe - Los Alamos Corridor Study", May 1990.
- 6 Los Alamos County, "Los Alamos County Comprehensive Plan", June 1987.
- 7 Santa Fe County Board of Commissioners, "Resolution for Construction of a Shorter Route Between Otowi and Santa Fe," Adopted September 28, 1949.
- 8 Los Alamos National Laboratory, Long-Range Site Development Plan, September 1982.
- 9 Los Alamos National Laboratory, "Los Alamos Laboratory National Laboratory Institutional Plan: FY1989-FY1994", September 1989.
- 10 Los Alamos National Laboratory, "Preliminary Study of a Proposed Highway: Los Alamos to Santa Fe", June 1983.
- 11 Los Alamos National Laboratory, "Santa Fe/Los Alamos Alternate Route", February 1987.
- 12 Los Alamos National Laboratory, "Short Term Construction Plan FY-90: FY 92 - FY 96", Draft, December 1989.
- 13 Los Alamos National Laboratory, "Site Development Plan", Revised Preliminary Draft, August 1989.
- 14 New Mexico State Highway and Transportation Department, "Report on a Proposed Alternate Highway from Los Alamos to Santa Fe", January 1951.

- 15 New Mexico State Highway and Transportation Department, "Six-Year Plan: 1990/91 - 1995/96 Fiscal Years, Santa Fe County".
- 16 New Mexico State Highway Department, Communications with Carroll L. Tyler, Manager, Atomic Energy Commission, in letters dated September 22, 1950; October 3, 1950; October 20, 1950; November 3, 1950; December 1, 1950.
- 17 New Mexico State Highway Department, "Phase A Report: Location/Environmental Study - Santa Fe - Los Alamos Corridor", August 1985.
- 18 New Mexico State Highway Department, "Report on a Proposed Alternate Highway from Los Alamos to Santa Fe", (Contained in a letter to Colonel G. E. Wrockloff, Transportation Officer, Fourth Army Headquarters) January 29, 1951.
- 19 Hal Rothman, Bandelier National Monument: An Administrative History, Southwest Cultural Resources Center, Professional Papers No. 14, 1988.
- 20 Santa Fe Extraterritorial Zoning Authority, "Santa Fe Comprehensive Extraterritorial Plan", August 1988.
- 21 Santa Fe - Los Alamos Highway Study Committee, Proposed New Highway: Santa Fe - Los Alamos; Cochiti, November 1971.
- 22 City of Santa Fe Planning Commission and Urban Policy Board, "Plan '83: Santa Fe Area General Plan", November 1983.
- 23 U. S. Congress, House, Department of Transportation and Related Agencies Appropriations Act of 1989. Public Law 100-457, 100th Congress, 1988, H.R., 4794.
- 24 U. S. Congress, House, Department of Transportation and Related Agencies Appropriations Bill, 1987, Public Law 99-591, 99th Congress, 1986, H.R. 5205.
- 25 Federal Highway Administration and New Mexico State Highway and Transportation Department, "Draft Environmental Impact Statement: Santa Fe - Los Alamos Corridor Study", July 1988.
- 26 Transportation Research Board, National Research Council, "Highway Capacity Manual", Special Report 209, 1985.

SECTION II

ALTERNATIVES CONSIDERED

II. ALTERNATIVES CONSIDERED

This section presents the alternatives considered for the proposed Santa Fe - Los Alamos Corridor Study. First, the process through which the alternatives were developed is presented. This is followed by a description of alternatives that have been eliminated. Finally, the alternatives retained for detailed evaluation and comparison are identified. At this time, a preferred alternative has not been determined. A decision with regard to the proposed action will not be made until the results of the circulation of this report and the information received through the Location Public Hearing process have been fully evaluated.

A. DEVELOPMENT OF ALTERNATIVES

At the initiation of this project, five broad ranged alternatives were established for development and consideration. The alternatives included the No-Build Alternative of maintaining the existing roadway system, an Improved Roadway Alternative, a Mass Transit Alternative, a Transportation Systems Management (TSM) Alternative, and the Build Alternative involving the construction of a new highway between Santa Fe and Los Alamos.

Prior to developing specifics for any of the alternatives, existing data files and previously completed studies were reviewed. Because of the continual evaluation of an additional route between these two areas over the past 40 years, an extensive collection of data existed for this project. These files were reviewed and pertinent information was extracted for use in this study. This information provided the basis for development of the alternatives and identification of additional data requirements to fully evaluate the various possibilities being studied.

B. ALTERNATIVES CONSIDERED BUT ELIMINATED

Several alternatives have been considered but eliminated because they do not serve the purpose of and need for the project. Alternatives eliminated from further consideration include the

Transportation Systems Management, Mass Transit, and Improved Roadway Alternatives.

1. **TRANSPORTATION SYSTEMS MANAGEMENT (TSM) ALTERNATIVE**

The TSM Alternative includes those types of limited construction activities designed to maximize the utilization and energy efficiency of the present transportation system. Possible TSM improvement options within this alternative include adding widened shoulders and additional warning signs in areas where they are lacking; minor realignment of sharp horizontal curves; traffic signals at intersections experiencing substantial delays; fringe parking areas for carpool and vanpool users; high occupancy vehicle (HOV) lanes; and flexible work schedules at major Los Alamos employers. However, the implementation of these TSM measures would not adequately address the needs of the project. That is, TSM measures would not sufficiently reduce congestion along SR 4, SR 502, or US 84/285, would not provide an alternate route between Santa Fe and Los Alamos, would not provide an additional evacuation route from Los Alamos, and would not substantially improve the highway system for safer transport of hazardous materials. Added shoulder width, improved signing, minor geometric improvements, and traffic signals could improve traffic safety and operations but would not markedly affect the capacity of the highway system. Park-and-ride programs could help to reduce peak period volumes along the existing route but their utilization is unlikely. High occupancy vehicle lanes would require extensive roadway construction along SR 502 and US 84/285, impacting numerous adjacent developments.

The Los Alamos National Laboratory (LANL) currently provides for flexible work hours and encourages carpooling/vanpooling activities. A recently completed survey of Los Alamos workers indicated that most persons began their daily commute to work between 6 and 8 a.m. and left work between 4 and 6 p.m.⁴ This survey also indicated that approximately 35 percent of Los Alamos employees already utilize a carpool or vanpool for commuting. Because of the high level of current participation in

these TSM programs, added flexibility of work schedules or encouragement of carpooling/vanpooling would result in little additional reduction in peak traffic volumes.

Based on all these factors, the TSM Alternative is not a viable alternative to meet the needs of the project. Although many of the TSM measures would result in traffic safety and operational improvements, the practical need lies with an alternative which would provide a long-term solution to the identified needs.

2. MASS TRANSIT ALTERNATIVE

The Mass Transit Alternative includes such options as providing either a bus or rail service between Santa Fe and Los Alamos to decrease roadway congestion. In Los Alamos County scheduled peak period bus service provides transportation to local residential and employment areas. Currently, Santa Fe has no scheduled daily bus service. No intercity bus service is currently provided between Santa Fe and Los Alamos. There is no rail service of any kind provided between the two areas.

The Los Alamos bus systems has no plans to expand their systems to include service to the Santa Fe area. The difficulty with a Santa Fe - Los Alamos bus route involves the diversity of rider origins and destinations. Because of this diversity, centralized pick-up and discharge locations would be required to maximize the efficiency of the service and to be competitive with other available means of commuting. Access to and from these centralized locations could be provided by the local transit system or by personal transportation. Because of the necessary transfers, this system would not likely be an attractive alternative to the current system of private automobiles, carpools, and vanpools. As such, the reduction in traffic volumes along US 84/285 and SR 502 due to this alternative would not substantially improve traffic operations and the level of service provided.

The provision of passenger rail service between the two cities is also unlikely to result in a substantial improvement in

traffic operations. The same transfer difficulties would exist with a rail system as with the express bus service. Additionally, the cost to implement rail service would be prohibitive since all facilities (stations, track, signals, communications, etc.) and equipment would be required. The implementation cost per user would be too high to justify such a system.

3. IMPROVED ROADWAY ALTERNATIVE

The Improved Roadway Alternative includes the modification, expansion, and reconstruction of existing roadway facilities to meet current and future travel demand. For this project, this alternative would include improvements to US 84/285, SR 502, and SR 4 between Santa Fe and Los Alamos. These improvements could involve highway realignment to improve horizontal and vertical geometry, adding travel lanes, constructing grade separated interchanges at high volume crossroads, modification of existing interchanges, and safety improvements.

Based on the traffic forecasts shown in Table I-3, an estimate of lane requirements has been made for the existing highway system.^{11,4} For SR 502 under this alternative, four travel lanes would be required in each direction of travel between US 84/285 and SR 4 to provide for LOS C. A six-lane roadway would be required for both SR 502 west of the White Rock "Y" and SR 4 between SR 502 and East Jemez Road. A four-lane facility would be needed between East Jemez and Pajarito Roads along SR 4 as well as along these two intersecting routes. The projected volume of traffic along US 84/285 is such that an eight-lane freeway would be required to provide LOS C.

The existing interchanges along SR 502 at SR 4 and US 84/285 would require rehabilitation, modification, or replacement to accommodate the projected growth in traffic and the expanded number of travel lanes. New interchanges would likely be required along US 84/285 at key access locations to maximize traffic operations along the route.

Roadway alignment modifications would be required along SR 502, between SR 30 and SR 4. This segment of roadway is planned for improvement but would require additional improvements to further reduce steep vertical grades and lessen sharp horizontal curves with an eight-lane roadway.

The effect of all these improvements would be substantial. The widening of roadways and construction of interchanges would impact most all of the properties abutting the existing routes. A considerable number of relocations would be required, particularly along US 84/285 where there are numerous commercial properties. Approximately 70 to 80 business and residential relocations could occur along US 84/285 due to this alternative.

In most instances, the improvements required under this alternative involve a doubling of the current number of travel lanes. This is, in effect, the same as building a new highway adjacent to the current facility; however, no new alternative route of shorter length is provided between Santa Fe and Los Alamos.

Based on the potential effects of this alternative, it does not appear to be feasible to improve the existing roadway to the extent required. In addition, the Improved Roadway Alternative would not provide a route for the transport of hazardous materials that is away from the more heavily populated areas of Santa Fe. The proposed Santa Fe Relief Route north of the Santa Fe - Los Alamos highway may not be suitable for the transport of hazardous materials due to a lack of funding for the facility, and the location of the road in planned residential areas. Additionally, the Improved Roadway Alternative would not provide an additional evacuation route from Los Alamos. Implementing this alternative would not meet the purpose of or need for the proposed improvements. Therefore, this alternative has been eliminated from further consideration.

C. ALTERNATIVES CONSIDERED FOR ADDITIONAL STUDY

Of the five basic alternatives considered for this project, two

have been retained for further study and evaluation. These include the No-Build Alternative and the Build Alternative.

For analysis and purposes of comparison, both of these alternatives are considered to have common termini at the intersection of Diamond (SR 501) and Trinity (SR 502) Drives in Los Alamos and the intersection of the proposed Santa Fe Relief Route and I-25 southwest of Santa Fe. The length of the No-Build Alternative between these termini is 47 miles as shown in Table I-1. For the Build Alternative, the distance is dependent on the route of the build alternate considered.

1. NO-BUILD ALTERNATIVE

The No-Build or Do-Nothing Alternative consists of a continuation of the existing route between Santa Fe and Los Alamos. No major improvements to the existing routes except those currently planned or programmed would be included in this alternative (See Section I-B.2). Continued roadway maintenance and minor improvements would be a part of this concept.

Table I-3 indicates that some segments of the current route are operating at Level of Service D or worse. By the year 2015, all of the route would be operating at LOS D or worse. Although the No-Build Alternative would not meet the needs of the project, it is being retained for further consideration as a basis of comparison with the Build Alternative.

2. DEVELOPMENT OF THE BUILD ALTERNATIVE

In order to provide a more direct connection between Santa Fe and Los Alamos along a new alignment, various build alternates were developed under the Build Alternative. The process for determining possible build alternates involved the following phases: development and evaluation of preliminary alignments (Phase A), selection and refinement of alignments (Phase B), and detailed development and evaluation of build alternates (Phase C).

a. **Preliminary Alignments Development and Evaluation (Phase A)**

Preliminary investigations were conducted within the study area to obtain information on factors which could influence the delineation of potential alignments in the study area. Available data was gathered and researched to provide information for the development of these alignments. Data gathering activities were conducted with various federal, state, and local agencies and groups that maintain information on the area and its resources. Following the preliminary data gathering activities, field investigations were conducted to aid in defining natural and man-made features that were considered in the conceptual design of the alignments.

Prior to the development of preliminary alignments, a set of design criteria was established for the new highway and all connecting roadways. These design guidelines are shown in Table II-1 and are based on desirable roadway design standards of the New Mexico State Highway and Transportation Department for this type of facility, along with design guidelines of the American State Highway and Transportation Officials .

Given the design guidelines of Table II-1, a series of preliminary alignments were developed for the study area. These alignments were based on the previous studies conducted for this project, local input received during the project, and the results of preliminary field investigations. During the evaluation, some of the alignments were eliminated in favor of other similar

TABLE II-1

DESIGN CRITERIA

| <u>FACTOR</u> | <u>WEST OF RIO GRANDE</u> | <u>EAST OF RIO GRANDE</u> | <u>SR 4</u> |
|------------------------------|--------------------------------------|--------------------------------------|--------------------|
| Functional Classification | Rural Freeway | Rural Freeway | Rural Arterial |
| Design Speed | 55 MPH | 60 MPH | 50 MPH |
| Terrain | Mountainous | Rolling | Rolling |
| Maximum Horizontal Curvature | 5.0 Degrees | 4.0 Degrees | 7.0 Degrees |
| Maximum Grade | 6% | 6% | 6% |
| Number of Lanes | 4 Lanes | 4 Lanes | 4 Lanes |
| Lane Width | 12 Feet | 12 Feet | 12 Feet |
| Outside Shoulders | 10 Feet | 10 Feet | 10 Feet |
| Inside Shoulders | 4 Feet | 4 Feet | None |
| Median Treatment | Paved | Revegetated | Paved |
| Median Barrier | Yes | No | No |
| Maximum Superelevation | .06 Ft/Ft | .06 Ft/Ft | .06 Ft/Ft |
| Intersection Radii | WB-50 | WB-50 | WB-50 |
| Access Control | Partial | Partial | Partial |
| Bridge Width (Curb to Curb) | 76 Feet | 76 Feet | None |

Source: American Association of State Highway and Transportation Officials, A Policy on Geometric Design of Highways and Streets, 1984.

alignments with less impacts and more desirable features. Other alignments were combined or modified to improve the overall characteristics of the alignment.

Following the initial engineering efforts, each of the preliminary alignments was evaluated based on engineering, social, and environmental factors such as: constructibility, costs, design features, existing land uses, recreation areas, historical/archaeological sites, agricultural uses, vegetation, floodplains, wetlands, geotechnical limitations, and topography. The evaluation of these factors was reported in the "Phase A Location/Environmental Report", published in August, 1985.² Eight alternate alignments were reviewed. These are shown on Exhibit II-1 and include: Montoso Peak, Sagebrush Flats, Potrillo, Potrillo Tunnel, Pajarito or White Rock Tunnel, Buey Canyon, Mortanúad, and Buckman.

b. Selection and Refinement of Alignments (Phase B)

As a result of the Phase A Report, four of the preliminary alignments were eliminated based on unacceptable high costs, undesirable construction requirements, or social, environmental, or cultural impacts. Those alignments that were eliminated included Sagebrush Flats, Potrillo Tunnel, Pajarito or White Rock Tunnel, and Buey Canyon. Table II-2 summarizes some of the major reasons why these alignments were not evaluated further. The remaining four alignments were refined and analyzed in greater detail during the Phase B Study. The results of this analysis are documented in the "Phase B Location/Environmental Report", published in March, 1986.³

As more detailed engineering studies and field investigations were completed on the four alignments, slight modifications were made to avoid potential impact to sensitive areas or to improve the constructibility of each alignment. The Buckman alignment was eliminated during this phase of the study

TABLE II-2

EVALUATION OF ELIMINATED PHASE A ALIGNMENTS

| ALIGNMENT NAME | EVALUATION FACTORS |
|-------------------|---|
| Sagebrush Flats | <ul style="list-style-type: none">- Difficult side hill construction on unstable slopes.- High potential for rock toppling from canyon rim onto highway.- Potential would exist for viaduct pier footing failures because of poor material in foundation areas. |
| Potrillo Tunnel | <ul style="list-style-type: none">- Difficult side hill construction on unstable slopes.- High potential for rock toppling from canyon rim onto highway.- Potential would exist for viaduct pier footing failures because of poor material in foundation areas.- Two-mile highway traverse in White Rock Canyon environmentally undesirable. |
| White Rock Tunnel | <ul style="list-style-type: none">- Sophisticated and very costly ventilation system necessary.- Required 300-foot high exhaust dispersal stack in the center of White Rock would be unsightly.- Two-mile highway traverse in White Rock Canyon environmentally undesirable.- Estimated \$3 million annual tunnel maintenance cost considered undesirable. |
| Buey Canyon | <ul style="list-style-type: none">- Difficult and very costly construction due to ruggedness of country.- Unacceptable steep grades and a very sharp curve which would not meet AASHTO standards for this class of road.- Two-mile highway traverse in White Rock Canyon environmentally undesirable. |

at the request of the San Ildefonso Pueblo.¹⁰ Due to this action, three alignments remained for inclusion in the Phase C Study.

c. Evaluation of Build Alternates (Phase C)

The Montoso Peak, Potrillo, and Mortandad alignments were selected as the three build alternates for detailed development and evaluation. These build alternates were presented in the "Draft Environmental Impact Statement (DEIS)", dated July, 1988, and are shown in Exhibit I-3. Following the publication of the DEIS, the results of this portion of the alternates development was presented in the "Phase C Engineering Report".

During Phase C, several alignments between SR 4 and White Rock Canyon were studied for both the Potrillo and Mortandad alignments. Along the Potrillo Alternate, two alignments were considered. The "Tunnel" and "Cut" alignments were both only slight modifications from the Phase B Potrillo alignment. Because of the similar alignment, both of these alignments were included in the Phase C report and the DEIS.

For the Mortandad Alternate, the Phase B alignment and six optional alignment segments were investigated. The segments are shown in Exhibit II-2 and included Mortandad Phase C; "A" Phase C; "B" Phase C; "C" Phase C; "D" Phase C; and South Phase C. These segments could be combined to form various alignments. The alignment selected during the study was the combination of "B" Phase C and "D" Phase C.¹⁰ The other four segments as well as the Mortandad Phase B alignment were eliminated from consideration for the reasons indicated in Table II-3.

Following completion of the DEIS and the Phase C Engineering Study, both alignments under the Potrillo Alternate were eliminated from further consideration, primarily because of.

TABLE II-3

EVALUATION OF ELIMINATED MORTANDAD PHASE C ALIGNMENTS

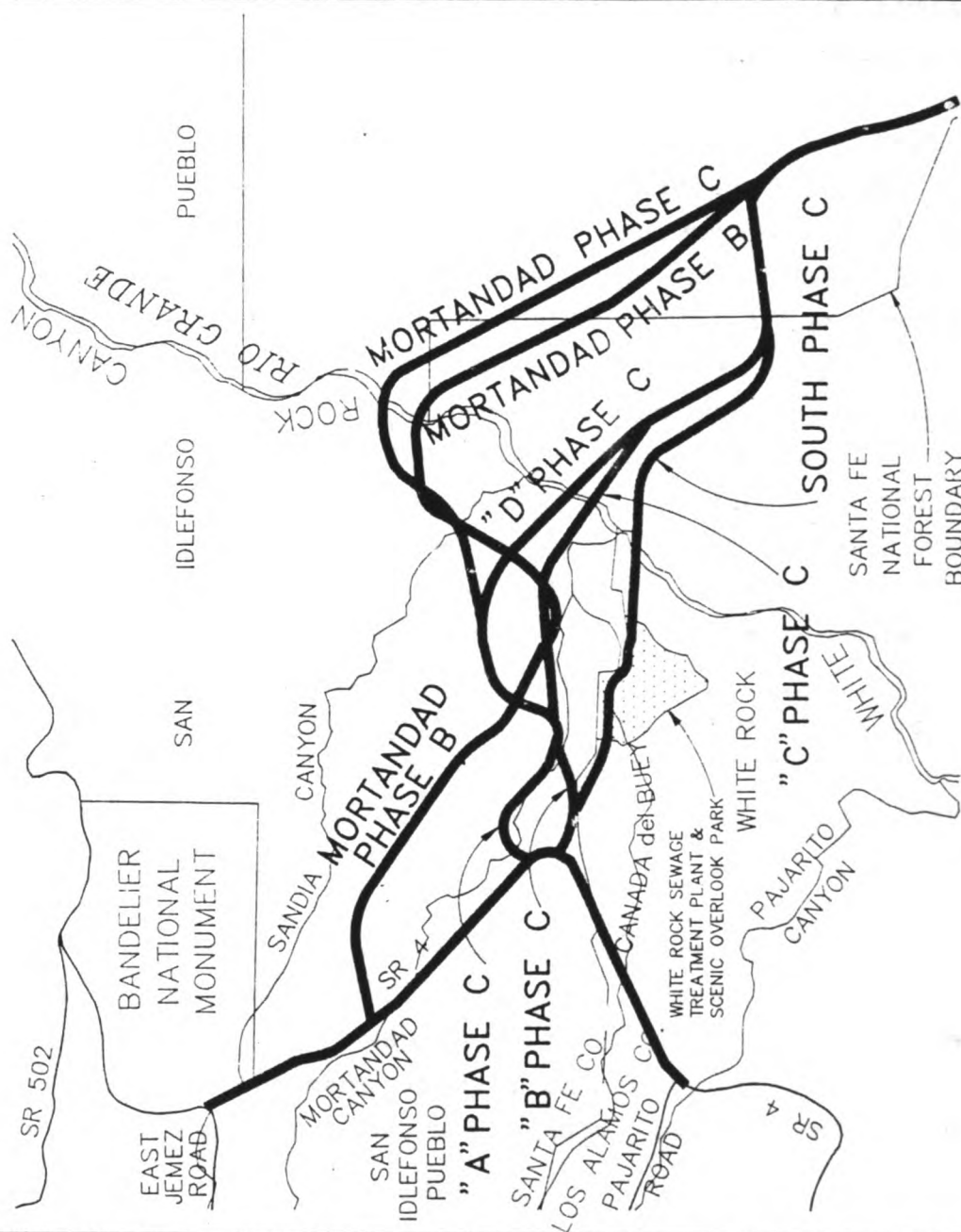
| <u>ALIGNMENT NAME</u> | <u>EVALUATION FACTORS</u> |
|-----------------------|--|
| Mortandad Phase B | <ul style="list-style-type: none"> - Westerly 1.5 miles of the alignment would pass between major archaeological sites on San Ildefonso Pueblo land. - Realignment at SR 4 resulted in excessively steep grades and a third major bridge. - Section of the alignment west of Sandia Canyon would require undesirable side hill construction. |
| "A" Phase C | <ul style="list-style-type: none"> - The engineering aspects of this segment of alignment were good; however, it passes through a planned Pueblo development area. |
| "C" Phase C | <ul style="list-style-type: none"> - This alignment required the construction of two major bridges and one small bidge. - The section of alignment between the two major bridges would be on a compound curve and would require undesirable side hill construction. |
| South Phase C | <ul style="list-style-type: none"> - The section of alignment between SR 4 and White Rock Canyon would lie between 250 and 400 feet north of the northeasterly residential section of White Rock, then pass through a park, a portion of the sewage disposal property, and the White Rock Canyon Overlook. - Extreme bridge visibility. |
| Mortandad Phase C | <ul style="list-style-type: none"> - All of this alignment between SR 4 and the Rio Grande would be over San Ildefonso Pueblo land. This alignment and the Mortandad "D" Phase C alignment were considered by the Pueblo during the Phase C study. A preference for the "D" Phase C alignment was indicated. - This alignment would require two major bridges. - The Rio Grande Bridge would be on a curved alignment and a 4% grade. |

SANTA FE-
LOS ALAMOS
CORRIDOR
STUDY



MORTANDAD
PHASE C
ALIGNMENTS

EXHIBIT II-2



required land acquisitions from two dedicated parks.⁹ These direct park impacts would have involved Section 4(f) of the Transportation Act. As such, this alternate could have been implemented only if there were no feasible and prudent alternatives to the Potrillo Alternate and all reasonable means to minimize harm to the parks had been incorporated into the alternate. Since there were prudent and feasible alternatives to the use of the Section 4(f) park land, the Potrillo Alternate was dropped from consideration.

Two additional build alternates emerged as a result of the Phase C study. Each is a modification of the remaining Montoso Peak or Mortandad Alternate. The Chino Mesa Alternate is concurrent with much of the Montoso Peak Alternate and the Sandia Canyon Alternate utilizes a large portion of the Mortandad Alternate. Prior to the Phase C Report, the Chino Mesa and Sandia Canyon Alternates were developed based on several preliminary alignments and comparative evaluations. The "Chino Mesa Alignment Study" was published in July, 1989 and documented the evaluation of two alignments for this alternate.⁵ These alignments were identified as the Chino Mesa North Line and South Line and are shown on Exhibit II-3. Based on the comparative study of these alignments, the North Line was selected for inclusion in the SDEIS and for more detailed development. The primary reasons for the selection of the North Line are as follows:

- South Line encroaches on Technical Area 33 of the Los Alamos National Laboratory (LANL)
- South Line is very close to the vibration sensitive Very Large Baseline Array (VLBA) at LANL
- North Line would require a shorter and lower bridge over White Rock Canyon.

Concurrent with the study of the Chino Mesa alignment options, an engineering study of two alignments along Sandia Canyon was performed. The results of this study were reported in the "Sandia Canyon Alignment Study", dated April, 1990.¹² These alignments were identified as the Sandia Canyon Upper Line and

Lower Line (in reference to their location in the canyon) and are shown on Exhibit II-4. Based on the studies of these two alignments, the Upper Line was selected for further development, evaluation, and inclusion in the SDEIS. The main factors that resulted in the selection of Upper Line are as follows:

- The horizontal and vertical alignment of the Upper Line is better than the Lower Line.
- The Upper Line would result in a 60 mph design speed instead of 50 mph with the Lower Line.
- The Upper Line would provide a substantial increase in user benefits with respect to safety related design considerations.

3. BUILD ALTERNATES

The four build alternates are shown on Exhibit II-5 and include: Montoso Peak, Chino Mesa, Mortandad, and Sandia Canyon. These are the four build alternates that are being evaluated in this Supplemental Draft Environmental Impact Statement (SDEIS). These alternates are also more fully detailed in the revised "Phase C Engineering Report", dated May, 1990.⁹ The following sections provide a more complete description of each of the alternates.

a. Montoso Peak Alternate

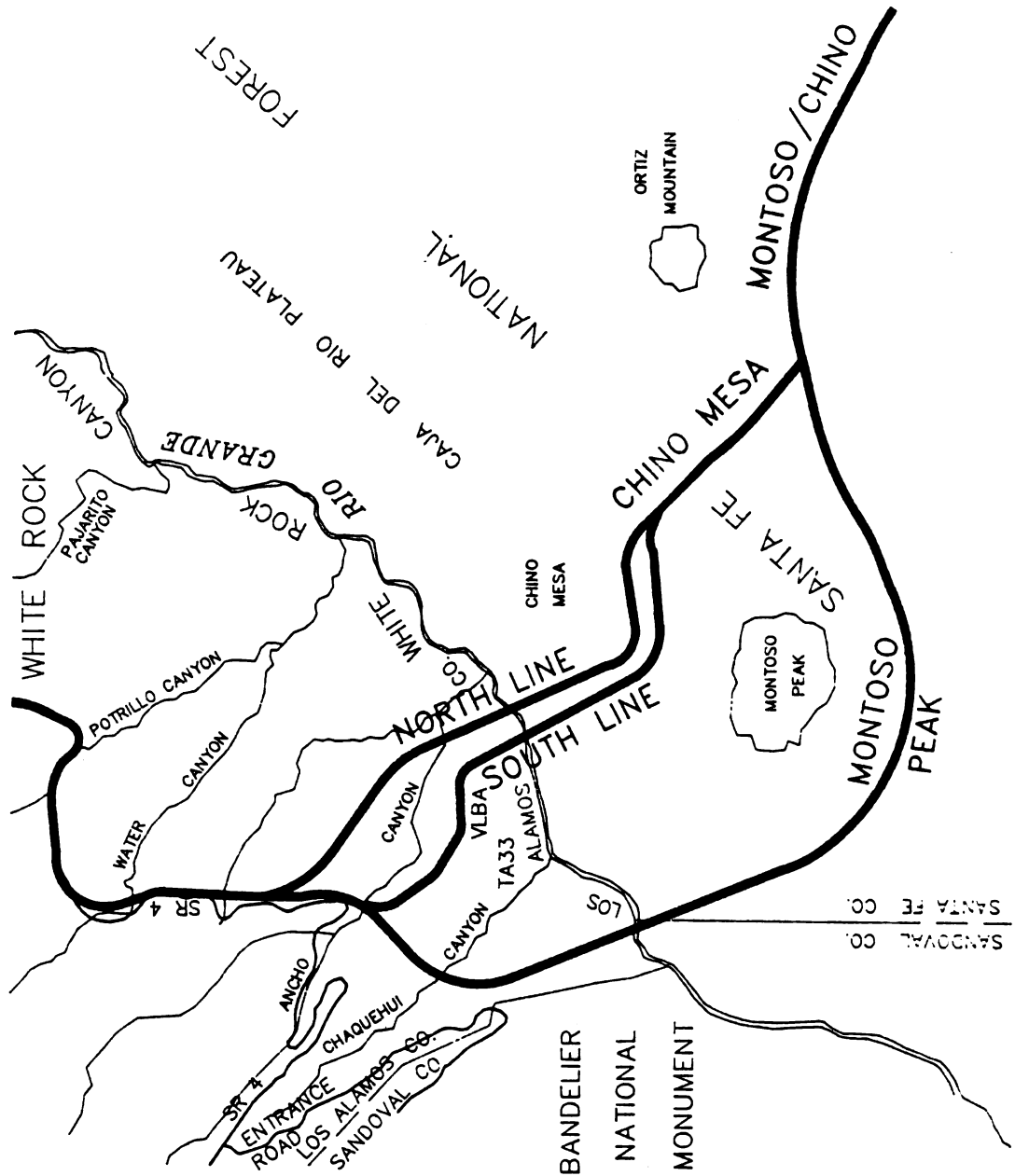
This alternate begins in White Rock at the intersection of SR 4 with Pajarito Road and Grand Canyon Drive. The route follows SR 4 south to the vicinity of Los Alamos National Laboratory (LANL) Technical Area (TA) 33, crossing Water Canyon and Ancho Canyon. The alignment then crosses Chaquehui Canyon and White Rock Canyon, passes south of Montoso Peak, and crosses the Caja del Rio Grant. This alternate follows CR 62 to the vicinity of the Arroyo Calabasas before turning southeasterly to tie to the proposed Santa Fe Relief Route.

SANTA FE-
LOS ALAMOS
CORRIDOR
STUDY

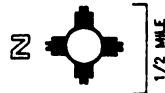


CHINO MESA
PHASE C
ALIGNMENTS

EXHIBIT 11-23

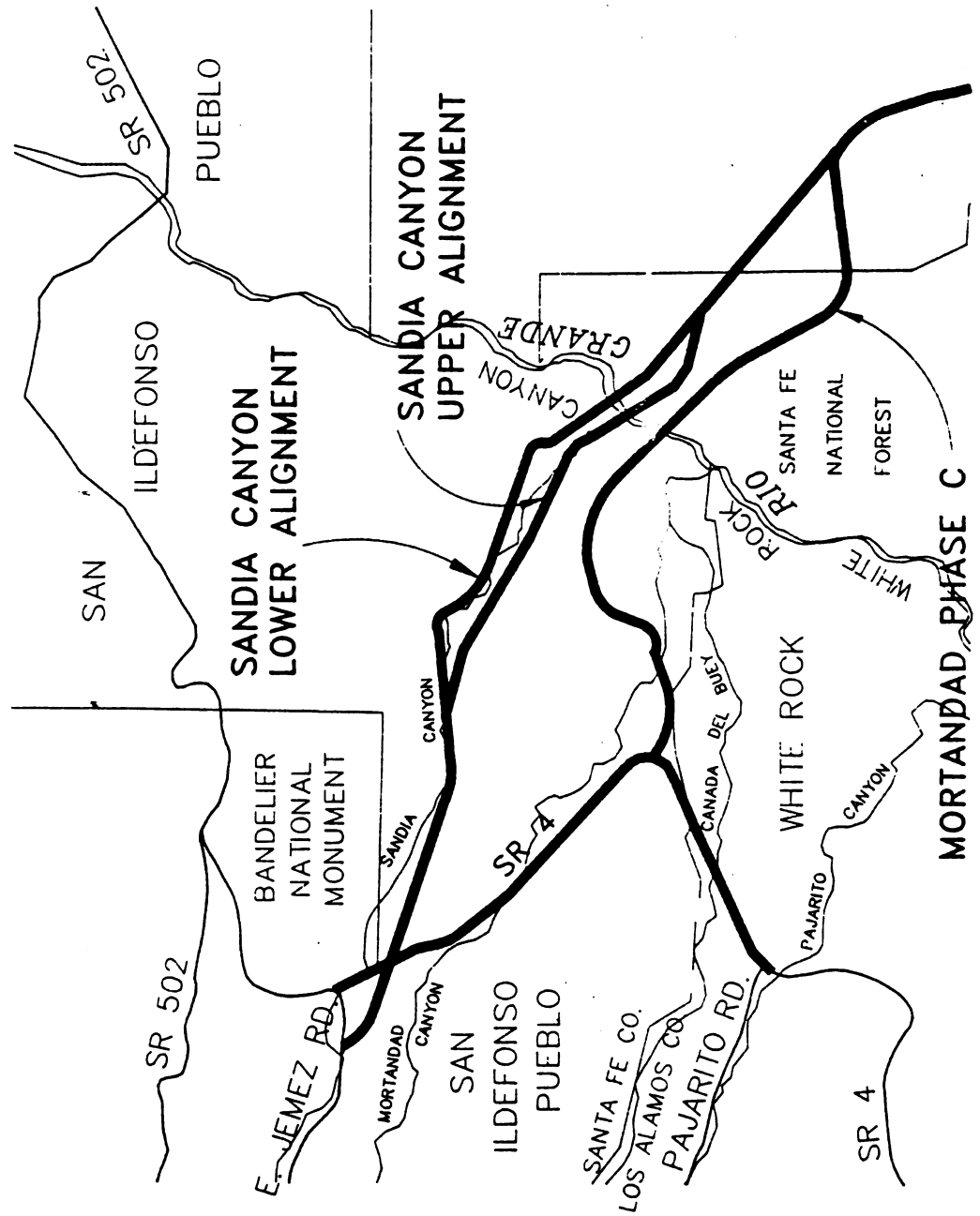


SANTA FE-
LOS ALAMOS
CORRIDOR
STUDY



SANDIA CANYON
PHASE C
ALIGNMENTS

EXHIBIT 10-13



SANTA FE- LOS ALAMOS CORRIDOR STUDY



LEGEND

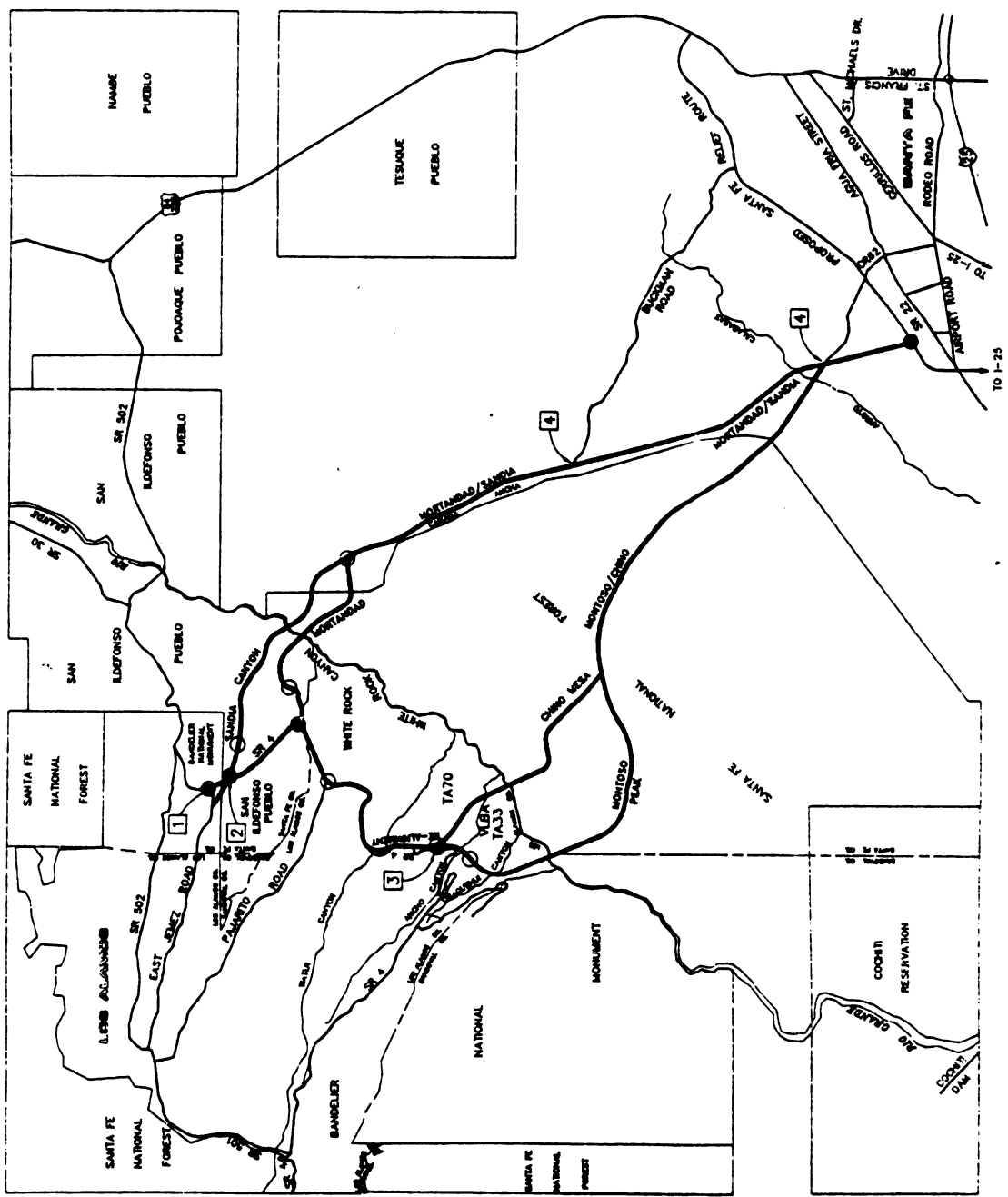
PROPOSED ACCESS FEATURES

- INTERCHANGE
 - AT-GRADE INTERSECTION
- TA33 LANL TECHNICAL AREA
VLBA VERY LARGE BASE ARRAY

NOTES:

- 1 THREE-LEVEL INTERCHANGE WITH MORTANDAD ONLY
- 2 TWO-LEVEL INTERCHANGE WITH SANDIA CANYON ONLY
- 3 AT-GRADE INTERSECTION WITH CHINO MESA ONLY
- 4 NO INTERCHANGE OR AT-GRADE INTERSECTION

**SDSIS
BUILD
ALTERNATES**



The Montoso Peak Alternate would require the acquisition of right of way for right of way from the Department of Energy, Santa Fe National Forest, Bureau of Land Management, State of New Mexico, and one private land owner. No land would be required from the San Ildefonso Pueblo.

The length of this alternate from the SR 4 - Pajarito Road intersection to the Santa Fe Relief Route would be about 21.5 miles. The total length of roadway construction would be about 22.3 miles due to improvements along SR 4 to the west of the alignment. The distance between the project termini along this alignment would be approximately 33.3 miles.

b. Chino Mesa Alternate

This alternate begins at the same place as the Montoso Peak Alternate and follows SR 4 south to the vicinity of LANL Technical Area 70. At this point the two alternates diverge, with the Chino Mesa Alternate crossing Ancho Canyon and White Rock Canyon north of the Montoso Peak Alternate. The Chino Mesa alignment then passes north of Montoso Peak and crosses the Caja del Rio Grant to a common point in the Santa Fe National Forest with the Montoso Peak Alternate. The two alternates follow the same alignment for the remainder of the National Forest, along CR 62 to the vicinity of the Arroyo Calabazas, and then southeasterly to the proposed Santa Fe Relief Route.

This alternate would affect the same land owners as the Montoso Peak Alternate. The length of the alternate is about 19.1 miles from Pajarito Road at SR 4 to the Santa Fe Relief Route. The distance between project termini along this alignment would be approximately 30.9 miles.

c. Mortandad Alternate

This alternate begins at a proposed interchange with SR 4 immediately north of White Rock, and proceeds easterly along Mortandad Canyon toward White Rock Canyon. The alignment crosses the Rio Grande and the Canada Ancha just north of the Caja del Rio

Plateau. It then continues southeasterly, generally following the Canada Ancha and the Caja del Rio Grant boundary. This alternate joins the alignment of the Montoso Peak and Chino Mesa Alternates in the vicinity of the Arroyo Calabasas and runs concurrently with these other alternates to the proposed Santa Fe Relief Route. Construction of the Mortandad Alternate would require associated improvements along existing SR 4 between East Jemez Road and Pajarito Road. In general, this improvement would involve widening the existing road to four lanes.

The Mortandad Alternate would require the acquisition of right-of-way from all the same land owners as the previous alternates with the exception of two. The single private land owner would not be affected by the Mortandad Alternate and land would be required from the San Ildefonso Pueblo.

This alternate is about 17.1 miles long from SR 4 to the Santa Fe Relief Route. With the approximate 3.8 miles of required improvements along SR 4, the total construction length of this alternate would be 20.9. The distance between the project termini via the Mortandad Alternate would be 30.0 miles.

d. Sandia Canyon Alternate

This alternate begins along East Jemez Road west of SR 4 and extends southeasterly following Sandia Canyon to White Rock Canyon. The alignment crosses the Rio Grande and the Canada Ancha to the north of the Caja del Rio Plateau and north of the Mortandad Alternate. The Sandia Canyon and Mortandad Alternates join and continue southeasterly, generally following the Canada Ancha and the Caja del Rio Grant boundary. In the vicinity of the Arroyo Calabasas, the two alternates join the other two alternates and continue southeasterly to the Santa Fe Relief Route. Like the Mortandad Alternate, construction of the Sandia Canyon Alternate would require improvements along SR 4 between East Jemez Road and Pajarito Road.

Affected land owners for the Sandia Canyon Alternate are the same as those for the Mortandad Alternate. The alternate is about 18.4 miles long from East Jemez Road to the Santa Fe Relief Route. Improvements along SR 4 extend the construction length of the alternate to 21.9 miles. The distance between the project termini along the Sandia Canyon Alternate would be 28.8 miles.

e. Bridge Options

Bridge studies for each of the build alternates have been completed as part of the Phase B and C engineering studies for all major river and canyon crossings.^{6,7,8,13} The one common feature that must be crossed by all alternates is the Rio Grande as it passes through White Rock Canyon.

Each of the alternates has at least one additional bridge for crossing another canyon or an arroyo. The Montoso Peak Alternate has two additional bridges, one over Chaquehui Canyon and one over Ancho Canyon. Chino Mesa requires only one additional bridge over Ancho Canyon. Both the Mortandad and Sandia Canyon Alternates have a bridge over the Canada Ancha arroyo.

Investigations of various bridge options have concentrated on the major structure for each alternate, the Rio Grande crossing. During Phase B for each alternate, numerous bridge types and span arrangements were evaluated. Key issues considered in the evaluation were costs, geotechnical data, constructibility, and aesthetics. For each alternate alignment, two bridge options were selected for further evaluation during the Phase C portion of the study. However, for the Montoso Peak Alternate, one of the bridge options (the suspension bridge) has been dropped from consideration due to the visual impacts on the surrounding area, cost, and difficulty of construction.

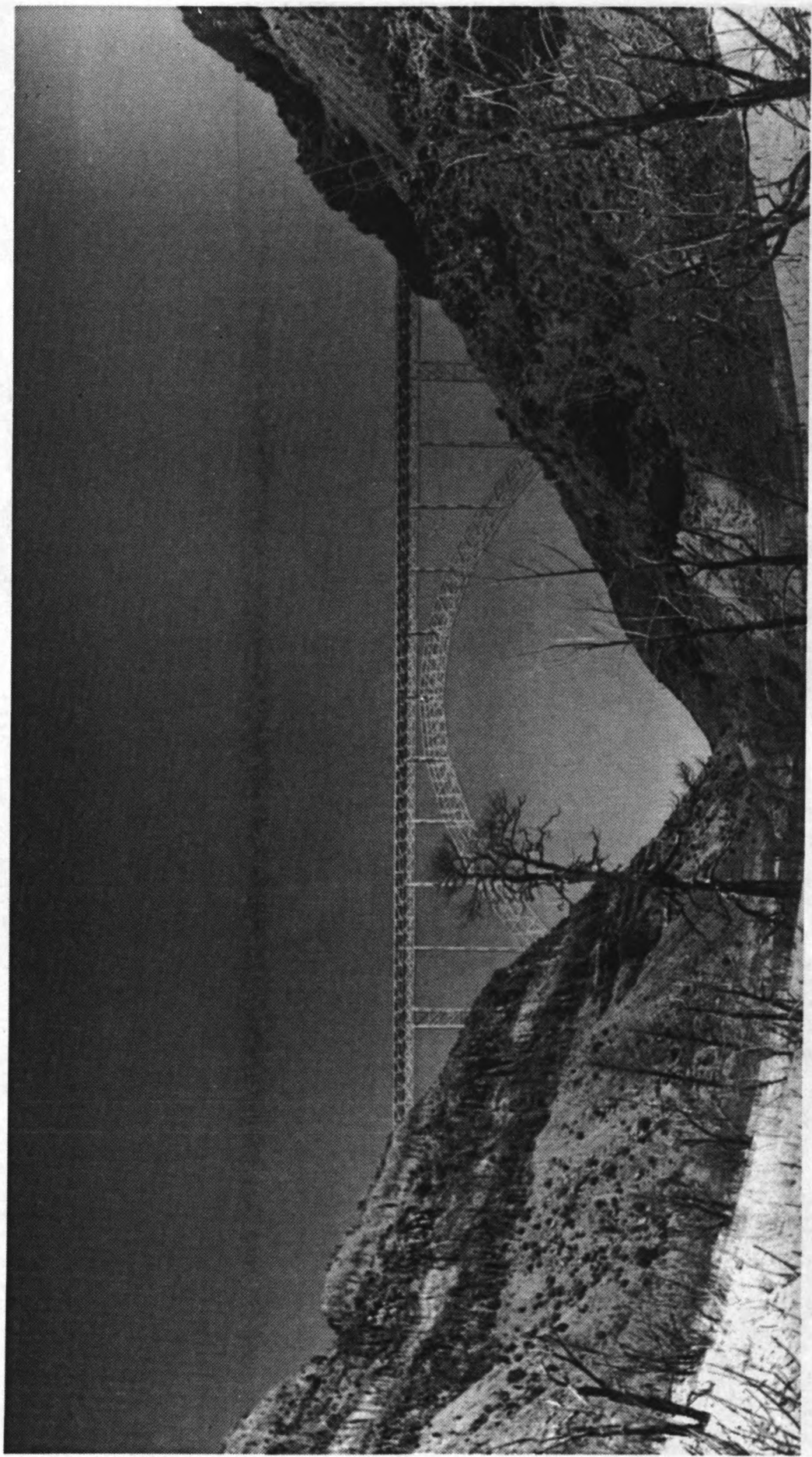
The remaining bridge options are preliminary designs for planning and estimating purposes only. Final determination of the type of bridge to be utilized will be made during final project

design and prior to construction based on more detailed subsurface investigations and engineering design. The bridge options in this study have, however, been developed to a sufficient common stage to permit the comparative evaluation of viable build alternates. Exhibits II-6 through II-12 depict how the various Phase C bridge options might appear over the Rio Grande and White Rock Canyon.

The steel trussed arch, shown in Exhibit II-6 for the Montoso Peak Alternate, would be approximately 1,020 feet above the Rio Grande and would extend for about 2,790 feet in order to span the canyon. The photographic view in this exhibit is from a point near the boundary of Bandelier National Monument along the Rio Grande, some 1,000 feet from the crossing.

The two bridges on the Chino Mesa Alternate, shown in Exhibits II-7 and II-8, cross both White Rock Canyon and Ancho Canyon. The bridge options for spanning White Rock Canyon include a concrete segmental bridge (Exhibit II-7) and a steel trussed arch (Exhibit II-8). These bridges are approximately 810 feet above the Rio Grande and are 3,113 feet in length. The Ancho Canyon bridges are comparable in type to the structures over White Rock Canyon. The photographic view in these exhibits is from a Los Alamos County Park in the Pajarito Subdivision near Water Canyon, some 7,000 feet from the Chino Mesa alignment.

For the Mortandad and Sandia Canyon Alternates, the two bridge options are the same, either a concrete segmental bridge or a multiple concrete arch. The main difference between the alternates is the height above the river. The Mortandad bridge is about 460 feet above the Rio Grande and the Sandia Canyon bridge is approximately 290 feet above the water. Exhibits II-9 through II-12 depict the two bridge options for



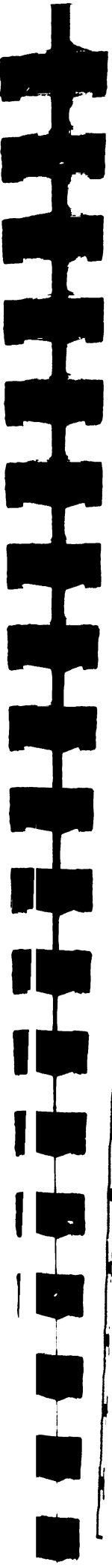
SANTA FE-
LOS ALAMOS
CORRIDOR
STUDY

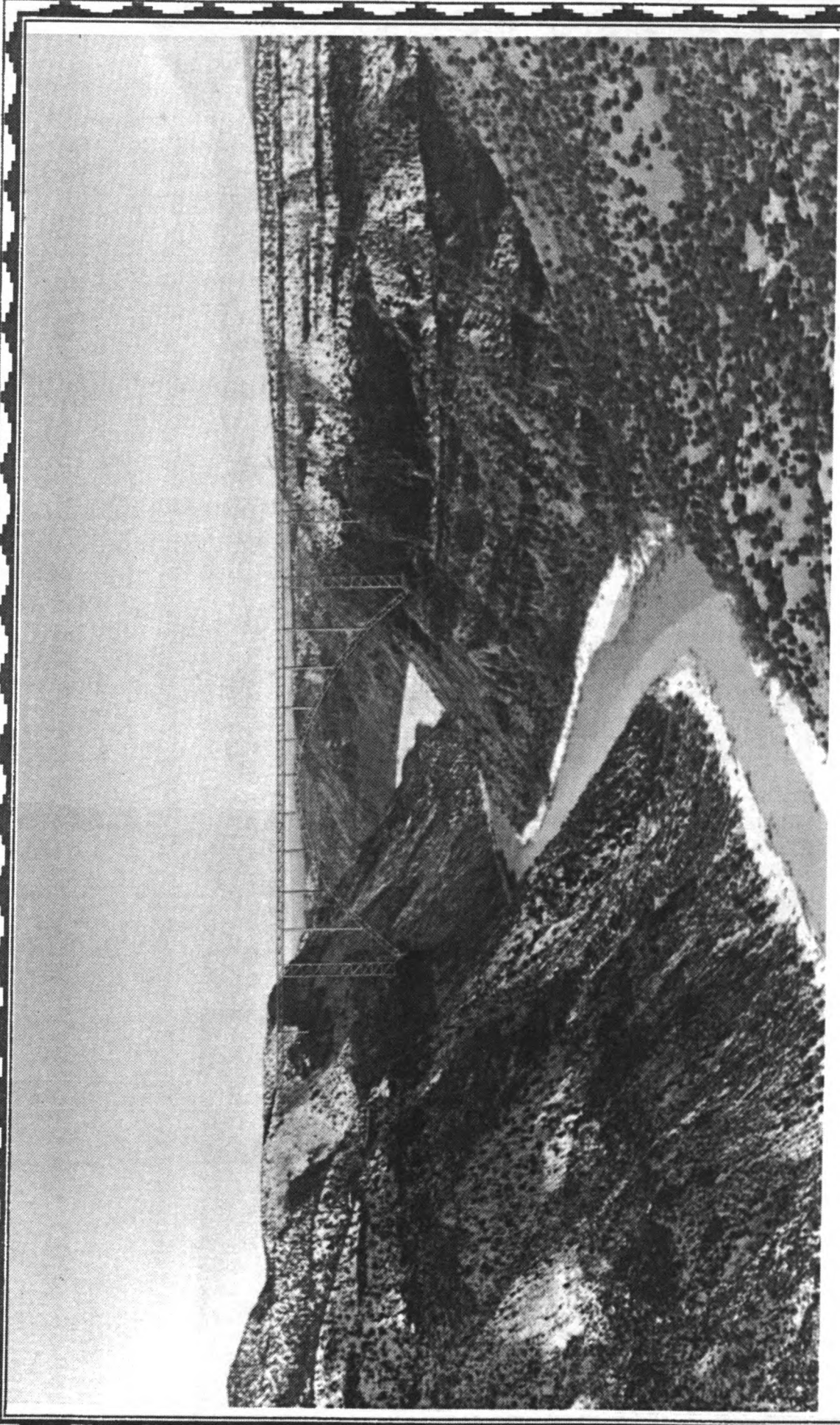
MONTOSO PEAK ALTERNATE
STEEL TRUSSED ARCH

VIEW TOWARD NORTHEAST FROM RIO GRANDE AT
BOUNDARY OF BANDELIER NATIONAL MONUMENT

EXHIBIT

II-6





SANTA FE-
LOS ALAMOS
CORRIDOR
STUDY

MONTOSO PEAK ALTERNATE
STEEL TRUSSED ARCH

VIEW TOWARD SOUTHWEST FROM LOS ALAMOS
NATIONAL LABORATORY-TECHNICAL AREA 33

EXHIBIT

II-7



SANTA FE-
LOS ALAMOS
CORRIDOR
STUDY

CHINO MEBBA ALTERNATE
CONCRETE SEGMENTAL BOX GIRDER
VIEW TOWARD SOUTHWEST FROM LOS ALAMOS CO. PARK IN PAJARITO ACRES

EXHIBIT

II-8



SANTA FE-
LOS ALAMOS
CORRIDOR
STUDY

CHINO MESA ALTERNATE
STEEL TRUSSED ARCH

VIEW TOWARD SOUTHWEST FROM LOS ALAMOS CO. PARK IN PAJARITO ACRES

EXHIBIT

II-9



Vertical text or markings along the right edge of the page, possibly bleed-through or a scanning artifact.



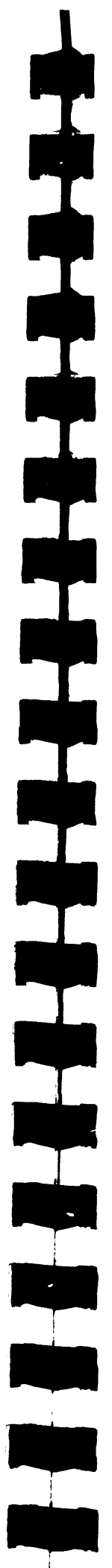
SANTA FE-
LOS ALAMOS
CORRIDOR
STUDY

MORTANDAD ALTERNATE
CONCRETE ARCH

VIEW TOWARD NORTHEAST FROM WHITE ROCK OVERLOOK PARK

EXHIBIT

II-10





SANTA FE-
LOS ALAMOS
CORRIDOR
STUDY

MORTANDAD ALTERNATE
CONCRETE SEGMENTAL BOX GIRDER

VIEW TOWARD NORTHEAST FROM WHITE ROCK OVERLOOK PARK

EXHIBIT

II-11





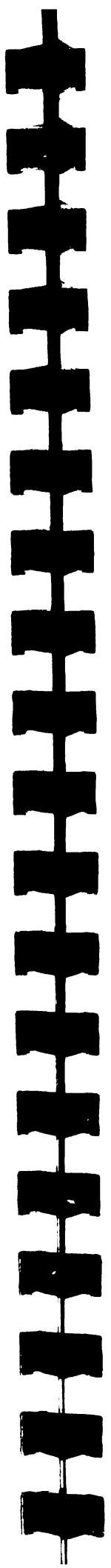
SANTA FE-
LOS ALAMOS
CORRIDOR
STUDY

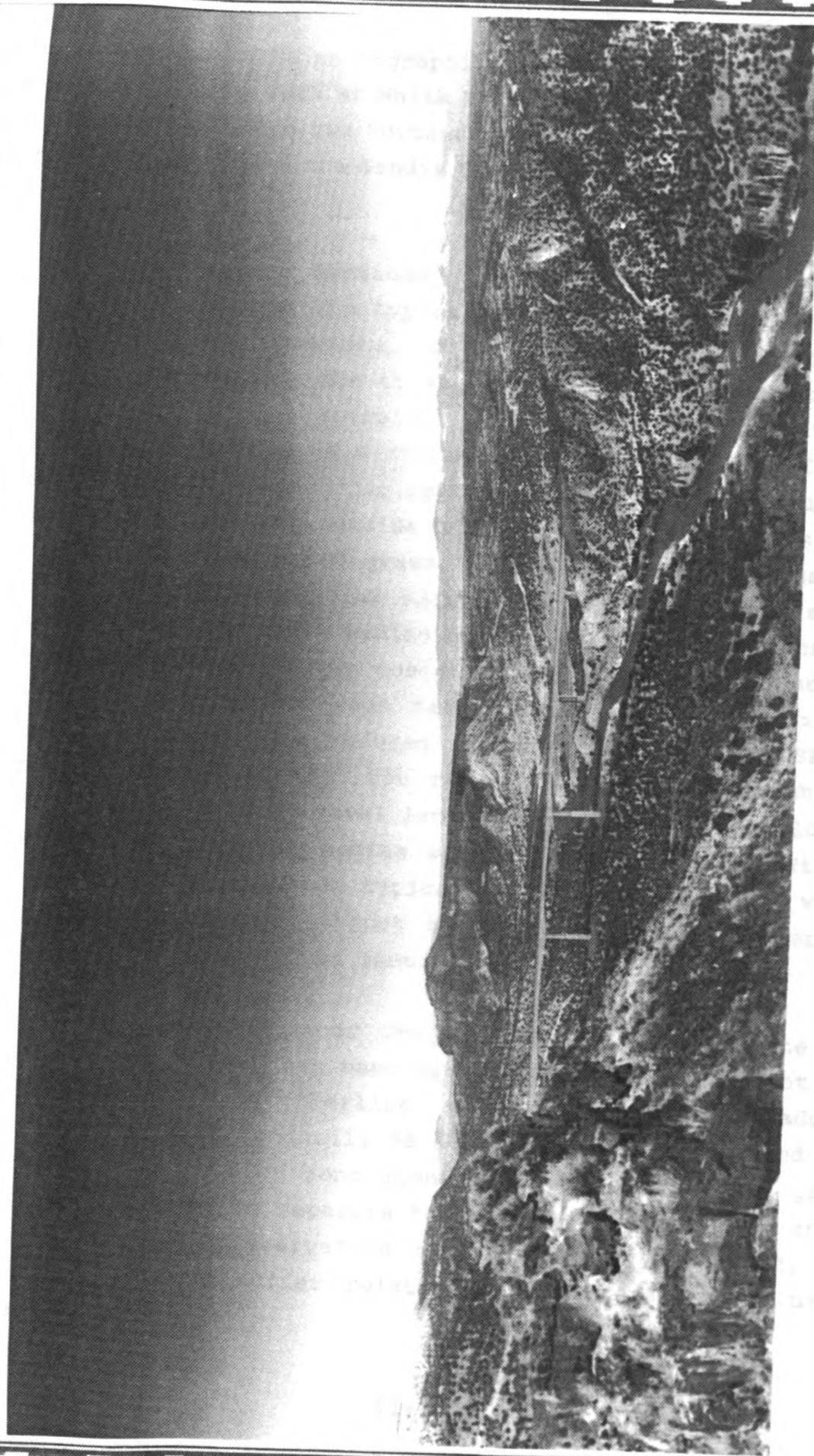
SANDIA CANYON ALTERNATE
CONCRETE ARCH

VIEW TOWARD NORTHEAST FROM WHITE ROCK OVERLOOK PARK

EXHIBIT

TT-19





SANTA FE-
LOS ALAMOS
CORRIDOR
STUDY

SANDIA CANYON ALTERNATE
CONCRETE SEGMENTAL BOX GIRDER

VIEW TOWARD NORTHEAST FROM WHITE ROCK OVERLOOK PARK

EXHIBIT

II-13

each alternate. The photographic view is from the overlook in the Los Alamos County Park at White Rock, some 4,000 to 5,000 feet from the alternates. The two Mortandad bridges are approximately 4,562 feet in length while the Sandia Canyon bridges are slightly shorter at 4,104 feet.

f. Typical Sections

Three basic typical sections are utilized along the mainline of each alternate, in addition to a typical section for SR 4 improvements.⁹ The three mainline sections are for rolling terrain, mountainous terrain, and bridge crossings. These are shown along with the SR 4 typical section on Exhibit II-13. The roadway typical section for rolling terrain includes four 12-foot travel lanes, 10-foot outside shoulders, 4-foot inside shoulders, and a 52-foot depressed grass median. The mountainous terrain roadway typical is similar except the depressed grass median is replaced with a concrete median barrier wall to reduce construction impacts and right of way costs. The bridge typical section is similar to the mountainous terrain roadway typical except the outside shoulders are reduced to nine feet. Along SR 4, the proposed typical section for rural areas outside of White Rock includes four 12-foot travel lanes, 10-foot outside shoulders, and a 14-foot paved flush median with no barrier wall. Within the White Rock area, an urban typical section would be used with four 12-foot travel lanes, 6-foot bicycle lanes, curb/gutter, and a 16-foot two-way left-turn lane.

Along most of the alternate alignments, the minimum planned right of way has been set at 300 feet or 150 feet on each side of the roadway centerline. Beyond this limit, an additional 150-foot width of land will be acquired on each side and held as a greenbelt or buffer zone along the new route. This greenbelt has been included to separate the highway from existing and uses, to provide for preservation of indigenous vegetation, and to provide a safety buffer related to the transport of hazardous materials.

g. **Access Control Features**

The proposed facility will have limited access. Generally, access will be controlled with no driveways permitted with the exception of locked gates for utility and land management purposes. Interchanges, connections, designated intersections, and other access control features are described in the following paragraphs.

Various interchanges and intersections are included along each of the four build alternates. All alternates will connect with the Santa Fe Relief Route using a trumpet interchange.⁹

Along the Montoso Peak Alternate, intersections would also be provided at SR 4 where it extends west toward SR 501 and the Jemez Mountains, as well as at Pajarito Road. No interchanges other than at the Santa Fe Relief Route would be required under this alternate. The Chino Mesa Alternate would be identical to the Montoso Peak Alternate with respect to interchanges and intersections.

The Mortandad Alternate involves two additional interchanges, three additional intersections, and continuation of existing SR 4 access in White Rock. At SR 4, this alternate would include an urban trumpet interchange. To the north along widened SR 4 near East Jemez Road, a three-level fully-directional interchange would be provided. Intersections would be provided along this alternate east of the Rio Grande at a proposed picnic area at Buckman, west of the Rio Grande in the San Ildefonso Pueblo lands, and in White Rock along SR 4 at Pajarito Road. All existing intersections and driveways along SR 4 in White Rock would remain open and connected.

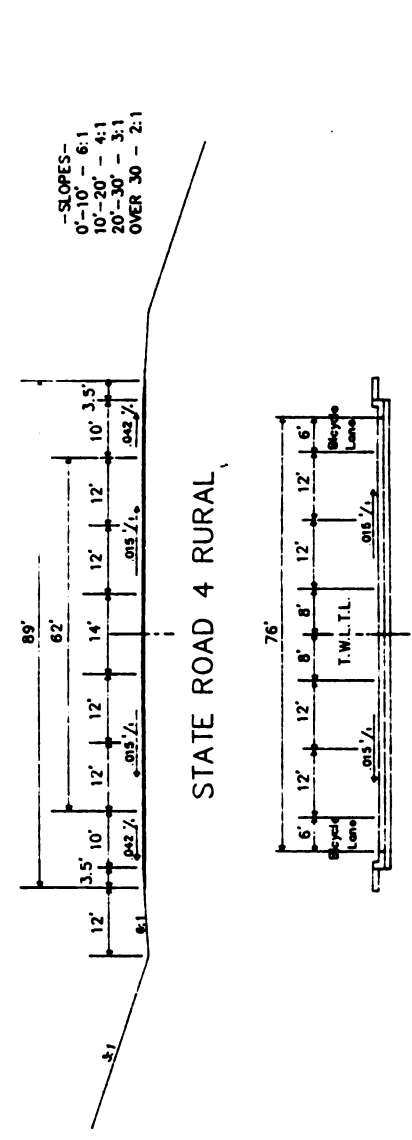
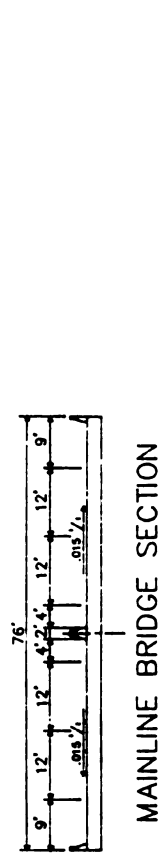
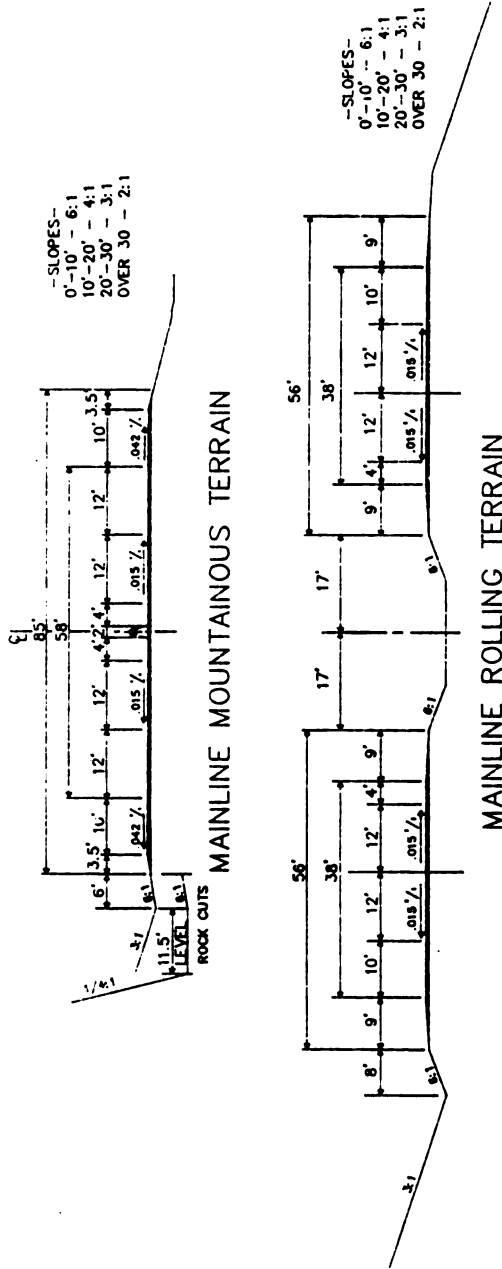
For the Sandia Canyon Alternate, the only interchange other than the Santa Fe Relief Route would be in the vicinity of SR 4 and East Jemez Road. Current plans include a

SANTA FE- LOS ALAMOS CORRIDOR STUDY



TYPICAL SECTIONS

EXHIBIT II-14



modified two-level diamond interchange at this location. Intersections would be provided at each of the same areas as the Mortandad Alternate.

Previous studies had included intersections or possible interchange along the Mortandad and Sandia Canyon Alternates at Buckman Road and at CR 62.¹⁰ If the roads were to remain in their current unimproved state, then at-grade intersections would have been provided. On the other hand, if Buckman Road were paved and improved, an interchange would have been provided. However, as a result of extensive public involvement and agency coordination the Location Study Team has recommended that there be no connections to Buckman Road or CR-62. Therefore, current plans for the Mortandad and Sandia Canyon Alternates do not include any public access connection between Buckman Road and the proposed Santa Fe - Los Alamos highway or between CR 62 and the proposed highway.

Locked gates on BLM allotments will be provided for range management purposes in accordance with agreements to be made with lessees and public land management agencies during final design.

SECTION II. REFERENCES

- 1 American Association of State Highway and Transportation Officials, A Policy on Geometric Design of Highways and Streets, 1984
- 2 New Mexico State Highway Department, "Phase A Report: Location/Environmental Study - Santa Fe - Los Alamos Corridor", August 1985.
- 3 New Mexico State Highway Department, "Phase B Report: Location/Environmental Study - Santa Fe - Los Alamos Corridor", March 1986.
- 4 New Mexico State Highway and Transportation Department, "Supplemental Traffic Analysis: Santa Fe - Los Alamos Corridor Study", May 1990.
- 5 New Mexico State Highway and Transportation Department, "Chino Mesa Alignment Study and Preliminary Environmental Review: Santa Fe - Los Alamos Corridor Study", July 1989.
- 6 New Mexico State Highway and Transportation Department, "Chino Mesa Route - Structures Report: Santa Fe - Los Alamos Corridor Study", July 1989.
- 7 New Mexico State Highway and Transportation Department, "Phase C Bridge Feasibility Study: Santa Fe - Los Alamos Corridor Study", August 1987.
- 8 New Mexico State Highway and Transportation Department, "Phase C Bridge Feasibility Study - Addendum: Santa Fe - Los Alamos Corridor Study", November 1988.
- 9 New Mexico State Highway and Transportation Department, "Phase C Engineering Report: Corridor Location Study: Santa Fe - Los Alamos Corridor Study", May 1990.
- 10 New Mexico State Highway and Transportation Department, "Phase C Engineering Report: Location/Environmental Study - Santa Fe - Los Alamos Corridor Study", December 1988.
- 11 New Mexico State Highway and Transportation Department, "Phase C Traffic Analysis: Santa Fe - Los Alamos Corridor Study", July 1988.
- 12 New Mexico State Highway and Transportation Department, "Sandia Canyon Alignment - Engineering Study: Phase A: Santa Fe - Los Alamos Corridor Study", April 1990.
- 13 New Mexico State Highway and Transportation Department, "Sandia Canyon Route - Structure Report: Santa Fe - Los Alamos Corridor Study", May 1990.

SECTION III
AFFECTED ENVIRONMENT

III. AFFECTED ENVIRONMENT

This section provides a concise description of the existing natural, social, and economic environments of the area affected by the proposed alternatives. The description is general in nature and addresses the entire project area rather than providing a separate description of the area as it relates to each of the alternatives.

As shown in Exhibit I-1, the region surrounding the project study area includes Bernalillo, Los Alamos, Rio Arriba, Sandoval, Santa Fe, and Taos Counties, and contains nearly 15,000 square miles or about twelve percent of the total land area in the state. Approximately forty percent of the land is privately owned; the balance is comprised of Indian, state, and federal lands with the largest shares under the control of the U.S. Forest Service and the U.S. Bureau of Land Management.³

A. NATURAL ENVIRONMENT

1. PHYSIOGRAPHY AND GEOLOGY

The Santa Fe area is on the east side of the Rio Grande trough. The valley of the Rio Grande drains southward within the trough and all streams draining the Santa Fe area discharge into it. The borders of the Rio Grande trough are irregular; the width ranges from twenty to forty miles.

In the latitude of Santa Fe, the trough is about forty miles wide; bordered by the Sangre de Cristo Mountains on the east and by the south end of the Sierra Nacimiento and Jemez on the west. These two ranges are the eastern and western prongs of the southern Rocky Mountains.

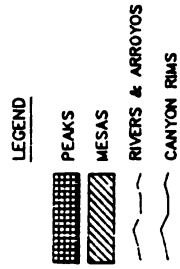
Northeast of Santa Fe, peaks of the Sangre de Cristo Mountains rise to elevations of more than 13,000 feet. Three miles to the north are Lake Peak and Santa Fe Baldy, two prominent peaks near Santa Fe. Westward from the foot of the mountains, an

alluvial plain or piedmont slope is inclined toward the Rio Grande and forms most of the Santa Fe area.

Much of Los Alamos County is located on the Pajarito Plateau, which occupies the eastern flank of the Jemez Mountains in north-central New Mexico. Many portions of the plateau have been deeply eroded by runoff, resulting in a series of mesas separated by canyons, many of which are several hundred feet deep. Most of the canyons contain intermittent streams, which flow during the rainy season. Frijoles Creek, located on the southern border of the county, and the Rio Grande, which separates Los Alamos and Santa Fe Counties, are the only permanent natural streams in the immediate project area. Exhibit III-1 shows the principal natural features within the project study area.

As noted in the "Santa Fe National Forest Plan: Environmental Impact Statement", the geologic materials in the area date from the Precambrian era to the Quaternary period.¹⁸ The major rock types are granites, limestones and sandstones, rhyolite, and tuff. There are three major geologic formations from Santa Fe to the Rio Grande. Immediately to the west of Santa Fe is the Tesuque formation composed of fine sand and sandstone. Three to four miles west of the city is the Ancho formation. It is composed of silt, sand, gravel, and basalt tuff. About eight miles west of the city is the Caja del Rio Grant. This grant area lies on a basalt formation that has flows containing some cinders. In general, there is an alluvium cover in all of the arroyos and drainage areas. The alluvium consists of sand and gravel. Further details of the geologic history and geologic environment are documented in the various geologic reconnaissance reports prepared for this study.¹⁹

SANTA FE- LOS ALAMOS CORRIDOR STUDY



NATURAL FEATURES

EXHIBIT III-1



2. SOILS

The 1975 "Soil Survey of Santa Fe Area, New Mexico" prepared by the U.S. Soil Conservation Service, Forest Service, and Bureau of Indian Affairs indicates there are three soil associations in the project area of Santa Fe County.¹⁴ Between Santa Fe and the Rio Grande are the Pojoaque-Rough Broken Land Associations, the Panky-Pojoaque-Harvey Association, and the Majada-Calabasas-Apache Association. The Pojoaque-Rough Broken Land Association and the Panky-Pojoaque-Harvey Association are encountered in the north and south sections of the area immediately to the west of the city. About eight miles west is the Majada-Calabasas-Apache Association, which continues to the Rio Grande.

In 1986, the Forest Service updated the 1975 Soil Survey within the Santa Fe National Forest boundaries.^{12,13} The Forest Service's soils update provides greater detail of existing soil types and conditions. Within the Pojoaque-Rough Broken Land Association, the Forest Service further classifies the soil components as Fluventic Ustochrepts and Typic Ustifluvents. These soil components occur on nearly level to strongly sloping valley plains and are predominately found immediately north and east of Buckman Road. Forest Service soils classified within the Panky-Pojoaque-Harvey Association are generally classified as Typic Haplustalfs. This soil component generally occurs on level to strongly sloping elevated plains and is generally found in the southeastern portion of the study area. The Majada-Calabasas-Apache Association is characterized by numerous Forest Service classified soil components. This soil association comprises a majority of the study area and is generally present south of the Buckman Road area and on both sides of the Rio Grande. Either separately or in combination, Forest Service soil components identified within this area include Typic and Lithic Haplustalfs and/or Typic and Lithic Ustochrepts. Typic Haplustalfs are present throughout the Majada Association, occurring in areas ranging from nearly level to strongly sloping lowland to very steep scarp slopes. Lithic Haplustalfs and Typic and Lithic Ustochrepts are

common on steep scarp slopes.

As indicated in the 1978 "Soil Survey of Los Alamos County, New Mexico", there are two principal soil associations that would be encountered in Los Alamos County and the area of Bandelier National Monument.⁶ They are the Rock outcrop and the Frijoles-Hackroy. The Rock outcrop is on the edges and sides of the mesas. The rocks are mainly basalt, with extremely steep slopes. There are large areas of basalt rubble, with boulders up to fifteen or twenty feet in diameter, deposited by landslides and exfoliation.

The Frijoles soils are on the mesas. They are deep, well drained, moderately permeable, and formed in eolian and alluvial sediments over pumice. The Hackroy soils are also on the mesas. They are very shallow, well drained, and slowly permeable. They formed in material derived from tuff. In the higher elevations of the county, the Redondo-Palon-Calaveras Association is encountered. It is composed of deep soils on the mountainside slopes and summits.

3. VEGETATION

Vegetation zones are largely controlled by changes in climate and altitude. These zones overlap and grade upward as functions of 1) an increase in precipitation and 2) a decrease in temperature with altitude. The limits of each vegetation zone, as indicated in Table III-1, vary according to local climate, exposure, and soil moisture.

The project area is located between elevations of 5,600 feet near the Canada Ancha and 6,780 feet near the west bridge approach of the Montoso Peak Alternate. The vegetation community for the entire project length for all alternates can be generally described as pinon-juniper woodlands with a groundcover of blue gramma, Bouteloua gracilis. Small pockets of ponderosa pine,

TABLE III-1

VEGETATION ZONES IN RELATION TO ALTITUDE

| ALTITUDE (ft.) | VEGETATION |
|-----------------------|---|
| 12,000 + | Alpine grass |
| 9,000 - 12,000 | Spruce and fir |
| 7,500 - 9,000 | Ponderosa Pine |
| 7,000 - 8,000 | Pinon Pine |
| 6,500 - 7,500 | Juniper |
| 6,000 - 7,500 | Grassland, predominantly grama grass |

Pinus ponderosa, are located in the canyons, while more grasses and shrubs such as big sage, Artemisia tridentata, and rabbit brush, Chrysothamnus nauseosus, are located at the lower elevations.

The four project alternates cross lands that have been subjected to heavy grazing for long periods of time. Ruderal species that generally increase in response to overgrazing, such as snake weed, Gutierrezia sarothrae, cholla, Opuntia imbricata, and soap weed yucca, Yucca glauca, are very common along all four alternates.

4. WILDLIFE

The deer mouse is apparently the most widely distributed small mammal in the area. Shrews are associated with canyon areas where water is available and with mesic sites in the forest. The pinon mouse is associated with the pinon-juniper vegetation and the western harvest mouse is found in canyon sites having dense stands of grasses and forbs. The mule deer is the most important and prevalent big-game species in the area, both in numbers and distribution.

Cold-blooded animals in the area include several species of fish found in the Rio Grande. The common carp, Rio Grande chub, white sucker, and carp-sucker are abundant. A few brown trout inhabit the river, but never reach substantial population densities because of the extreme turbidity of the water. There are at least nine reptile species, including small lizards and king, bull, garter and rattlesnakes.

Birds represent by far the largest variety of vertebrate wildlife in the area. Commonly observed permanent residents include the common raven, pygmy nuthatch, western bluebird, junco, and rufous-sided towhee. Summer birds commonly observed include the turkey vulture, red-tailed hawk, American kestrel, chipping sparrow, and violet-green swallow.

5. THREATENED AND ENDANGERED SPECIES

A list of threatened and endangered animal and plant species of concern in the project area was compiled from correspondence received through the Advance Notification Process, Agency Review Comments, coordination with federal and state agency officials and literature searches. The combined list consisted of three federally listed animal species (*) and five state listed species of which two are animal species and three are plant species.

| | |
|---------------------------|---------------------------------|
| * Bald Eagle | <u>Haliaeetus leucocephalus</u> |
| * Peregrine Falcon | <u>Falco peregrinus</u> |
| * Whooping Crane | <u>Grus americana</u> |
| Gray Vireo | <u>Vireo vicinior</u> |
| Rio Grande Silvery Minnow | <u>Hybognathus amarus</u> |
| Cyanic Milkvetch | <u>Astragalus cyaneus</u> |
| Fish-Hook Cactus | <u>Mammillarin wrightii</u> |
| Gramma Grass Cactus | <u>Pediocactus papyracantha</u> |

6. WATER QUALITY

The 1988 amended Water Quality Standards of the New Mexico Water Quality Control Commission establishes the designated uses of the main stem of the Rio Grande, from the headwaters of the Cochiti Reservoir upstream to Taos Junction Bridge, to include irrigation, livestock and wildlife watering, marginal coldwater fishery, secondary contact recreation, and warmwater fishery.¹⁰ With the exception of the Rio Grande, only ephemeral drainages are located within the project corridors.

B. SOCIAL ENVIRONMENT

1. POPULATION CHARACTERISTICS

The Santa Fe - Los Alamos Corridor study area is located within Los Alamos and Santa Fe Counties, which together make up the Santa Fe Metropolitan Statistical Area (MSA). This designation recognizes the social and economic interdependence of the two counties, including the degree of commuting for county residents between workplace and home. Neighboring counties include

Bernalillo, Rio Arriba, Sandoval, and Taos. In 1987, the Santa Fe MSA contained the third largest population concentration in the state, surpassed only by the Albuquerque MSA (Bernalillo County) and the Las Cruces MSA (Dona Ana County).¹¹

As shown in Table III-2, data from the 1980 Census and the University of New Mexico - Bureau of Business and Economic Research indicate the Santa Fe MSA experienced a growth in population of 19.3 percent from 1980 to 1987 compared to a state-wide growth of 15.1 percent during the same period.^{7,9} Within each county, Santa Fe experienced a growth in population of 21.6 percent, whereas in Los Alamos, growth was 9.3 percent during this period. Within the Santa Fe MSA, 11.4 percent of the 1980- 87 population growth was attributable to natural migration (natural population change occurring because of births and deaths). The remaining 7.9 percent was attributable to in-migration.

As shown in Table III-3, local population projections from 1990 to 2000 indicate continued growth within the MSA but at a declining rate. From 1990 to 2000, population within the MSA is projected to increase only 13.5 percent with Santa Fe County experiencing a projected growth of 15.1 percent and Los Alamos 5.4 percent. State growth during this period is projected to be 17.6 percent. This trend is projected to continue through the year 2010.⁴

Given the limited availability of land suitable for development, population growth within Los Alamos County is constrained. Growth in Santa Fe County is expected to continue in the western and southern portions of the county.

The area has a long history of habitation by Native Americans, Hispanic Americans, and Anglo-Americans. Many of the Native Americans reside on traditional Pueblo lands. The San Ildefonso, Tesuque, and Pojoaque Pueblo lands are located in

TABLE III-2

HISTORIC POPULATION GROWTH

| <u>COUNTY</u> | <u>1970</u> | <u>% Change</u> | | <u>1970-1980</u> | <u>1980-1987</u> |
|---------------|-------------|-----------------|-------------|------------------|------------------|
| | | <u>1980</u> | <u>1987</u> | | |
| Bernalillo | 315,774 | 420,261 | 486,200 | 33.1 | 15.7 |
| Los Alamos | 15,198 | 17,599 | 19,200 | 15.8 | 9.3 |
| Rio Arriba | 25,170 | 29,282 | 32,800 | 16.3 | 12.0 |
| Sandoval | 17,492 | 34,400 | 55,900 | 96.7 | 62.7 |
| Santa Fe | 54,774 | 75,519 | 91,900 | 37.9 | 21.6 |
| Taos | 17,516 | 19,456 | 21,900 | 11.1 | 12.5 |
| Santa Fe MSA* | 69,972 | 93,118 | 111,100 | 33.1 | 19.3 |
| New Mexico | 1,017,055 | 1,303,302 | 1,500,000 | 28.1 | 15.1 |

*Includes Santa Fe and Los Alamos Counties

Source: U.S. Department of Commerce, Bureau of the Census, and Bureau of Business and Economic Research, University of New Mexico.

TABLE III-3
POPULATION PROJECTIONS

| <u>GEOGRAPHIC AREA</u> | <u>1980</u> | <u>1990</u> | <u>% Change</u> <u>1980-1990</u> |
|------------------------|-------------|-------------|-------------------------------------|
| Santa Fe MSA | 93,118 | 113,200 | 21.6 |
| Santa Fe County | 75,519 | 94,600 | 25.3 |
| Los Alamos County | 17,599 | 18,600 | 5.7 |
| New Mexico | 1,303,302 | 1,585,200 | 21.6 |

| <u>GEOGRAPHIC AREA</u> | <u>2000</u> | <u>% Change</u> <u>1990-2000</u> | <u>2010</u> | <u>% Change</u> <u>2000-2010</u> |
|------------------------|-------------|-------------------------------------|-------------|-------------------------------------|
| Santa Fe MSA | 128,500 | 13.5 | 139,300 | 8.4 |
| Santa Fe County | 108,900 | 15.1 | 119,800 | 10.0 |
| Los Alamos County | 19,600 | 5.4 | 19,500 | -0.5 |
| New Mexico | 1,864,000 | 17.6 | 2,121,700 | 13.8 |

Sources: U.S. Bureau of the Census/City Planning Department/Steve Brugger/ UNM Bureau of Business and Economic Research, "Population and Employment Projections in New Mexico, 1985-2010, February 1989.

Santa Fe County, within the study area. As shown in Table III-4, data from the 1980 U.S. Census reveal that approximately 2.8 percent of Santa Fe County's population is Native American, whereas it is only 0.6 percent in Los Alamos County. Hispanics also comprise a majority of the population in Santa Fe County (56 percent) and are a minority of the population in Los Alamos County (11.5). The state Hispanic population was approximately 37 percent in 1980. Overall, Anglo-Americans, or whites, make up a majority of the area's population, comprising approximately 95 percent of Los Alamos County, 79 percent of Santa Fe County, and 89 percent of the state's 1980 population.

2. LAND USE AND COMPREHENSIVE PLANNING

The study area is under the direct jurisdiction of ten planning authorities: the City of Santa Fe, the County of Santa Fe, the Extraterritorial Zoning Authority, the San Ildefonso Pueblo, the County of Los Alamos, the New Mexico State Land Office, the Forest Service - Santa Fe National Forest, the Bureau of Land Management (BLM) - Taos Resource Area of the Albuquerque District, the National Park Service (NPS) - Bandelier National Monument, and the Department of Energy (DOE) - Los Alamos National Laboratory (LANL). Exhibit III-2 illustrates existing property ownership within the project study area.

A number of land use plans have been developed to provide a framework and guide for land use regulations, development, actions, and decisions within each agency or official's jurisdiction.^{1,2,5,8,13,15,16,17} Table III-5 provides a list of the planning documents which have been prepared for each of the jurisdictional areas.

Of these jurisdictional authorities, the Extraterritorial Zoning Authority (made up of both Santa Fe County and City elected officials), Los Alamos County, and the Los Alamos National Lab have

TABLE III-4

RACE/ETHNIC DISTRIBUTIONS

| <u>RACE/ETHNICITY</u> ¹ | <u>LOS ALAMOS CO.</u> | | <u>SANTA FE CO.</u> | | <u>NEW MEXICO</u> | |
|------------------------------------|-----------------------|----------|---------------------|----------|-------------------|----------|
| | <u>Population</u> | <u>%</u> | <u>Population</u> | <u>%</u> | <u>Population</u> | <u>%</u> |
| White | 16,727 | 95.0 | 59,287 | 78.7 | 1,164,053 | 89.3 |
| Black | 73 | 0.4 | 402 | 0.5 | 24,406 | 1.9 |
| American Indian | 99 | 0.6 | 2,138 | 2.8 | 106,119 | 8.1 |
| Other ² | 191 | 1.1 | 223 | 0.3 | 8,316 | 0.6 |
| Hispanic ³ | 2,022 | 11.5 | 41,865 | 55.6 | 477,222 | 36.6 |
| TOTAL ⁴ | 17,599 | 100% | 75,360 | 100% | 1,303,302 | 100% |

1 1980 racial distributions were revised by the Bureau of Business and Economic Research using U.S. Census Bureau and National Cancer Institute data.

2 Includes Asian and Pacific Islanders.

3 Persons of Spanish origin may be of any race and are counted both in the Hispanic category and in one of the racial classifications.

4 1970 and 1980 racial groups will not add to the total, since the total count was revised after racial distributions were determined.

**TABLE III-5
CURRENT JURISDICTIONAL PLANNING DOCUMENTS**

| JURISDICTIONAL AUTHORITY | DOCUMENT TITLE | DATE |
|--|---|------------------|
| City of Santa Fe | "Plan '83: Santa Fe Area General Plan" | November 1983 |
| County of Santa Fe | "Santa Fe County General Plan and Land Development Code" | 1980 |
| Santa Fe Extraterritorial Zoning Authority | "Santa Fe Comprehensive Extraterritorial Plan" | August 1988 |
| Los Alamos County | "Los Alamos County Comprehensive Plan" | June 1987 |
| Forest Service-Santa Fe National Forest | "Santa Fe National Forest Plan" | July 1987 |
| BLM - Taos Resource Area | "Taos Resource Management Plan and Environmental Impact Statement (Draft)" | March 1987 |
| NPS - Bandelier National Monument | "Final Master Plan: Bandelier National Monument" | April 1987 |
| DOE - Los Alamos National Laboratory | "Los Alamos National Laboratory Site Development Plan" (Revised Preliminary Draft) | August 1989 |

Source: See References 1, 2, 5, 8, 13, 15, 16, 17.

all identified the proposed Santa Fe - Los Alamos Corridor and incorporated the potential transportation facility within their respective comprehensive plans.

a. Existing Land Use

As shown on Exhibit III-2, a large portion of the land in the study area, as well as in northern New Mexico, is in public ownership. Of the approximately 70,000 acres that make up Los Alamos County, the largest land owner is the Forest Service, which administers 42 percent of the land, followed by the DOE - LANL (34 percent), NPS - Bandelier (10 percent), private ownership (7 percent), and local government ownership (7 percent). Approximately 60 percent of the land in Los Alamos County is dedicated in public ownership under the administration of the Forest Service and the Park Service. LANL occupies approximately 24,000 acres within the County. There are currently 68 technical areas with locations and spacing that reflect historic development patterns, topography, and functional relationships. The urban centers within the county are located in the Los Alamos townsite and in White Rock, along SR 4.

In Santa Fe County, approximately half of all land is in private ownership. In the project study area, the principal public land ownership/management includes the U.S. Forest Service, Bureau of Land Management, New Mexico State Land Office, Santa Fe County, and the City of Santa Fe. The predominant land uses within the county are for multiple use activities on National Forest Service and BLM lands. Outside the City of Santa Fe, residential subdivisions are dispersed throughout the county.

In 1981, the City and County of Santa Fe established an Extraterritorial Zone, adjacent to the City of Santa Fe, as an urban growth area. This Extraterritorial Zone, shown on Exhibit III-3, is jointly administered by the City and County through the

SANTA FE- LOS ALAMOS CORRIDOR STUDY

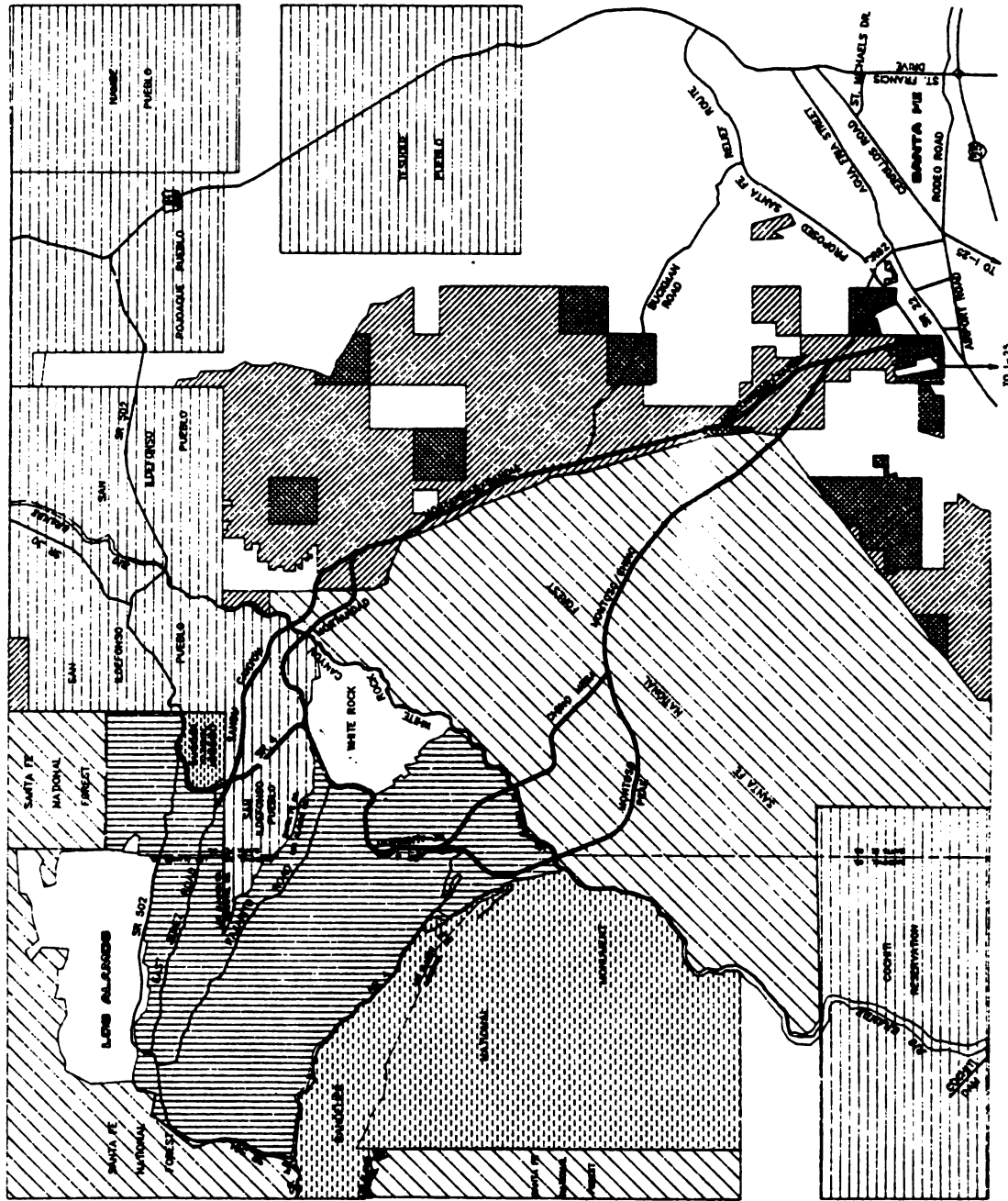


LEGEND

- SANTA FE NATIONAL FOREST
- BANDELER NATIONAL MONUMENT
- STATE LANDS
- INDIAN RESERVATIONS
- BLM LANDS
- D.O.E. (LANL)
- PRIVATE OWNERSHIP, CITY AND COUNTY LANDS
- BUILD ALTERNATES

PROPERTY OWNERSHIP

EXHIBIT III-C



SANTA FE- LOS ALAMOS CORRIDOR STUDY

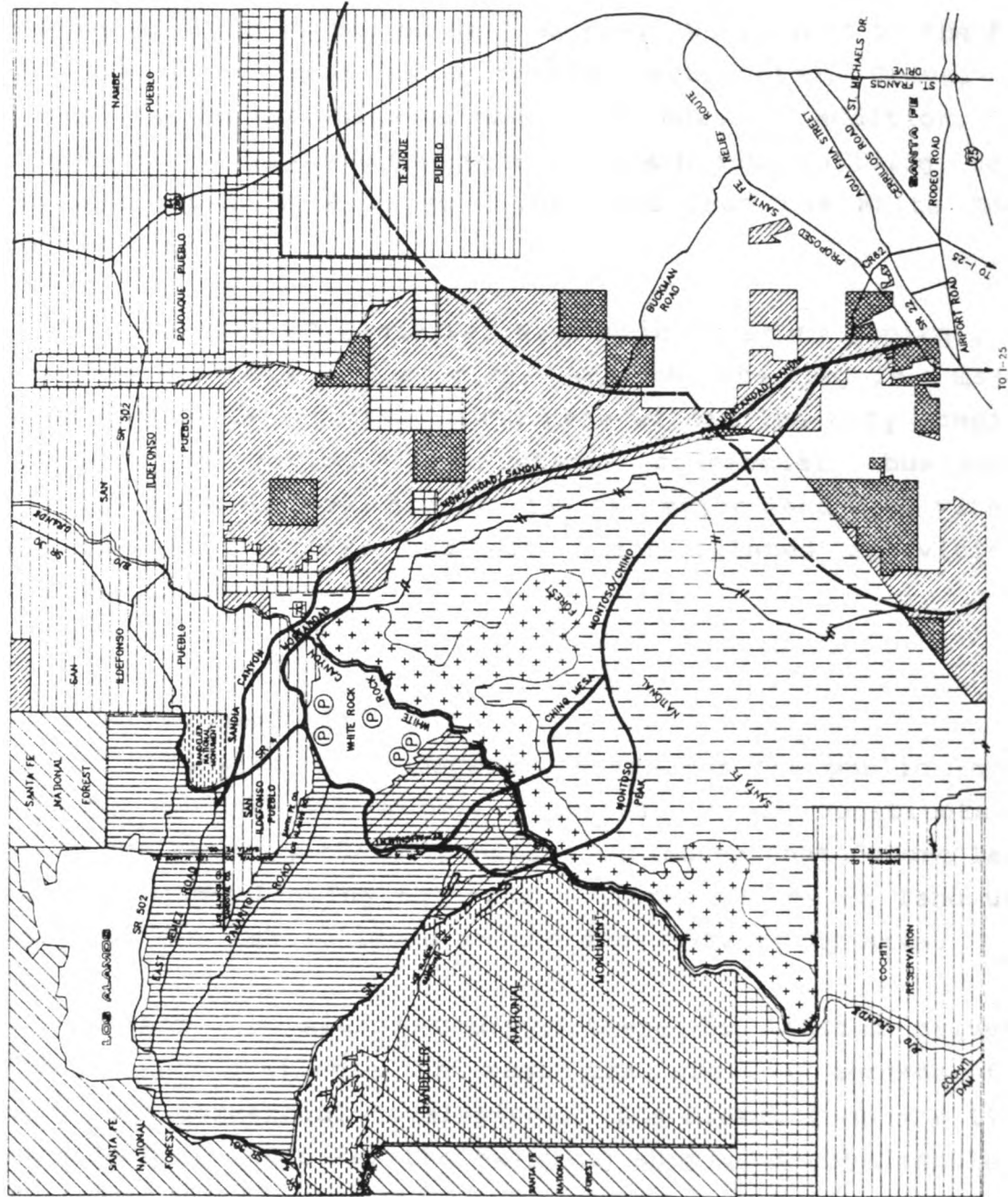


LEGEND

- SANTA FE NATIONAL FOREST
- SNF: WHITE ROCK MANAGEMENT AREA L
- SNF: CAJA MANAGEMENT AREA G
- SNF: OTHER MANAGEMENT AREAS
- SNF: WLD HORSE RANGE
- SNF: PROPOSED BUCKMAN PICNIC SITE
- BANDELLER NATIONAL MONUMENT
- HISTORIC ZONE VISITATION AREA
- BNM WILDERNESS AREA
- LOS ALAMOS NATIONAL LABORATORY
- LOS ALAMOS NATIONAL LABORATORY DOE/BNM JOINT MANAGEMENT AREA (WITHIN LANL)
- RURAL & UNDEVELOPED
- PUEBLO
- PUBLIC LANDS
- STATE LANDS
- DESIGNATED URBAN & OTHER DEVELOPED AREAS
- LOCAL PARKS
- EXTRA TERRITORIAL ZONING DISTRICT BOUNDARY
- BUILD ALTERNATES

EXISTING & PROPOSED LAND USE

EXHIBIT III-63



Extraterritorial Zoning Authority (EZA). Land use within the extraterritorial area is made up of public lands, and low density residential developments. Between 1970 and 1980, population in the Extraterritorial Zone increased by almost 90 percent and then leveled off during the 1980's. Much of the growth of the Santa Fe area is occurring within the Extra- territorial Zone.

Located within Santa Fe County, the lands of the San Ildefonso Pueblo are largely undeveloped, with most residential uses located near the Plaza, as well as near SR 30, west of the Rio Grande. The Plaza area is a tourist attraction. Gravel is extracted along the west side of the Rio Grande. In addition, the Pueblo leases out a gas station/garage and a nearby building, both of which are along SR 4, across the road from the White Rock business district.

The City of Santa Fe, New Mexico's state capital, is also the state's second largest city. As such, the city is a major urban area within the region. Land uses within the city consist of a mixture of residential, retail, commercial, business, industrial, and undeveloped areas. The two major land uses within the city are for tourist and government related activities, services, and facilities.

b. Future Land Use

A review of the management plans for the public lands within Santa Fe and Los Alamos Counties, which constitute a majority of the lands in those counties, indicates that future land uses will continue existing patterns. Little change in land use is anticipated for public lands in the immediate study area.

Within Los Alamos County, there is limited private developable land available to meet the growing demands for residential and commercial development. Los Alamos County's 1987 Comprehensive Plan indicates the existing supply of developable

residential lands could be depleted in less than five years. As a result, it is expected that LANL support services, commercial, and residential activities will continue to locate outside the county in such areas as Espanola and Santa Fe.

Most of the changes in private land use in the Santa Fe area are projected to occur in the southern and western areas within the City/County Extraterritorial Zone, where much of the area is zoned for low density residential developments. Over 10,000 dwelling units have already been approved and are yet to be constructed in the Extraterritorial Zone.

Land use within San Ildefonso Pueblo lands is not expected to change appreciably in the immediate future. Some development is planned for Pueblo lands along existing transportation routes, such as SR 4 near White Rock.

3. COMMUNITIES AND NEIGHBORHOODS

Within the study area, there are several distinct residential communities. In Los Alamos County, the principal residential areas are the townsite of Los Alamos and the White Rock community, which includes White Rock, La Senda, and Pajarito Acres. The townsite has a mixture of land uses, having both commercial and moderate density residential areas. Both the townsite and White Rock are considered to be urban centers and are the focus of commercial and civic activity within the county.

As noted in the 1987 Los Alamos County Comprehensive Plan, the vast majority of Los Alamos residents are employed at LANL or at its support facilities and services. As LANL's workforce has grown each year, so has the demand for housing. The combined trend of 1) LANL growth (averaging more than 5 percent per year), 2) an increasing proportion of retirees in the county, 3) the relative inaccessibility and topographical constraints upon development, and 4) inflated housing costs mean much of the LANL workforce must seek housing outside the county.

Much of the commuting workforce resides in Santa Fe County and the City of Santa Fe, as well as in the neighboring Counties of Rio Arriba and Sandoval. Within the study area on the fringe of Santa Fe, a variety of residential communities exist. The principal residential areas, communities, and subdivisions include private claims within the Pueblos of the San Ildefonso, Pojoaque, and Tesuque; a group of newly developing subdivisions along Buckman Road collectively referred to as Las Tierras and include La Tierra, La Tierra Nueva, Salva Tierra, and Tierra de Oro; The Ranch at Santa Fe; and scattered subdivisions near CR 62 including Alameda Ranchettes, Pinon Hills, and Puesta Del Sol. Excluding the Pueblos, these areas are all considered to be low to moderate density residential subdivisions. The Pueblos have mixed uses, which include a combination of low to moderate density housing within the Pueblos.

At the present time, the lands of San Ildefonso Pueblo are largely undeveloped. Most of the population resides in the vicinity of the Plaza, near the Pojoaque River. Housing is also concentrated near SR 30, west of the Rio Grande. In addition, a few homes are located west of the Rio Grande along SR 4 in the Totavi area.

4. COMMUNITY FACILITIES AND SERVICES

As shown on Exhibit III-3, the study area is composed of a variety of public recreation areas, including Bandelier National Monument and the Santa Fe National Forest. In addition, there are several public recreational areas within the town of White Rock. These areas include Overlook Park, which contains a picnic area, a number of athletic fields, and an overlook platform for viewing the Rio Grande and White Rock Canyon; Pinon Park, located along SR 4; and two park areas located overlooking Potrillo Canyon and Water Canyon. There also exists a system of hiking trails which follow White Rock Canyon, leading to Overlook Park. Also, within the project corridors in Santa Fe County is the Caja del Rio Gun Club, located along SR 62.

Other community facilities and quasi-public facilities such as museums, libraries, shopping centers, civic clubs, schools, hospitals, churches/synagogues, and cemeteries occur outside the immediate project vicinity in Santa Fe County and in White Rock and the Los Alamos townsite in Los Alamos County. Numerous hiking and biking trails, as well as jeep trails, are found in the Caja del Rio; hiking trails are also located throughout Bandelier National Monument.

5. PUBLIC UTILITIES

The Public Service Company of New Mexico, the Gas Company of New Mexico, the Sangre de Cristo Water Company, the Western Telecom and Plains Electric Generation and Transmission Company all have existing facilities parallel to Buckman Road.

6. TRANSPORTATION FACILITIES

Los Alamos County is somewhat isolated, with highway access only from SR 502 (formerly SR 4) to the east and SR 501 to the west. To the east, SR 502 links to SR 30 south of Espanola and links to US 84/285 north of Santa Fe. To the west, SR 501 links to SR 4, which ties in with SR 44. Local bus service and city taxi service is available within portions of Los Alamos County. A local airport operated by the Department of Energy is primarily used for LANL purposes. Within the project corridor, the county has designated a trail along SR 4, south of White Rock, as a bicycle facility.

There is no rail service of any kind which serves the Los Alamos area. The nearest rail facilities for freight are located in Santa Fe. Passenger rail service is available at Lamy. Given this and the limited operations at the Los Alamos airport, almost all shipments to and from the area are via trucks utilizing the existing highway network.

The Santa Fe area is more accessible than Los Alamos, with primary access from I-25/US 85 which crosses the area in an east-west direction, and US 84/285, which runs approximately in a

north-south direction. Business I-25 runs through the City of Santa Fe along Cerrillos Road, St. Michaels Drive, and the Old Pecos Trail.

The primary access to Los Alamos from Santa Fe is via US 84/285 and SR 502. There is a small non-profit, peak-period bus service in the Los Alamos area and local taxi service is available. A shuttle bus service operating from Santa Fe at one time served residents in Santa Fe commuting to Los Alamos. The airport in Los Alamos is used for smaller, commercial commuter and private aircraft. The nearest major commercial air service is in Albuquerque, approximately 60 miles south of Santa Fe.

7. CULTURAL RESOURCES

The project study area is rich in prehistoric resources. The wide variety of cultural resources present has been documented in numerous archaeological studies. In general, prehistoric remains east of the Rio Grande consist primarily of ceramic and lithic scatters without associated architecture. Archaic period hunter-gatherer sites occur on the ridges surrounding sandy ephemeral drainages and date from 3500 B.C. to A.D. 1. Sites with ceramics suggest the presence of Pueblo Indians. A few habitation sites occur along major drainages and along the mesa rim overlooking the river. However, habitation sites remain relatively rare, and most site remains indicate hunting and foraging activities. Prehistoric and historic Pueblo ceramic types recovered, and the lack of architecture on the Caja del Rio Plateau, suggest that it was peripheral in importance to the Pajarito Plateau and, later, to the Rio Grande for habitation. Site densities calculated from survey documents range from seven to twelve per square mile.

The Pajarito Plateau west of the Rio Grande is composed of narrow canyons and mesas and is bordered on the west by the Jemez Mountains. Pueblo Indians built their homes and tilled their fields along the mesas and canyons. Evidence of their occupation from the thirteenth to the sixteenth century includes many small

masonry house mounds, large pueblos, cavate rooms in the volcanic tuff cliffs, rock-bordered fields, prehistoric trails, rock art and scatters of pottery and stone tools. Literally hundreds of sites have been recorded for all parts of the plateau; on mesa tops, site densities exceed twenty per square mile.

Site complexity and size vary dramatically from one side of the Rio Grande to the other. Archaeological sites east of the river are primarily surficial with low artifact densities. Hearths are the most prominent features. The potential for buried features or architectural remains is low. Conversely, architectural remains are quite common west of the river and include houseblocks of two to five rooms and large pueblos with twenty or more rooms and associated subterranean ceremonial architecture. Depths of deposits on these sites may exceed one meter (three feet). Fields, cave rooms, rock art, and other vestiges of prehistoric use are found between these sites. Potential for both surface and subsurface cultural remains are very high. In short, more intensive investigation and data recovery are anticipated on the Pajarito Plateau than on the Caja del Rio Plateau.

An assessment of the prehistoric and historic resources located within the study area has been conducted for this project. The assessment is based on both numerous preliminary archaeological reconnaissance surveys and examination of existing site data contained in the New Mexico Historic Preservation Division files, the U.S. Department of Agriculture - Santa Fe National Forest files, the Bureau of Land Management files, and the Los Alamos National Laboratory files. The National Register of Historic Places and the New Mexico State Register of Cultural Properties were also consulted; no currently listed sites were found to be on or eligible for listing on either list. This determination pertains solely to the corridors surveyed for each proposed alternate. However, outside the project corridors there are sites that are currently listed on these registers. These include Bandelier National Monument, the Tsankawi ruins, and the Navawi ruins. Details of the various surveys conducted for this project

are documented in the cultural resource assessments prepared for this project.²⁰

C. ECONOMIC ENVIRONMENT

1. EMPLOYMENT

The single most dominant economic force in northern New Mexico, and the largest employer in Los Alamos County, is the Los Alamos National Laboratory (LANL). Under the aegis of the Department of Energy and administered by the University of California, LANL is one of the nation's foremost weapons and energy research facility. In 1989, approximately 7,700 persons were employed full time by LANL. Recent estimates indicate that in 1984, LANL and related organizations spent \$684 million. Taking the multiplier on this expenditure into account, LANL's total impact on the region was nearly \$1.4 billion. As a result, nearly 38 percent of all jobs in Los Alamos, Santa Fe, and Rio Arriba Counties are directly or indirectly supported by LANL. Employment at LANL has grown fairly constantly over the last decade.

The major economic forces in Santa Fe County are state government and tourism. In 1985, state government employed approximately 7,000 people, with another 5,000 employed in the tourist industry. Santa Fe continues to grow in popularity as a tourist destination, thereby increasing the importance of tourism to the regional economy. To a smaller extent, tourism is also becoming an increasingly important economic factor to Los Alamos County. As Table III-6 indicates, 1987 travel-related expenditures within Santa Fe County were approximately \$273 million or 14 percent of the total travel expenditures within the state.

Other employment sectors contributing to both Santa Fe and Los Alamos' economic base include local and federal government, education, research organizations, small high-technology manufacturing and service companies, as well as retail sales and

TABLE III-6

ECONOMIC IMPACT OF TRAVEL

| <u>AREA</u> | <u>TOTAL TRAVEL EXPENDITURES (\$000)</u> | <u>TRAVEL- GENERATED PAYROLL (\$000)</u> | <u>TRAVEL- GENERATED EMPLOYMENT</u> |
|----------------------|--|--|---|
| Los Alamos County | \$ 23,127 | \$ 4,648 | 596 |
| Santa Fe County | \$ 272,803 | \$ 53,780 | 7,065 |
| New Mexico | \$1,941,007 | \$405,910 | 45,708 |

Source: U.S. Travel Data Center, "The Economic Impact of Travel on New Mexico Counties - 1987", November 1988.

TABLE III-7

NON-AGRICULTURAL EMPLOYMENT BY INDUSTRY

EMPLOYMENT (ANNUAL AVERAGES)*

| INDUSTRY | 1988 | 1987r | Change | |
|---|---------------|---------------|--------------|------------|
| | | | In Jobs | % Change |
| MINING | 100 | 100 | 0 | 0.0 |
| CONSTRUCTION | 2,600 | 2,600 | 0 | 0.0 |
| MANUFACTURING | 1,600 | 1,600 | 0 | 0.0 |
| Durable Goods | 1,000 | 1,000 | 0 | 0.0 |
| Nondurable Goods | 600 | 600 | 0 | 0.0 |
| TRANSPORTATION AND PUBLIC UTILITIES | 1,150 | 1,150 | 0 | 0.0 |
| Transportation | 450 | 450 | 0 | 0.0 |
| Communications, Electric, Gas and Sanitary Service | 700 | 750 | -50 | -6.7 |
| TRADE | 10,800 | 10,400 | 400 | 3.8 |
| Wholesale | 850 | 850 | 0 | 0.0 |
| Retail | 9,900 | 9,600 | 300 | 3.1 |
| General Merchandise Stores | 1,000 | 950 | 50 | 5.3 |
| Food Stores | 1,200 | 1,300 | -100 | -7.7 |
| Auto Dealers & Service Stations | 800 | 850 | -50 | -5.9 |
| Eating and Drinking Places | 4,400 | 4,000 | 400 | 10.0 |
| Other Retail Trade | 2,600 | 2,500 | 100 | 4.0 |
| FINANCE, INSURANCE AND REAL ESTATE | 2,000 | 2,000 | 0 | 0.0 |
| SERVICES | 14,800 | 14,300 | 500 | 3.5 |
| Hotels & Other Lodging Places | 2,050 | 1,900 | 150 | 7.9 |
| Business Services | 3,300 | 3,300 | 0 | 0.0 |
| Health Services | 3,500 | 3,200 | 300 | 9.4 |
| Social Services | 700 | 650 | 50 | 7.7 |
| Other Services | 5,200 | 5,200 | 0 | 0.0 |
| GOVERNMENT | 22,200 | 21,800 | 400 | 1.8 |
| Federal | 1,600 | 1,600 | 0 | 0.0 |
| State ¹ | 16,400 | 16,300 | 100 | 0.6 |
| Local | 4,200 | 3,900 | 300 | 7.7 |
| TOTAL NONAGRICULTURAL EMPLOYMENT | 55,200 | 53,900 | 1,300 | 2.4 |

*Santa Fe and Los Alamos Counties.

r = Revised.

1 = State government includes employment at Los Alamos National Laboratory.

Note: Detail may not add to total because of rounding.

Source: New Mexico Department of Labor, Bureau of Economic Research and Analysis.

services. Table III-7 provides a breakdown of 1987 and 1988 annual average employment by industry for the Santa Fe MSA.

2. INCOME

Los Alamos County has the highest per capita income in New Mexico. Data from the U.S. Bureau of Economic Analysis indicates 1987 per capita income in Los Alamos was \$21,232, approximately 86 percent above the state average of \$11,428. Santa Fe's per capita income (\$14,213) also exceeded the state average by approximately 24 percent.

3. UNEMPLOYMENT

Statistics from the New Mexico Department of Labor indicate that the Santa Fe MSA 1989 labor force was approximately 68,179. The unemployment rate within the MSA was approximately 3.7 percent, compared to a state unemployment rate of 5.5 percent.

Despite the below average unemployment rate within the MSA, the San Ildefonso Pueblo historically has experienced a high rate of unemployment. According to sample data, the unemployment rate in 1979 was 15.8 percent, with an additional 14.6 percent of the work force unemployed for fifteen or more weeks. The 1985 Pueblo census paints an even bleaker picture, placing the unemployment rate at 58.5 percent. Of those persons employed in 1979, the majority were employed in the services industry or in public administration work. There also were twenty-three potters and seven jewelers.

The high unemployment rate on the Pueblo has adversely affected their ability to generate income. In 1979, the median family income was \$9,182. Forty-five percent of all households had incomes below the poverty level. Seventeen percent of all households received food stamps.

SECTION III. REFERENCES

- 1 City of Santa Fe-Planning Commission and Urban Policy Board, "Plan '83: Santa Fe Area General Plan", November 1983.
- 2 County of Santa Fe, "Santa Fe County General Plan and Land Development Code", 1980.
- 3 Federal Highway Administration and New Mexico State Highway and Transportation Department, "Draft Environmental Impact Statement: Santa Fe - Los Alamos Corridor Study", July 1988.
- 4 University of New Mexico Bureau of Business and Economic Research; "Population and Employment Projection in New Mexico, 1985 - 2010", February 1989.
- 5 Los Alamos County, "Los Alamos County Comprehensive Plan", June 1987.
- 6 U.S. Department of Energy, Los Alamos Scientific Laboratory, "Soil Survey of Los Alamos County, New Mexico", June 1978.
- 7 Santa Fe Community College Business Assistance Center, "Santa Fe Stats", 1989.
- 8 Santa Fe Extraterritorial Zoning Authority, "Santa Fe Comprehensive Extraterritorial Plan", August, 1988.
- 9 Sunwest Financial Services, "New Mexico Progress, Economic Review of 1988, Volume 6", 1988.
- 10 State of New Mexico, Water Quality Control Commission, "Water Quality Standards for Interstate and Intrastate Streams in New Mexico" (as amended through March 8, 1988), April 1988.
- 11 University of New Mexico, Bureau of Business and Economic Research, (source of economic statistics).
- 12 U.S. Department of Agriculture, National Forest Service, "Revised Soils Survey for Santa Fe National Forest - Caja del Rio", January 1989.
- 13 U.S. Department of Agriculture, National Forest Service, "Santa Fe National Forest Plan", September 1987.
- 14 U.S. Department of Agriculture, Soil Conservation Service and Forest Service, "Soil Survey of Santa Fe Area, New Mexico", August 1975.
- 15 U.S. Department of Energy, Los Alamos National Laboratory, "Site Development Plan", Revised Preliminary Draft, August 1989.

- 16 U.S. Department of Interior, Bureau of Land Management, Taos Resource Area, "Taos Resource Management Plan and Environmental Impact Statement", October 1987.
- 17 U.S. Department of Interior, National Park Service, "Final Master Plan: Bandelier National Monument", April 1977.
- 18 U.S. Department of Agriculture, National Forest Service, "Environmental Impact Statement: Santa Fe National Forest Plan", July 1987.
- 19 Sergent, Hauskins & Beckwith, Consulting Geotechnical Engineers, various Geologic Reconnaissance Reports for the Santa Fe - Los Alamos Corridor Study, prepared March 1990, June 1989, September 1988, and October 1987.
- 20 Cross Cultural Resources Systems, Inc., "Cultural Resources Assessment: Mortandad - Montoso Peak Alternates, Santa Fe to Los Alamos, Santa Fe County, New Mexico"; "Archaeological Assessment Survey: Montoso Peak (West) and New Mexico State Route 4, Los Alamos to Santa Fe Corridor Study, Los Alamos County, New Mexico"; "Archaeological Assessment Reconnaissance Survey: Chino Mesa Alternate of the Proposed Los Alamos to Santa Fe Highway, Santa Fe and Los Alamos Counties, New Mexico"; and "Archaeological Reconnaissance Survey of Sandia Canyon: West Sandia Canyon Alignment of the Proposed Mortandad Alternate, Santa Fe County, New Mexico".

SECTION IV

ENVIRONMENTAL CONSEQUENCES

IV. ENVIRONMENTAL CONSEQUENCES

This section addresses the probable beneficial and adverse social, economic, and environmental effects that would result from the implementation of the proposed action and describes the measures proposed to mitigate adverse impacts.

A. TRAFFIC AND TRANSPORTATION IMPACTS

Traffic and transportation impacts have been determined based on projections of future traffic volumes in the study area. The Transportation Research Board's "Highway Capacity Manual, 1985" was the basis for which Levels of Service were determined.

1. TRAFFIC VOLUMES

The average daily traffic (ADT) volumes on the existing and proposed highway system for the year 1995, and design year 2015, are shown in Exhibits IV-1 through IV-5 for the No-Build Alternative and each of the four build alternates, respectively. Under the Build Alternative, design year 2015 traffic volumes along the proposed Santa Fe - Los Alamos Corridor are projected to range from 8,800 to 14,300 vehicles per day. The year 2015 ADT for existing SR 502 under the No-Build Alternative is projected to be approximately 30,000 vehicles per day. For US 84/285 in 2015 under the No-Build Alternative, the traffic volumes near Santa Fe are estimated to be around 55,000 vehicles per day.

Truck traffic is projected to continue to be approximately one percent of the total traffic volume. This would be the case for both the No-Build Alternative and the Build Alternative.

2. LEVEL OF SERVICE

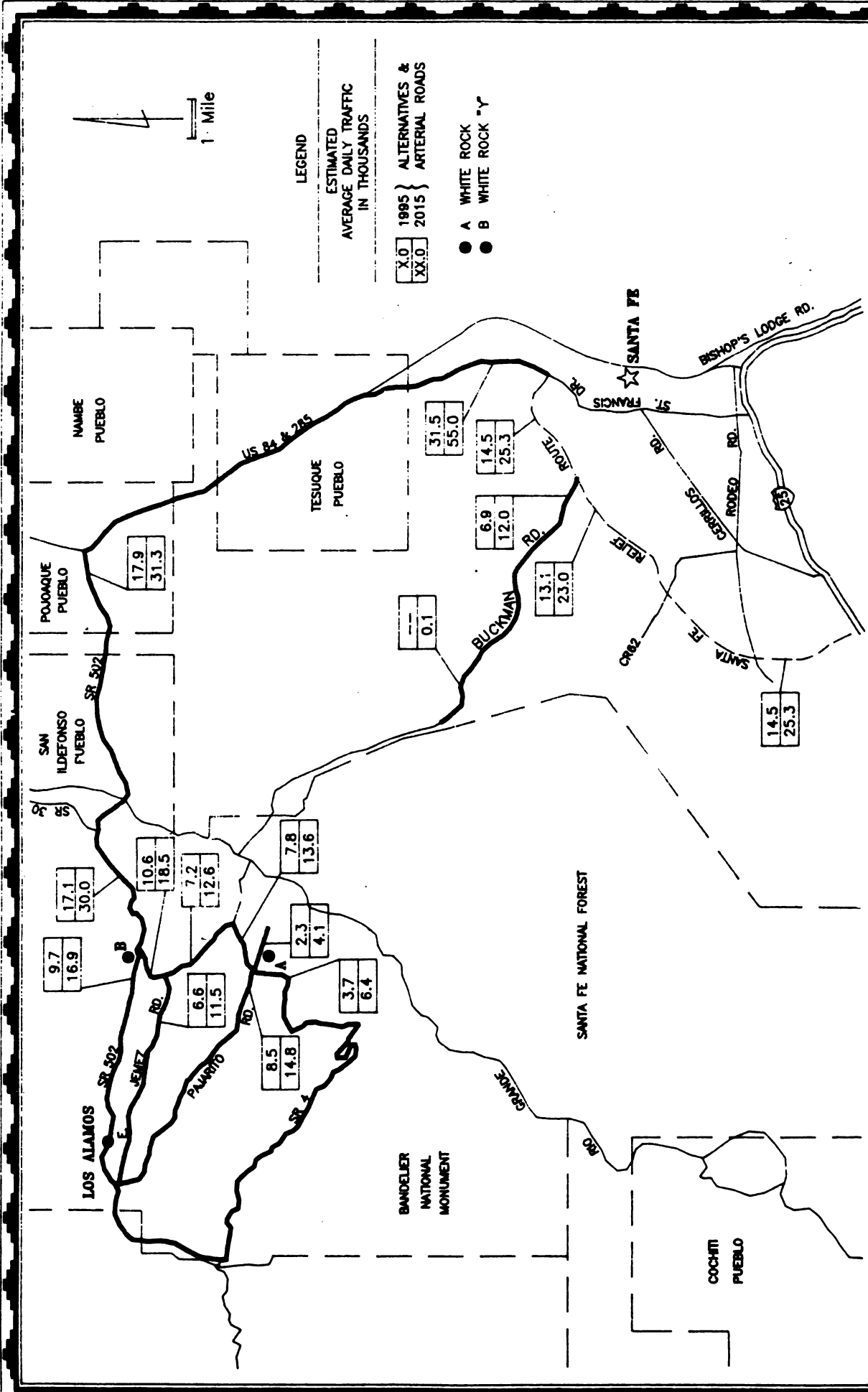
The Level of Service (LOS) provided by either the existing facility (No-Build Alternative) or the proposed facility (Build Alternative) is determined by speed, delays, and capacity utilization. LOS is a qualitative measure which describes

operating conditions of a traffic stream along a roadway. Six levels of service are defined from A to F, with LOS A the best and LOS F the worst. A level of service of B or better over the design life of the project/facility is desired for new or modified rural highway facilities. However, in mountainous terrain a LOS C is acceptable.

As indicated in Section I, much of the existing rural route between Los Alamos and Santa Fe is currently operating at LOS D or worse, indicating a need for traffic operational improvements at the present time. Under the No-Build Alternative in design year 2015, the level of service along this route would decrease to LOS E and F. Therefore, the projected 2015 travel demand in this corridor would not be adequately served.

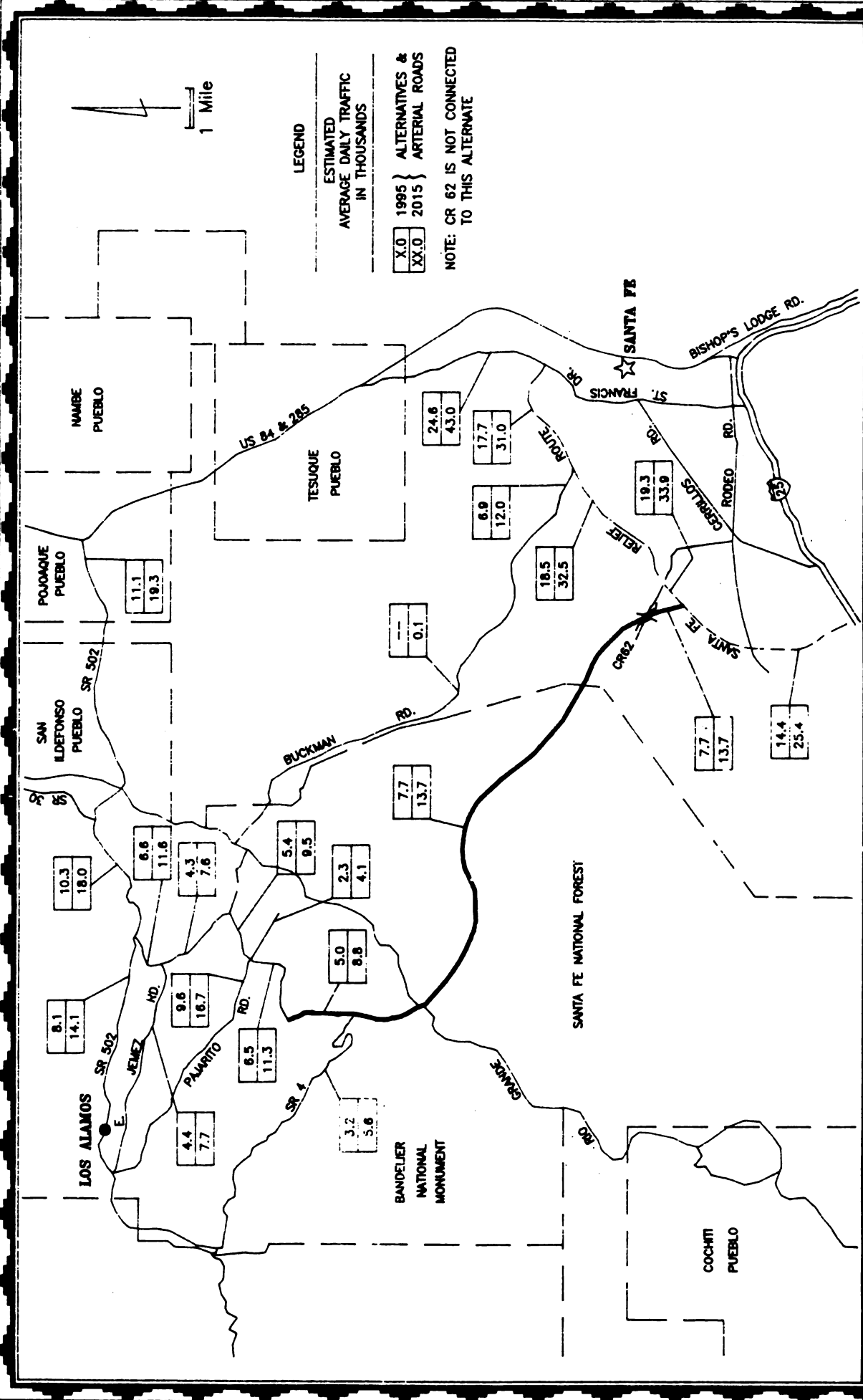
With implementation of the Build Alternative, the level of service along existing SR 502 in the year 2015 would be improved over the no build condition to LOS D because of the diversion of traffic from the current route to the proposed Santa Fe - Los Alamos highway. For existing US 84/285, the year 2015 level of service would not change under the Build Alternative. However, an approximate 22 percent reduction in traffic volumes along this road would result with any of the four build alternates.

For the Build Alternative in the year 2015, the new highway facility and SR 4 would operate at LOS C or better. This level of traffic service would be provided regardless of the alternate selected.



**SANTA FE-
LOS ALAMOS
CORRIDOR
STUDY**

**1995 & 2015 TRAFFIC ON
EXISTING SYSTEM
(NO-BUILD ALTERNATE)**



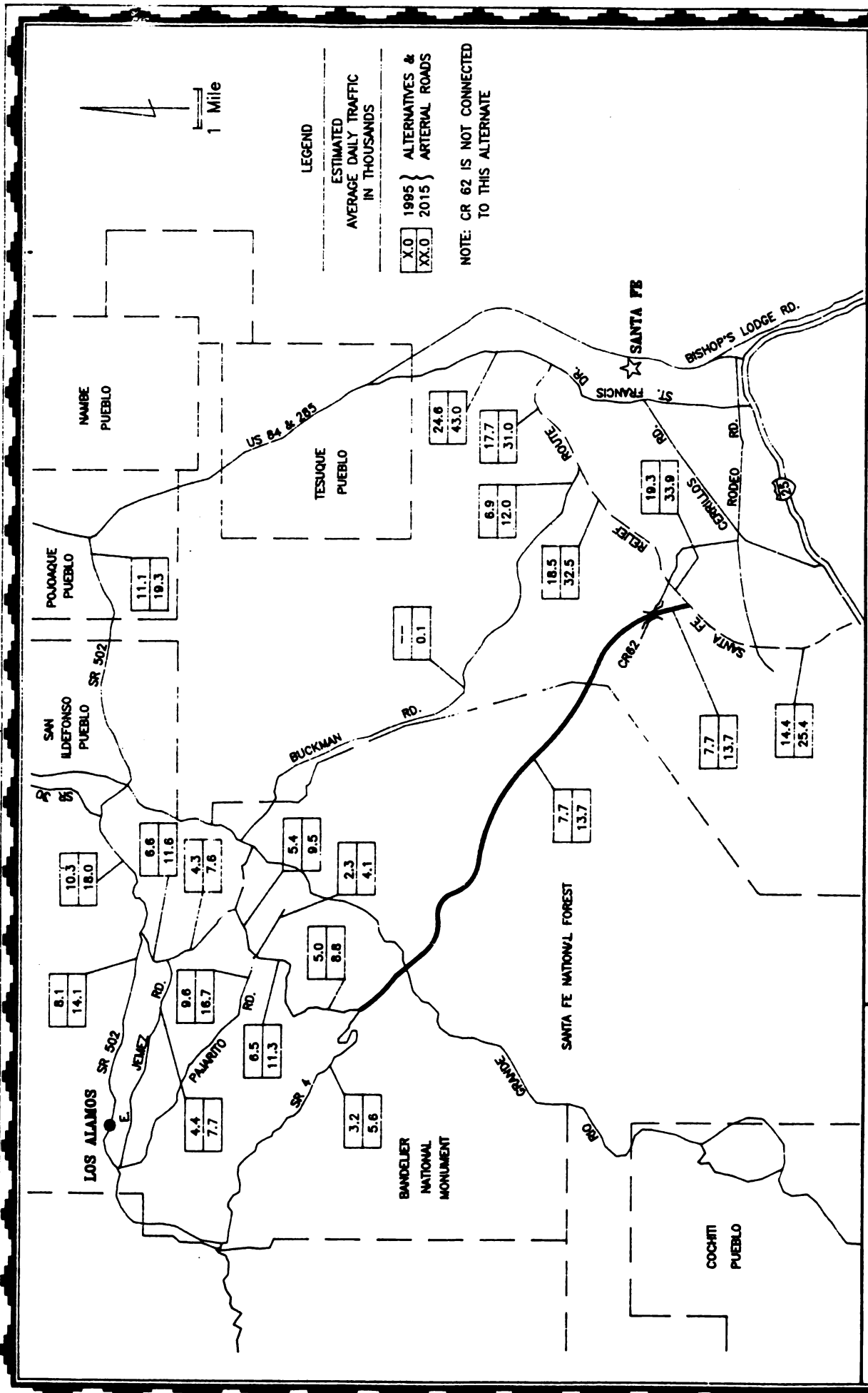
**1995 & 2015 TRAFFIC ON
MONTOSO PEAK ALTERNATE**

**SANTA FE-
LOS ALAMOS
CORRIDOR
STUDY**

**SANTA FE-
LOS ALAMOS
CORRIDOR
STUDY**

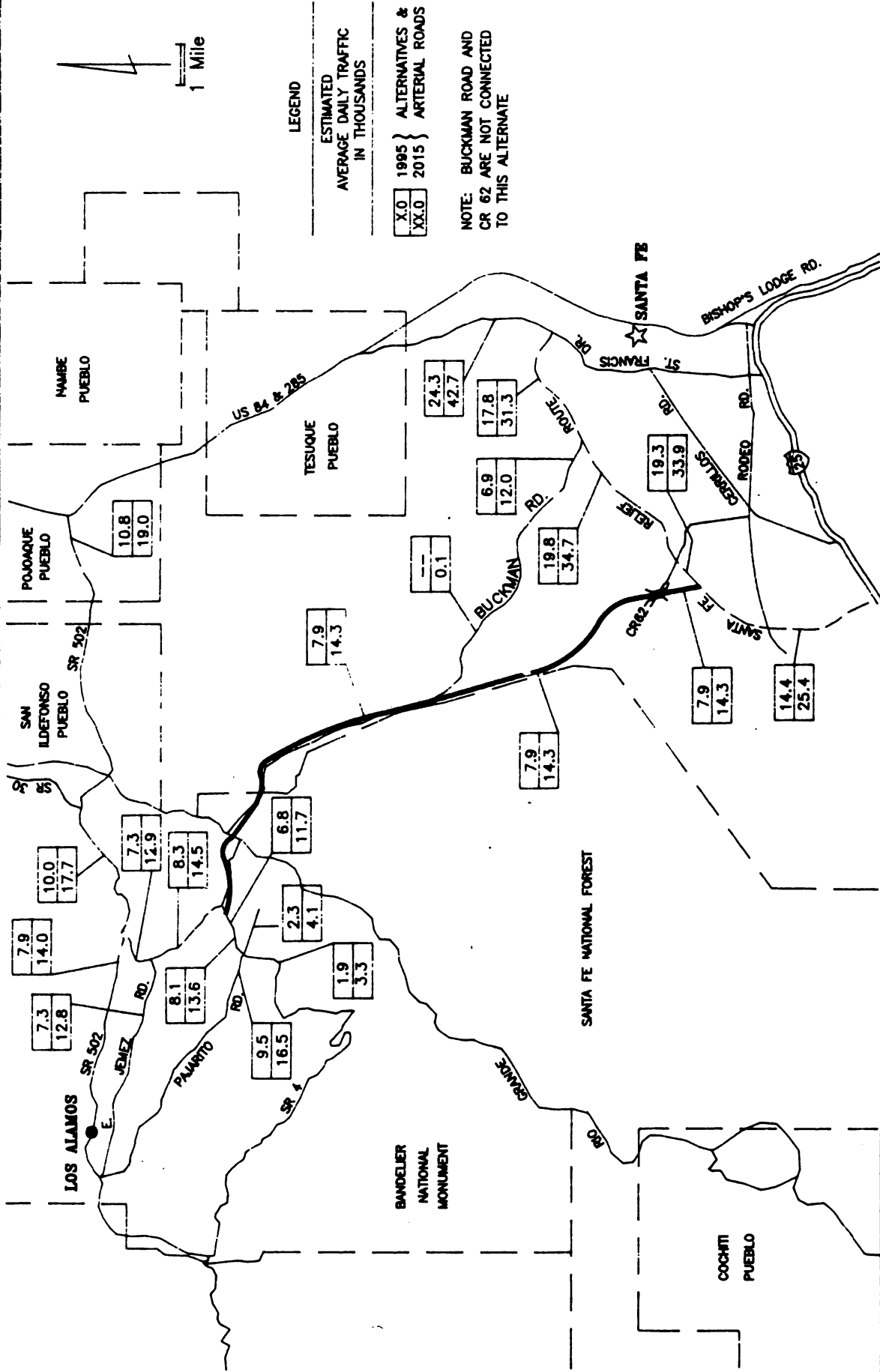
**1995 & 2015 TRAFFIC ON
CHINO MESA ALTERNATE**

**EXHIBIT
IV-3**



1995 & 2015 TRAFFIC ON MORTANDAD ALTERNATE

SANTA FE- LOS ALAMOS CORRIDOR STUDY



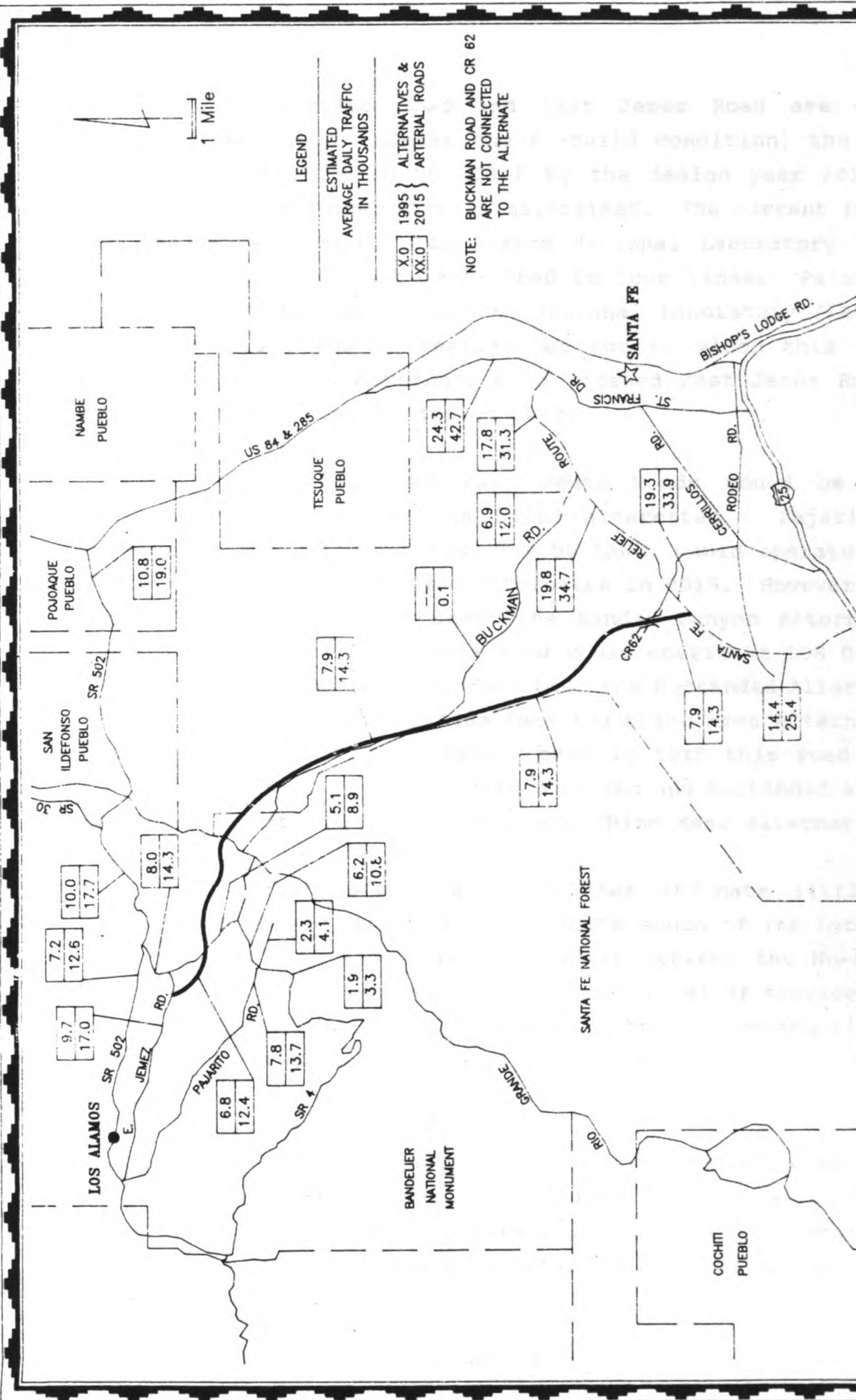


EXHIBIT
IV-5

1995 & 2015 TRAFFIC ON
SANDIA CANYON ALTERNATE

SANTA FE-
LOS ALAMOS
CORRIDOR
STUDY

Pajarito Road and East Jemez Road are currently operating at LOS C. Under the no-build condition, the level of service would decrease to LOS E by the design year 2015 if the existing two-lane operation is maintained. The current long-range comprehensive plan for Los Alamos National Laboratory indicates future widening of East Jemez Road to four lanes. Pajarito Road is controlled by the Los Alamos National Laboratory (LANL) which currently has plans to realign but not to widen this facility. Under the No-Build Alternative, a widened East Jemez Road would operate at LOS C in the design year.

Pajarito and East Jemez Roads would be affected differently by each of the build alternates. Pajarito Road, maintained as a two-lane facility by LANL, would operate at LOS E under each of the four build alternates in 2015. However, traffic volumes would be lowest under the Sandia Canyon Alternate. In 2015, a four-laned East Jemez Road would operate at LOS D with the Sandia Canyon Alternate, at LOS C with the Mortandad Alternate, and at LOS B with both the Montoso Peak and Chino Mesa Alternates. If East Jemez Road is not widened, then in 2015 this road would be operating at LOS E under the Sandia Canyon and Mortandad Alternates and LOS D under the Montoso Peak and Chino Mesa Alternates.

Forecasted traffic volumes indicate little change along the proposed Santa Fe Relief Route south of its intersection with the Santa Fe - Los Alamos highway between the No-Build and Build Alternatives. Because of this, the level of service provided by the Relief Route will not be altered by the construction of the Santa Fe - Los Alamos highway.

3. TRAVEL DISTANCE

A comparison of travel distances for the No-Build and Build Alternatives has been completed for this project. Table IV-1 shows the distances between three points in the Los Alamos area and five locations in the Santa Fe area. Travel distances

TABLE IV-1

**TRAVEL DISTANCE MATRIX BY ALTERNATIVE
(Miles)***

| ORIGIN | DESTINATION | | | | |
|---|------------------------------------|----------------------------|----------------------------|-------------------|-------------------------------------|
| | I-25 & Santa Fe Relief Route | Cerrillos & Rodeo Roads | I-25 & St Francis Drive | Santa Fe Plaza | US 84 & Santa Fe Relief Route |
| LOS ALAMOS: (at SR 501 and 502) | | | | | |
| - Existing Route | 46 | 41 | 39 | 35 | 33 |
| - Montoso Peak | 33 | 33 | 40 | 39 | 37 |
| - Chino Mesa | 31 | 31 | 37 | 36 | 34 |
| - Mortandad | 30 | 30 | 36 | 35 | 33 |
| - Sandia Canyon | 29 | 29 | 36 | 35 | 33 |
| WHITE ROCK: (along SR 4) | | | | | |
| - Existing Route | 44 | 39 | 37 | 33 | 31 |
| - Montoso Peak | 26 | 26 | 32 | 32 | 30 |
| - Chino Mesa | 24 | 24 | 30 | 29 | 27 |
| - Mortandad | 23 | 23 | 29 | 29 | 27 |
| - Sandia Canyon | 26 | 26 | 33 | 32 | 30 |
| BANDELIER N.M.: (at entrance off SR 4) | | | | | |
| - Existing Route | 51 | 46 | 44 | 40 | 38 |
| - Montoso Peak | 24 | 24 | 30 | 29 | 27 |
| - Chino Mesa | 24 | 24 | 30 | 29 | 27 |
| - Mortandad | 30 | 30 | 36 | 35 | 33 |
| - Sandia Canyon | 33 | 33 | 39 | 38 | 36 |

* Distance determined by most logical route.

are indicated for trips along the existing route and along each of the four build alternates.

For any build alternate, the distance is shortest for trips originating in, or destined for, southwest Santa Fe or Albuquerque. For these trips, travel through Santa Fe (on the Santa Fe Relief Route, Cerrillos Road, or St. Francis Drive) would be avoided. For example, trips between Villa Linda Mall and Los Alamos would be 12 miles shorter over Sandia Canyon, 11 miles shorter over Mortandad, 10 miles shorter over Chino Mesa, and 8 miles shorter via Montoso.

For commuter trips to the Los Alamos area, the Sandia Canyon Alternate provides the shortest route, except for trips from the vicinity of US 84/285 and the Santa Fe Relief Route. For all trips to or from Los Alamos, the Montoso Peak Alternate is the longest of the four build alternates. There exists a break even point in northern Santa Fe at which a trip over each of the alternates would be the same distance as a trip over the existing route. That is, distance would not be a factor in choosing which route to take in this case.

For trips to and from White Rock, Mortandad is always the shortest route, followed by Chino Mesa, Sandia Canyon, and Montoso. The existing route is always longer than the build alternates. If travelling to Villa Linda Mall from White Rock, a driver would save 16 miles via Mortandad, 15 miles over Chino Mesa, 13 miles via Sandia Canyon, and 13 miles over Montoso. As with trips to Los Alamos, the savings over the existing route decline as the Santa Fe origin or destination moves northward.

From Bandelier National Monument, the Montoso and Chino Mesa Alternates have the shortest travel distances. These are followed by the Mortandad and Sandia Canyon Alternates. The existing route is always longer than the build alternates. The

difference between the existing route and the build alternates diminishes, however, as the terminus in Santa Fe becomes further north.

4. COMMUTING PATTERNS

Implementation of the Build Alternative would have an effect on commuting patterns into Los Alamos County. Approximately 40 percent of the work force in the county commutes to work from outside the county lines. Furthermore, it is estimated that of these commuters, approximately 40 percent come from Santa Fe and points south toward Albuquerque. Based on the travel distances shown in Table IV-1, the Build Alternative would provide a more direct commuting route for a substantial portion of the daily commuting population.

For persons who commute to Los Alamos from areas north of Santa Fe, the net result of the Build Alternative would be a reduction in traffic volumes and congestion encountered along the existing routes. The No-Build Alternative would result in increased congestion and commuting delays over time as traffic volumes increase on the existing highway system.

5. ACCESS CONSIDERATIONS

The current plans for access to the Santa Fe - Los Alamos highway from Santa Fe include an interchange with the Santa Fe Relief Route. An additional access location to the Mortandad and Sandia Canyon Alternates was considered at Buckman Road. Access to County Road 62 from all of the build alternates was also considered. However, these connections are not included as part of the SDEIS Build Alternative. Santa Fe County has requested that adequate right-of-way be acquired for future access at both these locations. Issues related to access and improving County Road 62 and Buckman Road have been evaluated as part of this study and are discussed more fully in the following sections.

a. County Road 62 (CR 62)

Traffic forecasts for 1995 and 2015 have been prepared for three options at CR 62⁴. These include the current plan of no access at this location, an at-grade intersection with an unimproved County Road 62, and an intersection with a paved County Road 62. Traffic volumes for the current plans are shown in Exhibits IV-2 through IV-5 for each build alternate.

Under the second scenario of an at-grade intersection with an unimproved CR-62, between 400 and 600 vehicles per day are forecasted for 1995 and 2015 along this route. If County Road 62 were to be paved and connected to the proposed facility, the travel demand would increase to between 5,600 and 6,000 vehicles per day in 1995 and to between 9,700 and 11,000 vehicles per day in 2015, depending on the build alternate selected.

b. Buckman Road

Neither an interchange nor an intersection is currently proposed for the Mortandad and Sandia Canyon Alternates at Buckman Road. However, because of Buckman Road's location and access to northern Santa Fe and as a result of substantial public interest, future traffic forecasts have been developed for similar scenarios as presented for CR 62⁴.

Exhibits IV-1 through IV-5 indicate that future traffic volumes on Buckman Road, under all of the alternates, will range from less than 100 vpd to 6,900 vpd in 1995 in the vicinity of the Santa Fe Relief Route. By 2015 this range is expected to grow to between 100 vpd to 12,000 vpd. Residential development along the road is the reason for the traffic growth over the years.

Should an at-grade intersection be provided between either the Sandia Canyon or Mortandad Alternates and the existing unimproved section of Buckman Road, slight increases in traffic volumes are expected. By 1995, volumes are projected to

range from 500 vpd to 7,200 vpd. This trend would continue to 2015 when volumes are estimated to range from 800 vpd to 12,600 vpd.

By paving and connecting Buckman Road to the proposed Santa Fe - Los Alamos highway, the demand for travel along Buckman Road would increase. Under this scenario, 1995 volumes would range from 4,600 vpd to 9,500 vpd. By the design year 2015, traffic is projected to range from 8,100 vpd to 16,600 vpd.

B. DESIGN ELEMENTS AND COSTS

The four build alternates have been developed in accordance with the New Mexico State Highway and Transportation Department and American Association of State Highway and Transportation Officials (AASHTO) design standards.³⁴ The major design criteria used for developing the alternates are shown in Table II-1.

1. RIGHT OF WAY AND CONSTRUCTION COSTS

Table IV-2 provides an estimate of the right of way requirements associated with each alternate.³⁵ These estimates include the amount of land required for construction of the alternate, reconstruction of pertinent portions of SR 4, interchange construction, and the greenbelt area along each alternate. The Chino Mesa Alternate would require the least land area of the build alternates and the Sandia Canyon Alternate would require the most. Private property will be acquired in accordance with the Uniform Relocation Assistance Act. Public lands and Indian lands will be acquired under applicable federal and state laws.

Table IV-3 provides a comparison of the design features of each build alternate.³⁵ Table IV-4 provides a comparison of the project costs associated with each build

TABLE IV-2
RIGHT OF WAY REQUIREMENTS
(ACRES)

| PROPERTY | MONTOSO PEAK | CHINO MESA | MORTANDAD | SANDIA CANYON |
|------------------------------------|-----------------|-----------------|-----------------|------------------|
| Department of Energy | 279.33 | 268.28 | 64.46 | 67.97 |
| San Ildefonso Pueblo | 0 | 0 | 102.59 | 209.79 |
| Santa Fe National Forest | 836.80 | 700.21 | 111.16 | 89.05 |
| Bureau of Land Management | 224.99 | 224.99 | 1,265.72 | 1,277.38 |
| State of New Mexico Land Office | 82.90 | 82.90 | 98.08 | 98.08 |
| Private Ownership | 14.94 | 14.94 | 0 | 0 |
| TOTAL | 1,438.96 | 1,291.32 | 1,642.01 | 1,742.27 |

Source: New Mexico State Highway and Transportation Department,
 "Phase C Engineering Report: Santa Fe - Los Alamos
 Corridor Study", June 1990.

TABLE IV-3

BUILD ALTERNATE DESIGN FEATURES

| FEATURE | MONTOSO PEAK | CHINO MESA | MORTANDAD | SANDIA CANYON |
|--------------------------------|-----------------|---------------|-----------|------------------|
| Design Speed (mph) | 55 | 55 | 55 | 60 |
| Construction Length (miles) | 22.26 | 19.15 | 20.90 | 21.85 |
| Maximum Curvature (degrees) | 5 | 5 | 5 | 4 |
| Maximum Grade (%) | 6.00 | 6.00 | 5.67 | 6.00 |
| Bridge Lengths (Ft) | | | | |
| Ancho | 1161 | 1923 | - | - |
| Chaquehui | 640 | - | - | - |
| Rio Grande | 2790 | 3113 | 4562 | 4104 |
| Canada Ancha | - | - | 500 | 400 |
| Construction (Temporary) | - | - | 300 | 300 |
| Bridge Height (Feet) | | | | |
| Ancho | 250 | 500 | - | - |
| Chaquehui | 120 | - | - | - |
| Rio Grande | 1020 | 810 | 460 | 290 |
| Canada Ancha | - | - | 20 | 60 |

Source: New Mexico State Highway and Transportation Department,
 "Phase C Engineering Report: Santa Fe - Los Alamos
 Corridor Study", June 1990.

TABLE IV-4

**BUILD ALTERNATE COST COMPARISON
(MILLIONS)**

| COST ITEM | MONTOSO PEAK | CHINO MESA | MORTANDAD | SANDIA CANYON |
|--|-------------------------|-----------------------|------------------|--------------------------|
| Bridges | | | | |
| Ancho | \$ 9.4 | \$ 32.1 | \$ - | \$ - |
| Chaquechui | 4.8 | - | - | - |
| White Rock | 70.1 | 67.1 | 53.3 | 45.4 |
| Canada Ancha | - | - | 3.0 | 2.8 |
| Construction | - | - | 0.5 | 0.5 |
| Subtotal | 84.3 | 99.2 | 56.8 | 48.7 |
| Roadway and Interchanges | 58.2 | 60.2 | 68.1 | 64.2 |
| Engineering and Contingencies | 8.5 | 9.6 | 7.5 | 6.8 |
| Gross Receipts Tax | 9.1 | 10.1 | 7.9 | 7.2 |
| Right of Way | 0.8 | 0.9 | 2.9 | 5.0 |
| Utility Adjustment | 0.2 | 0.2 | 1.1 | 0.8 |
| Archaeological Mitigation | <0.1 | <0.1 | <0.1 | 0.1 |
| Design | 22.6 | 25.3 | 19.9 | 18.0 |
| TOTAL | \$183.7 | \$205.5 | \$164.2 | \$150.8 |

Source: New Mexico State Highway and Transportation Department,
"Phase C Engineering Report: Santa Fe - Los Alamos
Corridor Study", June 1990.

alternate.³⁵ Based on this table, the Sandia Canyon Alternate would be the least costly to implement (\$150.8 million) and the Chino Mesa Alternate the most costly (\$205.5 million). These cost estimates include an estimated cost for the San Ildefonso lands under the Sandia Canyon and Mortandad Alternates, and for private lands under the Montoso Peak and Chino Mesa Alternates.

Bridge costs reported in Table IV-4 for the crossing at White Rock Canyon are based on the following most reasonable bridge types as determined by the project's Location Study Team based on aesthetics, constructability, and costs:

- Montoso Peak: Steel Trussed Arch
- Chino Mesa: Steel Trussed Arch
- Mortandad: Concrete Segmental Box Girder
- Sandia Canyon: Concrete Arch

These bridges are portrayed in Exhibits II-6 through II-12 along with other Phase C bridge options. The selection of a most reasonable bridge crossing was made for cost comparison purposes only. Final bridge type determination will not be made until an alignment is selected, final engineering design is completed, and competitive construction bids are received.

2. INTERSECTIONS AND INTERCHANGES

Each of the intersections associated with the various build alternates was evaluated based on 2015 traffic data and turning movements. Each location was studied as an unsignalized intersection in order to evaluate the traffic operational characteristics with respect to the various turning movements. If a satisfactory level of service could not be attained, the location was evaluated as a signalized intersection. If estimated traffic volumes were sufficiently large, alternative interchange configurations were evaluated.

The results of this analysis are documented in two project reports. For the Montoso Peak and Mortandad Alternates, results are published in the July, 1988 "Phase C Traffic Analysis".³⁶ In May of 1990, a "Supplemental Phase C Traffic Analysis" report was prepared for the Chino Mesa and Sandia Canyon Alternates.⁴ Table IV-5 summarizes the planned intersection and interchange treatments along the various alternates.

3. PEDESTRIAN AND BICYCLE FACILITIES

With the exception of SR 4 in White Rock, the existing routes (SR 4, SR 502, US 84/285) do not contain adequate provisions for either pedestrians or bicycles. Existing facilities generally have a 2-foot paved shoulder. The provision of 10-foot paved shoulders on the proposed facility would improve safety conditions should the facility be used for bicycle activities. The urban cross-section proposed for SR 4 in White Rock would provide a 6-foot bicycle lane.

4. UTILITIES

All utility lines impacted by the project would be relocated prior to construction. Costs for these relocations have been estimated and are included in the utility adjustment costs shown in Table IV-4.

The lines of the Public Service Company of New Mexico, the Gas Company of New Mexico, the Sangre de Cristo Water Company, the Western Telecom and Plains Electric Generation and Transmission Company will be affected to varying degrees under each build alternate. The Montoso Peak and Chino Mesa Alternates would affect only electric and fiber optic lines and would have the least impact on utilities. The Mortandad and Sandia Canyon Alternates would affect all four utilities with the Mortandad Alternate requiring the most relocations.

TABLE IV-5
INTERSECTION/INTERCHANGE CONFIGURATION

| LOCATION | MONTOSO PEAK | CHINO MESA | MORTANDAD | SANDIA CANYON |
|-----------------------|---------------------|---------------------|-------------------------------------|------------------------------|
| East Jemez Road | - | - | Three-Level Directional Interchange | Modified Diamond Interchange |
| Pajarito Road | Signalized | Signalized | Signalized | Signalized |
| SR 4 | Signalized | Signalized | Modified Urban Interchange | Modified Diamond Interchange |
| San Ildefonso | - | - | Unsignalized | Unsignalized |
| Buckman Picnic Area | - | - | Unsignalized | Unsignalized |
| Santa Fe Relief Route | Trumpet Interchange | Trumpet Interchange | Trumpet Interchange | Trumpet Interchange |

Note: Interchange configurations are assumed for cost comparison purposes only. Final interchange determinations will be made during final design for the project.

Source: New Mexico State Highway and Transportation Department, "Phase C Traffic Analysis", July 1988 and "Supplemental Phase C Traffic Analysis", May 1990.

Coordination with all affected utility companies would be undertaken during design and prior to construction. All necessary precautions would be taken to prevent any disruption in service for these utilities.

C. RELOCATION IMPACTS

Because all of the build alternates are located primarily along public lands, relocation impacts would be minimal. Montoso Peak and Chino Mesa Alternates both traverse private property, and would require the acquisition of approximately 14.94 acres of undeveloped land under either alternate. However, while the other two alternates are completely located on public lands, both the Mortandad and Sandia Canyon Alternates would require the taking of personal private property on BLM lands. As a grazing lessee of BLM lands, owners of the Santa Fe Ranch have paid for and constructed a well and corral. Both the well and the corral are located within the proposed right of way limits of the Mortandad and Sandia Canyon Alternates. The New Mexico Department of Highways and Transportation has committed to reimburse the owners for the loss of the well and corral.¹³

The Montoso and Chino Mesa Alternates would not require a direct taking of the Caja del Rio Gun Club's shooting range; however, the proposed alignment of either the Montoso or Chino Mesa Alternate would pass through the club's buffer zone. Mitigation may require the re-orientation or relocation of the club's shooting range.

None of the build alternates nor the No-Build Alternative would require the displacement of people, businesses, farms, or non-profit organizations. The acquisition and relocation program would be conducted in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970.

D. LAND USE IMPACTS

Impacts to current and future development trends in the study area would vary depending on the build alternate considered. The following lands would be affected by one or more of the build alternates: Santa Fe National Forest - Caja del Rio; Bureau of Land Management; National Park Service - Bandelier National Monument; Department of Energy - Los Alamos National Laboratory; New Mexico State Land Office; San Ildefonso Pueblo; and a private land holding. The extent of the impact would be relative to the alternative selected and the consistency of the proposed project with the land manager's comprehensive development plans. Several current planning documents make reference to the proposed project.

1. SANTA FE NATIONAL FOREST

The "Santa Fe National Forest Plan," published in September 1987, makes several references to the project.¹⁵ The Transportation System Management Plan shows a "proposed state highway corridor" that approximates the Mortandad Alternate. The Sandia Canyon Alternate, developed following the publication of the Forest Plan, also closely approximates the alignment discussed in the Forest Plan. No reference is made to the other build alternates.

Within the study area, the Santa Fe National Forest is divided into two management areas: the Caja Management Area G and the White Rock Management Area L. Exhibit III-3 shows the boundaries of these management areas.

Management Area G encompasses a majority of the National Forest in the study area. In this area, emphasis is placed on the management of the lands for wildlife habitat, forage and firewood production, and dispersed recreation activities. Both the Mortandad and Sandia Canyon Alternates would have less impact on National Forest lands because their alignments primarily follow the eastern National Forest boundary. The Montoso and Chino Mesa Alternates would cross Area G, potentially making access to water

supplies by grazing animals difficult. Under any of the alternates, access from the highway would be managed seasonally for grazing and administrative needs. Concrete box culvert stockpasses measuring at least ten feet in width and eight feet in height would permit cattle and wild horses to pass under the road at locations designated by the U.S. Forest Service. Stock water sources would need to be developed to manage cattle and wild horses. Sites would be designed by the U.S. Forest Service.

The White Rock Management Area L is situated along the eastern banks of the Rio Grande. Management emphasis is placed on semi-primitive, non-motorized recreation. This area is not designated specifically as an existing or planned recreation site and, therefore, is not designated as a Section 4(f) property.

Depending on the build alternate, the Forest Service has indicated there would be varying degrees of disruption to the existing and intended land uses of Management Area L. The Montoso and Chino Mesa Alternates would divide Management Area L almost in half, affecting the visitor's experience of relative isolation. The Management Plan indicates roads are not to be constructed in this area in order to protect semi-primitive, nonmotorized uses. The Forest Service has expressed concern that either of these two alternates would bring about increased recreational usage, littering, and wildlife disturbance in Management Area L. Should either of those alternatives be selected, an amendment to the forest management plan would be required.

Efforts to mitigate potential adverse impacts would include maintaining the proposed project as a limited access facility. The new roadway would not provide or allow for additional points of access in the area. The greenbelt corridor is planned to run parallel to the roadway facility, further prohibiting access into the area. Because the Mortandad Alternate crosses Management Area L at its extreme northern end, the Forest Service has indicated use would be modified very little. (See

Appendix C, Exhibit 2). The Sandia Canyon Alternate and the No-Build Alternative would not affect land use within Management Area L.

The Forest Service's Management Plan indicates a proposed picnic site to be developed in 1996. The plan calls for the development of the Buckman picnic area along the Rio Grande and in proximity to the northwestern terminus of unpaved Buckman Road. Under the plan, the Forest Service would develop a picnic area with 30 parking spaces, 0.1 mile of river access, and a one-mile access road to be constructed by 1996. Access to this picnic area would be provided under the Mortandad and Sandia Canyon Alternates via an at-grade intersection.

2. BUREAU OF LAND MANAGEMENT (BLM)

The BLM's Taos Resource Area "Resource Management Plan" does not specifically refer to the project. The plan does call for the transfer of "all scattered and isolated tracts." Sections 15, 22, 23, 26, 27 and 35 within Township 17 North, Range 8 East, are within the designated Disposal Zone. Under any alternative, the project would cross through some of these sections. As noted in the DEIS, in 1988 the City and County of Santa Fe recently have applied to purchase these and other sections from BLM for recreational use.^{9,16} As indicated in Appendix A Exhibits 10 and 11, this proposed highway corridor is specifically excluded from the proposed recreational lands. However, at this time, no plans are in progress to effect this change in land ownership and use.

The BLM has indicated concern that construction of either the Mortandad or Sandia Canyon Alternate would bisect a currently leased grazing area near the northern terminus of Buckman Road. The northern portion of the separated grazing area would be left without a water supply, forcing BLM to reduce the grazing allotment by approximately 190 Animal Unit Months. Efforts to mitigate this could include the construction of additional

livestock watering facilities in this northern grazing section, as well as the construction of concrete box culverts to allow for livestock passage to existing watering sources.

No other impacts would be expected on BLM lands under any of the build alternates. The No-Build Alternative would not impact BLM lands. Implementation of any of the build alternates is consistent with the jurisdictional authority's management plans.

3. NATIONAL PARK SERVICE

None of the build alternates would directly affect land uses within the National Park Service's Bandelier National Monument. However, implementation of any of the build alternates would improve access between Santa Fe and Los Alamos, thereby improving access to Bandelier National Monument. The National Park Service has indicated that easier access to Bandelier National Monument would aggravate already crowded conditions at the park.¹⁷

According to the National Park Service, visitor use is at or exceeds maximum levels during the summer season and increased park visitation would further strain the park's resources.

The National Park Service has also indicated that other potential impacts to the park might affect the use of the monument property and the experience of the visitor. Concerns have been expressed with regards to visual intrusions, noise impacts, and air quality alterations related to the proposed facility. Each of these issues is addressed in this section of the SDEIS, and in the Section 4(f) Evaluation.

The Department of the Interior (DOI) has a Joint Management Agreement with the Department of Energy (DOE) for protection of cultural resources (See Appendix C, Exhibit 1) within a portion of LANL property between SR 4 and the Rio Grande (See Exhibit III-3). The provisions of the DOI/DOE agreement may apply to the Chino Mesa Alternate, which cross the joint management area.

4. DEPARTMENT OF ENERGY

The 1989 LANL "Site Development Plan" identifies the Santa Fe - Los Alamos Corridor project on its priority list of recommended transportation/circulation improvements.¹⁸ In general, the project would be compatible with existing and future LANL land uses. During the initial evaluation of the Chino Mesa Alternate, LANL officials expressed concern that construction activities for the alternate could potentially create vibrations at LANL's proposed Laser Target Facility in Technical Area 70, immediately north of and adjacent to Ancho Canyon. Therefore, in an effort to accommodate their concerns, the Chino Mesa alignment was shifted closer to the southern edge of the mesa. This shift has allowed for the possible development of more of the mesa top and would reduce the potential for vibrations at the proposed Laser Target Facility.

5. SANTA FE COUNTY AND CITY

The portion of the project nearest the Santa Fe Relief Route would be located within Santa Fe's Extraterritorial Zoning District. (See Exhibit III-3). Land uses in this district are regulated jointly by the city and county via the Extraterritorial Zoning Authority. The Authority adopted the Extraterritorial Comprehensive Plan on August 4, 1988. Within this approved plan is the proposed Santa Fe - Los Alamos Corridor.⁴¹ Santa Fe County has adopted a resolution regarding the location of the intersection of the Santa Fe Relief Route and the project. The proposed project is consistent with the county resolution.

In addition, in 1986, a "Santa Fe Public Transportation Resource Report and Findings" was published by the Santa Fe Public Transportation Advisory Committee.⁴² In its report, the committee supported the completion of a new Santa Fe to Los Alamos highway. The committee stated that the new highway and the Santa Fe Relief Route are necessary to make feasible scheduled inter-city air service at the Santa Fe Airport.

6. LOS ALAMOS COUNTY

Los Alamos County has recently updated its County Plan and developed a White Rock Civic Center District Plan.⁴³ The County Plan includes a Land Use/Housing Element, Transportation Working Paper and Policies Plan. Each of these documents is supportive of the project.

The Land Use/Housing Element cites the project's benefits in providing an alternative route to and from Los Alamos, shortening the travel time to Santa Fe and Albuquerque, and providing an opportunity for the development of the San Ildefonso Pueblo property adjacent to White Rock. The document states that the Pueblo land probably would be provided public services by the county and would augment the county housing supply. Development of the Pueblo land is included within the county's first-priority development strategy; the county has indicated a willingness to assist the Pueblo in such development.

The Transportation Working Paper cites the project's benefits of increased safety, reduced travel time, and reduced travel costs. Other benefits would include land development along the route, utilization of the Santa Fe Airport, possible redevelopment of the Los Alamos Airport, and increased potential for mass transit.

Some of the policies supportive of the project suggest working closely with the Pueblo to encourage development of the San Ildefonso property north of White Rock, encouraging the development of the Los Alamos-Santa Fe highway, promoting industrial development in the region, cooperating with LANL regarding the highway project and alternate ingress/egress to Los Alamos, and encouraging recreational vehicle parking on the Pueblo property.

The White Rock Civic Center District Plan is also supportive of the project. The plan suggests that the county

should cooperate with San Ildefonso in planning the development of the Pueblo property north of White Rock to provide land uses that complement existing land uses in the White Rock Civic Center. The plan recognizes that the project provides an opportunity to attract commuters and visitors to the commercial area and, with the potential development of the Pueblo property, to improve White Rock's standing as a commercial center and office market.

7. SAN ILDEFONSO PUEBLO

The current tribal administration has indicated a desire to develop Pueblo lands in the SR 4/White Rock area. It is anticipated that this development will occur regardless of the status of this project. Overall, the project would be consistent with current tribal land use plans.

E. FARMLAND IMPACTS

In accordance with the Farmland Protection Policy Act, the impact of the proposed action on farmlands has been assessed. Through coordination with the Soil Conservation Service (SCS), it has been determined that neither prime, unique, nor statewide important soils would be impacted by any of the proposed build alternates. Coordination with the SCS, as well as a Farmland Conversion Impact Rating (Form AD-1006), are included in Appendix C, Exhibit 4.

F. SOCIAL IMPACTS

This project has been developed in accordance with the Civil Rights Act of 1964, as amended by the Civil Rights Act of 1968. Potential impacts to the social environment have been evaluated and include potential changes to community cohesion, travel patterns and accessibility, community facilities and services, traffic and public safety, and minority or ethnic groups. No individuals will be excluded from participation in, or be denied the benefits of, or be otherwise subject to discrimination under the proposed project on the grounds of race, color, religion, sex, national origin, marital status, handicap, or family composition.

1. COMMUNITY COHESION

This project would not adversely affect the existing cohesion of the surrounding communities. No existing or planned neighborhoods, towns, or communities would be divided by the proposed highway. All of the build alternates would have a positive impact on community cohesion in terms of economic development and social interaction.

Efforts to foster economic development in the region have historically been characterized more by competition than by cooperation. The advent of the Tri-Area Association for Economic Development (TRADE) in 1984 and the establishment of LANL's Community Council have marked a change in relationships among individual communities in the region, fostering inter-dependencies and cooperation for regional economic development.

This project would reinforce this trend toward regional cooperation. In the short-term, it already has necessitated cooperation among community officials in order to plan for its possible development. In the long-term, it would bring communities closer together by reducing the travel distance between communities, thus fostering more social interaction among community members. The No-Build Alternative would maintain the status quo in relation to community cohesion.

2. TRAVEL PATTERNS AND ACCESSIBILITY

Implementation of any of the build alternates would alter existing travel patterns and, subsequently, reduce travel times, as well as improve access between the Los Alamos and Santa Fe areas. Travel between these two areas would shift away from the heavily congested US 84/285 corridor and travel distances would be shortened as indicated in Table IV-1. Because the travel distance would be shorter and the congestion less, the travel time between these areas would also be reduced.

Any of the build alternates would equally improve access to many jobs, goods, services, and recreational, cultural, and educational opportunities in the study area. For the No-Build Alternative, these impacts would be negative. This Alternative would result in increased congestion on the existing route between Santa Fe and Los Alamos.

3. COMMUNITY FACILITIES AND SERVICES

No community facilities or services are located within the corridors of the four build alternates. Therefore, no community facilities or services would be directly affected by the No-Build or the Build Alternative. Any of the build alternates would have a positive effect on community facilities and services by providing greater access to such facilities as churches, cemeteries, schools, recreation areas, social service programs, airports, and other public and semi-public facilities.

The project would increase the accessibility of Los Alamos residents to St. Vincent Hospital and other Santa Fe medical facilities. The distance from Los Alamos to the hospital would be reduced by one to five miles, depending upon the alternate; the distance from White Rock would be reduced by four to eight miles.

The project would also increase the accessibility of Los Alamos residents to retail stores in Santa Fe and Albuquerque. Improved access to retail goods would benefit Los Alamos residents, who would likely experience a greater variety of goods within a shorter shopping radius.

Under any of the build alternates, the project would not increase demand for housing in southwest Santa Fe nor the corresponding need for public facilities and services. The 1988 Extraterritorial Plan indicates that, due to the limited water supplies and limitations on the existing capacity of the sewer plant in other parts of the urban area, future land development may occur primarily in south Santa Fe. Because south Santa Fe is

the city's priority growth area, and approximately 7,000 residential units have been approved and not yet built, the proposed facility is not expected to generate extensive new growth over and above what has already been approved.

4. TRAFFIC AND PUBLIC SAFETY

Implementation of any of the build alternates would divert a portion of the traffic now using the existing route to the new route. Therefore, because the number of traffic accidents on a facility is a function of the roadway's volume and design features, it is likely that the number of accidents would be reduced along the existing route.

In addition to the safety benefits resulting from reduced traffic accidents, implementation of any of the build alternates would also provide an additional emergency escape route from Los Alamos. At the present time, the only improved roads providing egress from Los Alamos are SR 502 to the east and SR 4 to the west. If there were an emergency, it would be extremely difficult to quickly and efficiently evacuate the Los Alamos area. If the project were built, emergency egress from Los Alamos would be improved and access would be less likely to be cut off when an accident occurs.

In part, the purpose of the proposed project is to provide for the safer transport of hazardous materials from Los Alamos. These materials currently travel to and through metropolitan Santa Fe and would continue to do so under the No-Build Alternative. Any of the build alternates would redirect the shipment of these materials away from the more heavily populated areas along the current route. (See Section IV-U for additional discussion of the transportation of hazardous materials.)

5. MINORITY OR ETHNIC GROUP IMPACTS

Neither the No-Build Alternative nor the Montoso Peak or Chino Mesa Alternates would impact any minority or ethnic groups. Because either the Mortandad or Sandia Canyon Alternate would cross San Ildefonso Pueblo lands, both adverse and/or beneficial impacts could potentially result.

Traditional hunting grounds of the San Ildefonso people could be disturbed by the conversion of Indian lands to highway right of way. With the withdrawal of this land from hunting usage, pressure may increase in other areas of the reservation.

There is also the potential for increased incidences of trespassing on San Ildefonso Pueblo lands in areas made more accessible by the Mortandad or Sandia Canyon Alternate. In the recent past, Pueblo lands north of White Rock have been ransacked by pot hunters and disturbed by those persons seeking recreational activities in the area. These areas are not currently patrolled to prevent vandalism. With the Pueblo providing better security in these areas and the access control features of the proposed facility, any of the existing trespassing and vandalism problems could be alleviated.

The San Ildefonso Indians could also benefit from either the Mortandad or Sandia Canyon Alternates. Implementation of either of these alternates would provide an interchange at SR 4 and thus improve accessibility to the Pueblo's undeveloped lands in that area. The Pueblo has indicated an interest in developing the areas in the vicinity of SR 4 and White Rock, near the Sandia Canyon and Mortandad Alternates.

G. ECONOMIC IMPACTS

An economic evaluation examined the potential economic impacts of the project on property values and housing, the transfer of technology from Los Alamos National Laboratory to private

enterprises, tourism, and grazing lands. Overall, the local and regional economic impacts of the project would be beneficial. These benefits would stem from the associated reduction in travel time and travel costs. There may be minor localized adverse impacts resulting from changes in the markets for housing and retail goods. However, in comparison with the overall growth in economy that would be expected to occur with or without the project, these adverse impacts would be negligible. The following briefly summarizes the findings of the economic evaluation.

The limited supply of land in Los Alamos has led to high property values, housing prices, and rents. Under any of the build alternates, increasing the accessibility of housing in Santa Fe County would increase the potential supply of housing for persons working in Los Alamos.

Construction of any of the build alternates would help facilitate the transfer of technology, or "technology transfer", in which federally funded research and advanced technologies developed within LANL are transferred to the nation's industrial base. LANL currently has an active program to transfer its technology to private companies. Under any build alternate, improved access would further facilitate the use of the Los Alamos National Laboratory and its personnel as resources by the private sector.

Tourism is the backbone of the region's private sector, with Santa Fe a major year-round tourist destination. In 1987, total travel-related expenditures in Santa Fe were approximately \$273 million; 14 percent of the total state travel expenditures. Many of Santa Fe's tourists visit nearby attractions, including Bandelier National Monument; the Jemez and Sangre de Cristo Mountains; the Santa Fe National Forest-Caja del Rio; the San Ildefonso, Tesuque, Pojoaque, and Nambe Pueblos; and Los Alamos National Laboratory. With improved access to these areas would likely come increased tourist visitation. Increased

tourist visitation could likely result in the expenditure of more tourist dollars in the local economy.

Revenues generated by grazing permits and activities would be reduced under any of the build alternates due to the project's need for BLM, Forest Service, State Land Office, and San Ildefonso lands. In addition to acreage necessary for right of way acquisition, approximately 360 acres of BLM land and 642 acres of Forest Service land would be isolated and therefore unavoidably cut from grazing use by implementation of the Mortandad Alternate. The Sandia Canyon Alternate would isolate approximately 248 acres of BLM lands and 482 acres of National Forest lands. Neither the Montoso nor Chino Mesa Alternates, or the No-Build Alternative would be expected to isolate grazing lands, rendering them unusable. As Table IV-6 indicates, the potential annual economic loss would be the greatest under the Mortandad Alternate and the least under the Chino Mesa Alternate.

H. AIR QUALITY IMPACTS

The study area is located within Air Quality Control Region 3, as designated by the New Mexico Environmental Improvement Division. It includes the Counties of Los Alamos, Santa Fe, Rio Arriba, and Taos. Under the State Implementation Plan, Region 3 is classified as attainment for all criteria pollutants, including ozone, hydrocarbons, and nitrous oxides. This is confirmed by the Environmental Protection Agency, as well as by the New Mexico Environmental Improvement Division-Air Quality Bureau (See Appendix C). Because the region is in attainment, there are no Transportation Control Measures or Inspection or Maintenance Programs in effect.

An air quality analysis was performed in compliance with the requirements in FHPM 7-7-9. A microscale air quality analysis was performed using the EPA approved MOBILE3 emissions model and the CALINE3 carbon monoxide (CO) dispersion model. MOBILE 3, which reflects expected changes resulting from the 1977 Clean Air Act

Amendments, was used to determine CO emission factors which, in turn, were used in the CALINE3 model to generate CO concentrations at 13 "worst case" analysis sites, as shown in Exhibit IV-6. Carbon monoxide is used as an indicator of the air pollutants produced by traffic activities along the proposed roadways. Details of the modeling may be found in the Air Quality Study prepared for this project, available from the New Mexico State Highway and Transportation Department. Table IV-7 summarizes the results of the air quality modelling. With a highest one-hour CO concentration of 2.0 ppm (compared to the National Ambient Air Quality Standard of 35 ppm), none of the build alternates will substantially impact air quality in the project area.

The project is in an area where the State Implementation Plan does not contain any transportation control measures. Therefore, the conformity procedures of 23 CFR 770 would not apply to this project.

I, NOISE IMPACTS

For the purpose of analyzing noise impacts resulting from implementation of any of the build alternates, existing and projected traffic generated noise was determined for the proposed project. This was done in accordance with the procedures set forth in Volume 7, Chapter 7, Section 3 of the Federal-Aid Highway Program Manual (FHPM 7-7-3). A Noise Study Report has been prepared for this project and is available through the New Mexico State Highway and Transportation Department. The results of this study are summarized below.

In compliance with FHPM 7-7-3, noise levels for this analysis are reported in decibels (dBA) on the A scale. This scale most closely approximates the response characteristics of the ear for low level sound. Noise levels are reported as Leq (h) values, which contain the same amount of acoustic energy as the actual time-varying, A-weighted sound level over a one-hour period.

TABLE IV-6

IMPACT ON GRAZING LANDS

| GRAZING IMPACTS | BUILD ALTERNATES | | | |
|---------------------------------------|------------------|---------------|------------|------------------|
| | Montoso Peak | Chino Mesa | Mortandad | Sandia Canyon |
| Acres Displaced* | | | | |
| State Land Office | 83 | 83 | 98 | 98 |
| BLM | 240 | 240 | 1,636 | 1,525 |
| U.S. Forest Service | 837 | 700 | 731 | 482 |
| San Ildefonso Pueblo | <u>0</u> | <u>0</u> | <u>103</u> | <u>210</u> |
| Total | 1,160 | 1,023 | 2,558 | 2,315 |
| Animal Unit Months Lost** | | | | |
| State Land Office | 8 | 8 | 10 | 10 |
| BLM | 24 | 24 | 163 | 153 |
| U.S. Forest Service | 84 | 70 | 73 | 48 |
| San Ildefonso Pueblo | <u>0</u> | <u>0</u> | <u>10</u> | <u>21</u> |
| Total | 116 | 102 | 256 | 232 |
| Potential Annual Economic Loss*** | \$1,392 | \$1,224 | \$3,072 | \$2,784 |
| Potential Loss in Permit Value**** | \$9,280 | \$8,160 | \$19,680 | \$16,880 |

* Excludes Department of Energy land. Includes acreage not acquired as right of way but isolated, therefore not usable.

** At ten acres per AUM

*** At \$12/AUM/year

**** At \$80/AUM, excluding San Ildefonso land (one-time loss)

The following list provides noise levels for some common noise generators: 15 dBA - recording studio; 25 dBA - bedroom at night; 35 dBA - library; 40 dBA - living room; 50 dBA - dishwasher in the next room; 60 dBA conversational speech; 65 dBA - business office; 70 dBA - lawn mower 100 feet away; 85 dBA - average street traffic; 90 dBA - heavy truck; 100 dBA - jackhammer; 110 dBA rock band; 125 dBA jet airplane at take off; and 140 dBA threshold of pain.

Potential noise sensitive areas which may be affected by noise from any of the build alternates were selected for acoustical analysis. These noise analysis locations are described in Table IV-8 and are depicted in Exhibit IV-7. Ten noise analysis locations representing the worst noise conditions along each of the proposed alternates were selected for this study. Because of the potential for secondary impacts, an additional six locations beyond the project limits were included in the analysis. Of the six locations, four are located in Las Tierras communities along Buckman Road, one is located in Pinon Hills, and the remaining site is situated along East Jemez Road in a mobile home park near Los Alamos.

The analysis locations for the Montoso Peak and Chino Mesa Alternates are all located along those portions of each alternate that are common to both alternates, hence, the two alternates were evaluated as one. Noise levels in the project area were determined for the existing conditions, the design year (2015) no-build conditions and the design year (2015) build conditions.

1. EXISTING CONDITIONS

The two most commonly used methods of obtaining noise levels for existing conditions are either by computer modeling or field measurements. Computer modeling is possible only when the predominant noise source is vehicular traffic. At noise analysis locations where traffic is not the primary noise source, field measurements were used for determining the existing ambient noise

TABLE IV-7

SUMMARY OF AIR QUALITY ANALYSIS

| SITE | DESCRIPTION | WORST CASE 1-HOUR CO CONCENTRATION (ppm) |
|------|-----------------------------|---|
| A1 | Residence N. of Buckman Rd. | 1.0 |
| A2 | Residence N. of Buckman Rd. | 1.0 |
| A3 | Residence N. of Buckman Rd. | 1.1 |
| A4 | Residence N. of Buckman Rd. | 1.2 |
| A5 | Residence N. of Buckman Rd. | 1.2 |
| A6 | Residence N. of Buckman Rd. | 1.3 |
| A7 | Residence N. of Buckman Rd. | 1.6 |
| A8 | Pinon Hills | 1.1 |
| A9 | Pinon Hills | 1.1 |
| A10 | Residence S. of SR 4 | 1.9 |
| A11 | Business in White Rock | 2.0 |
| A12 | Residence in White Rock | 1.5 |
| A13 | Residence in White Rock | 1.5 |

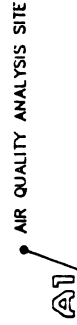
- Notes:
1. The National Ambient Air Quality Standard for the one-hour CO concentration is 35 ppm and for the eight-hour CO concentration is 9 ppm.
 2. Analysis sites A1 - A7 are located along Buckman Road. Sites A8 - A13 are located along the alternates and apply to all build alternates.
 3. Existing ambient CO level assumed at 1 ppm for a background level.
 4. Analysis year is the design year 2015.

Source: New Mexico State Highway and Transportation Department, "Air Quality Analysis: Santa Fe - Los Alamos Corridor Study, May 1990.

SANTA FE- LOS ALAMOS CORRIDOR STUDY

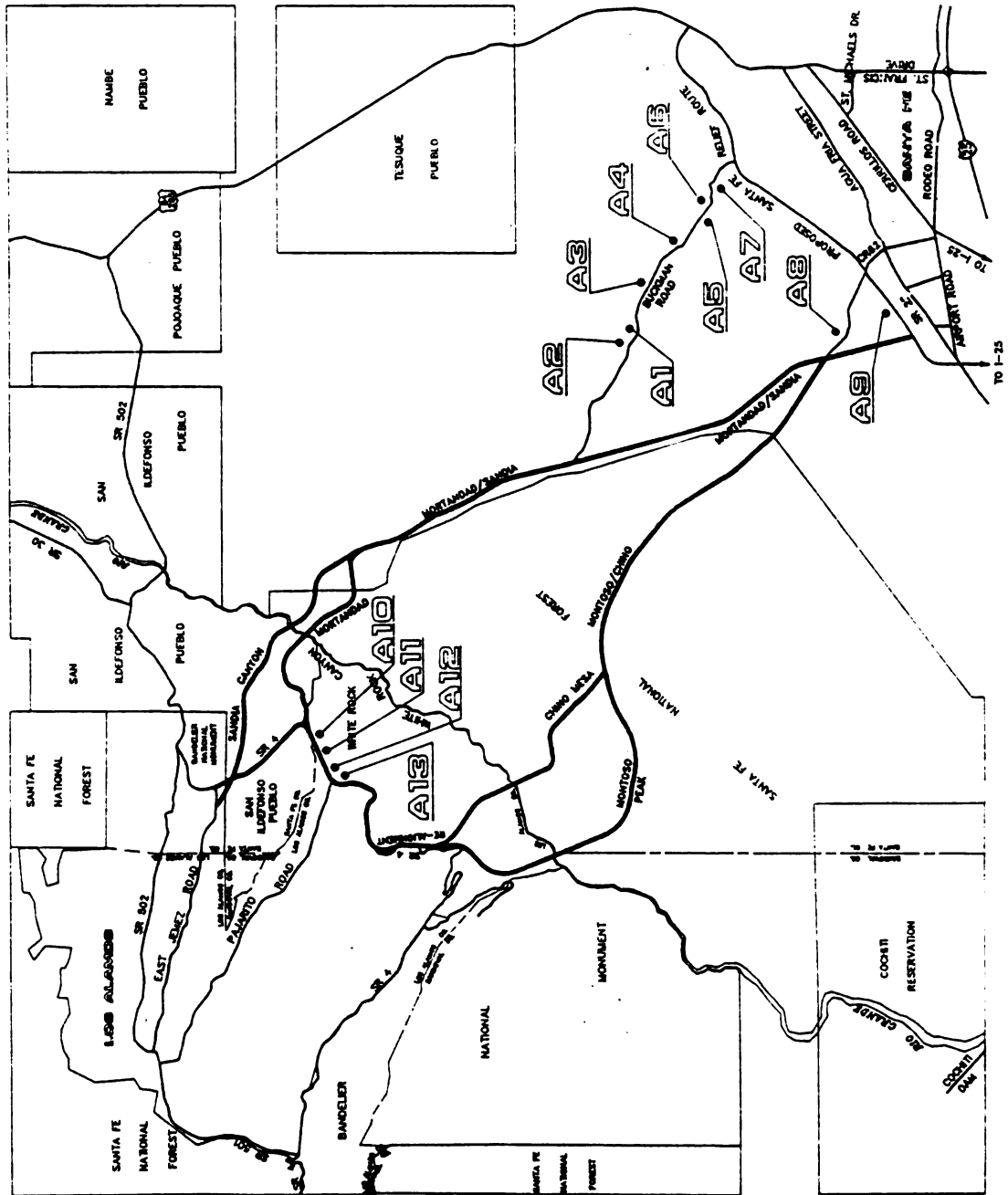


LEGEND



AIR QUALITY ANALYSIS LOCATIONS

EXHIBIT IV-6



SANTA FE- LOS ALAMOS CORRIDOR STUDY

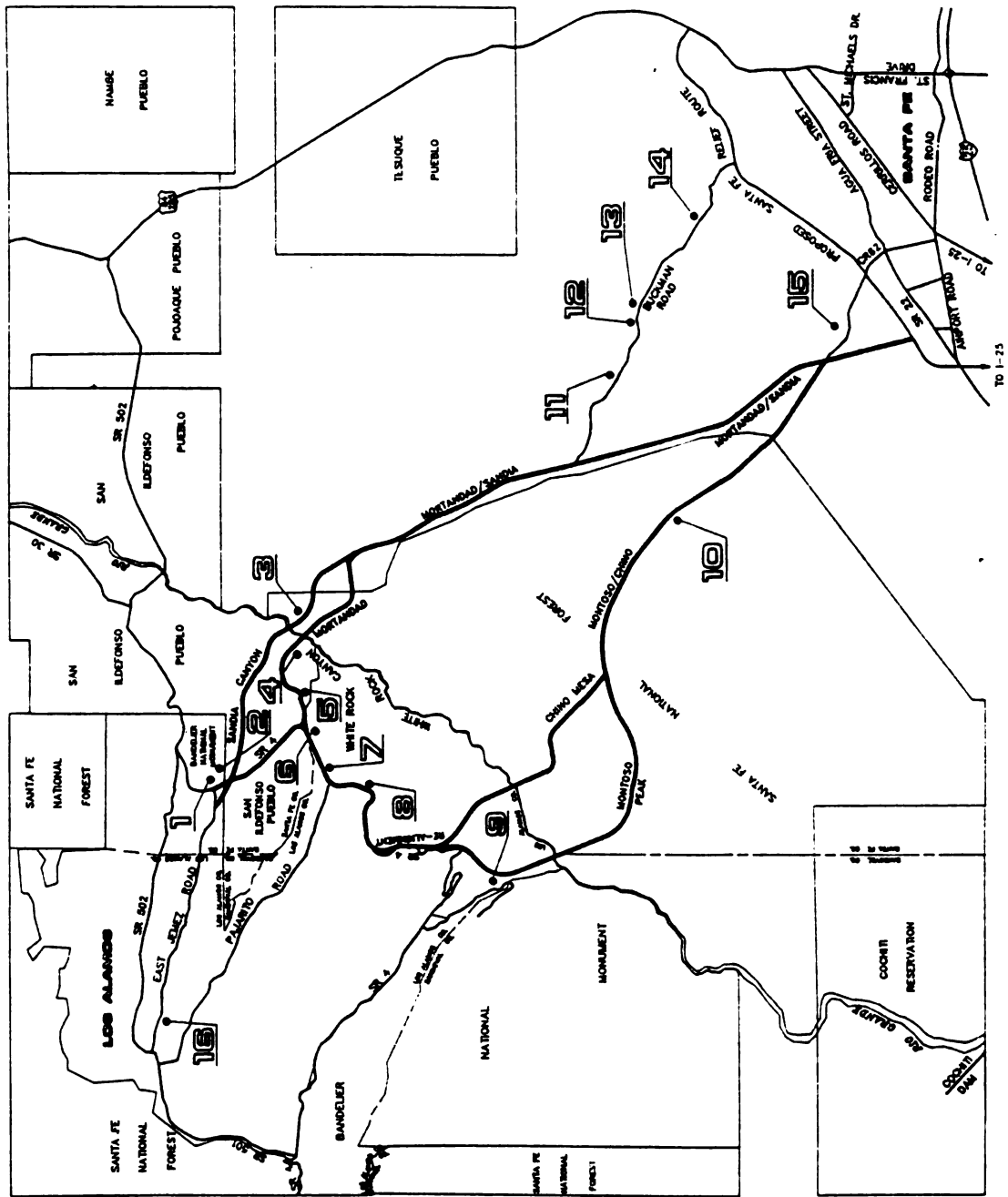


LEGEND



NOISE ANALYSIS LOCATIONS

EXHIBIT 10-2



level.

Noise monitoring was performed at all 16 sites along the alternate corridors, including the five locations (Sites 1, 6, 7, 8, and 16), where the predominant noise source is traffic related. At the remaining 11 sites, the primary noise source is from non-vehicular sources. The purpose of monitoring those sites where traffic is the predominant noise source was to verify the accuracy of the noise prediction computer model for use in this study. At sites where the existing noise source is non-vehicular, the noise measurements provide existing background noise levels for a comparative noise impact evaluation. Details of the noise monitoring procedures are contained in the "Noise Study Report".³⁰

2. DESIGN YEAR NOISE LEVELS

Using the STAMINA 2.0 model, noise levels for the build alternates were predicted for the 16 potentially noise sensitive sites identified on Exhibit IV-7. The computer model was also used for the No-Build Alternative at locations where the predominant noise is anticipated to be from traffic. Worst case noise conditions were modeled for the design year 2015 projected traffic volumes, anticipated vehicle operating conditions, and assumed traffic composition.

At those locations, under the No-Build Alternative, where the primary noise source in the year 2015 is not expected to be from traffic, the projected noise levels were assumed to be the same as today; therefore, the existing monitored values were used for those situations. Table IV-9 lists the worst case noise levels at each of the investigated sites for the existing and design year Build and No-Build conditions.

3. EVALUATION OF NOISE IMPACTS

FHPM 7-7-3 specifies two criteria with which to determine noise impacts from a proposed highway project. For the purpose of this study, impacts occur if predicted noise levels

TABLE IV-8

NOISE ANALYSIS SITES AND AREAS THEY REPRESENT

| SITE | LOCATION | AREA REPRESENTED |
|------|---|---|
| 1 | Picnic area in Bandelier National Monument, east side of SR-4 | 1-Picnic area |
| 2 | Hiking trail to Tsankawi ruins inside Bandelier National Monument, east of SR-4 | 1-Park area |
| 3 | Possible future picnic area adjacent to the Rio Grande, within Santa Fe National Forest | 1-Picnic area |
| 4 | Lookout in Los Alamos County Park, White Rock | 1-Park area |
| 5 | Residence on Joya Loop, White Rock | 17-Residential properties which would back onto the Mortandad Alignment |
| 6 | Residence on Bandolina Drive, White Rock | 6-Residential properties which back onto SR-4 |
| 7 | Residence on La Paloma Drive, White Rock | 18-Residential properties which back onto SR-4 |
| 8 | Residence on Piedra Loop | 7-Residential properties along SR-4, south of Pajarito Road |
| 9 | Lookout in Bandelier National Monument | 1-Park area |

TABLE IV-8 (cont'd.)

NOISE ANALYSIS SITES AND AREAS THEY REPRESENT

| SITE | LOCATION | AREA REPRESENTED |
|------|---|-----------------------------|
| 10 | Typical location in Santa Fe National Forest | 1-Passive recreational area |
| 11 | Residence near Buckman Road, La Tierra Nueva | 4-Residential properties |
| 12 | Tennis court near Buckman Road, La Tierra Nueva | 1-Recreational area |
| 13 | Residence near Buckman Road, La Tierra Nueva | 2-Residential properties |
| 14 | Residence near Buckman Road, Salva Tierra | 15-Residential properties |
| 15 | Residence on Caria Road in Pinon Hills | 8-Residential properties |
| 16 | Mobile home in Royal Crest Trailer Court | 18-Mobile homes |

approach or exceed the Noise Abatement Criteria (NAC) or if the predicted noise levels substantially exceed the existing noise levels. The Noise Abatement Criteria levels are described in Table IV-10. In accordance with the NMSHTD noise abatement guidelines, a substantial increase in noise levels is assumed to occur if predicted noise levels exceed the existing noise levels by 10 dBA or more and exceed 57 dBA. All sites in this study fall under Category B of the Noise Abatement Criteria (67 dBA).

The National Park Service requested that Category A of the NAC be utilized for Site 2. However, the trail and ruins at Tsankawi are not utilized by the public in a manner requiring extraordinary serenity and quiet. Furthermore, preservation of extraordinary serenity and quiet is not essential for Tsankawi to continue to serve its intended purpose, which is the protection of an archeological site. The projected noise level for the closest build alternate at Site 2 is below the NAC for Category A.

Utilizing the results from the analysis, as shown in Table IV-12, a noise impact assessment of the proposed project was made based on the comparisons outlined above. For simplicity, the anticipated impacts upon the receptors are discussed and compared by alternate.

The results of the analysis of the eight receptors (Sites 1, 6, 7, 8, 9, 10, 15, and 16) investigated along the Montoso Peak and Chino Mesa Alternates indicated that the existing noise levels vary from 48 to 64 dBA and that noise levels associated with these build alternates would range from 53 to 64 dBA. The average increase for the Montoso Peak and Chino Mesa Alternates would be 2 dBA with the largest variation being 5 dBA. It is apparent from the data in Table IV-9 that the noise levels are not expected to rise very much by the design year, if either the Montoso Peak or Chino Mesa Alternate is built. The maximum increase for the No-Build Alternative is projected to be

TABLE IV-9

EXISTING AND DESIGN YEAR NOISE LEVELS

| SITE NO. | EXISTING CONDITION | 2015 NO BUILD | BUILD ALTERNATES (2015) | | |
|----------|--------------------|---------------|-------------------------|---------------|-------------------------|
| | | | Mortandad | Sandia Canyon | Montoso Peak Chino Mesa |
| 1 | 59 | 59 | 59 | 57 | 59 |
| 2 | 43* | 43* | N/A | 55 | N/A |
| 3 | 55* | 55* | 61** | 62** | N/A |
| 4 | 60* | 60* | 61** | N/A | N/A |
| 5 | 54* | 54* | 60** | N/A | N/A |
| 6 | 60 | 63 | 62 | 61 | 61 |
| 7 | 59 | 62 | 62 | 61 | 61 |
| 8 | 58 | 61 | 58 | 58 | 58 |
| 9 | 48* | 48* | N/A | N/A | 53** |
| 10 | 51* | 51* | N/A | N/A | 60** |
| 11 | 55* | 55* | 55* | 55* | N/A |
| 12 | 54* | 61** | 61** | 61** | N/A |
| 13 | 59* | 59** | 59** | 59** | N/A |
| 14 | 60* | 62** | 62** | 62** | N/A |
| 15 | 55* | 55 | 55** | 55** | 55** |
| 16 | 64 | 64 | 64 | 64 | 64 |

* Measured Level

** Ambient contributed to composite noise level

N/A Analysis site does not apply to the particular build alternate due to location and distance removed.

- Notes:
1. FHWA Noise Abatement Criteria for Activity Category B is 67 dBA and applies to all sites.
 2. For the No-Build Alternative, only those sites where traffic generated noise is the predominant noise source were modeled.

Source: New Mexico State Highway and Transportation Department, "Noise Study Report: Santa Fe - Los Alamos Corridor Study", June 1990.

only 3 dBA for the design year. Comparing the Build to the No-Build Alternative in Table IV-9 indicates that these build alternates average only 1 dBA higher than the No-Build Alternative. These build alternates would not be anticipated to equal or exceed the NAC nor produce a substantial increase in the noise level at any of the receptors for the design year.

Assessment of the Mortandad Alternate considered the anticipated noise impacts upon thirteen (13) sensitive receptors (1, 3, 4, 5, 6, 7, 8, 11, 12, 13, 14, 15 and 16). Table IV-9 shows that existing noise levels at the receptors investigated under this alternate range from 54 to 64 dBA and that they vary from 55 to 64 dBA with the construction of the Mortandad Alternate. The average increase over existing conditions for the Mortandad Alternate equals 2 dBA with the highest variance being 7 dBA. Generally, noise levels would rise very little by the design year if the No-Build Alternative were selected in comparison to the Mortandad Alternate. An exception to this would be along Buckman Road (sites 11, 12 and 13) where, because of projected developments, the noise levels are anticipated to increase by as much as 7 dBA (similar to the Mortandad Alternate, assuming no connection to the Mortandad Alternate). The average increase in the design year Build levels versus the No-Build levels would be less than 1 dBA. At one location, Site 8, the noise levels are predicted to be lower under the build alternate due to a redistribution of traffic volumes. Under the Design Year Build condition, the NAC would not be equalled or exceeded, nor would there be a substantial increase in noise levels.

For the Sandia Canyon Alternate, Table IV-9 indicates that the range of the existing noise levels at the twelve (12) receptors (1, 2, 3, 6, 7, 8, 11, 12, 13, 14, 15, and 16) analyzed varies from 43 to 64 dBA. The Sandia Canyon Alternate's noise levels would vary from 55 to 64 dBA, with an average increase of 2+ dBA and a maximum increase of 12 dBA. The 12 dBA increase at

TABLE IV-10

NOISE ABATEMENT CRITERIA (NAC)
Hourly A-Weighted Sound Level - Decibels dBA (A)

| ACTIVITY CATEGORY | Leq(h) | DESCRIPTION OF ACTIVITY CATEGORY |
|-------------------|------------------|---|
| A | 57 (Exterior) | Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose. |
| B | 67 (Exterior) | Picnic areas, recreation areas, playgrounds, active sports areas, parks, residences, motels, hotels, schools, churches, libraries, and hospitals. |
| C | 72 (Exterior) | Developed lands, properties, or activities not included in Categories A or B above. |
| D | -- | Undeveloped lands. |
| E | 52 (Interior) | Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, and auditoriums. |

Site 2 is not considered substantial under NMSHTD guidelines, which also require that 57 dBA be exceeded before a substantial increase in noise levels is recognized. It should be noted that when model results, instead of measured values, for the existing and no-build conditions are compared with the Sandia Canyon Alternate at Site 2, there is a 6 dBA increase. The difference in estimated noise increase is attributable to the conservative approach taken in the noise modelling, which did not utilize intervening natural barriers which account for the lower ambient reading at Site 2 as reported in Table IV-9. In other words, the 12 dBA increase is derived from a comparison of the 2015 modelled noise level (55 dBA) with the ambient reading (43 dBA). But when modelled results for the existing condition and no-build conditions (49 dBA) are used as the basis of comparison, the projected increase is 6 dBA. With the exception of one site along Buckman Road, noise levels are not expected to increase very much between the present and the year 2015, if this alternate is not implemented. A maximum increase of 7 dBA would be expected for that period at one site along Buckman Road. The average increase in design year Build levels versus the No-Build levels are projected to be less than 1 dBA. At site 1 the predicted noise levels under the build alternate are shown lower than the No-Build Alternative due to a reduction in traffic volumes along SR 4. Results indicate that the NAC would not be equalled or exceeded nor would there be a substantial increase in noise levels at any of the sensitive sites analyzed under the Sandia Canyon Alternate.

Existing residential areas considered in the noise analysis included Los Alamos (Site 16), White Rock (Sites 5, 6, 7, and 8), Buckman Road area, including Las Tierra (Sites 11, 12, 13 and 14), and Pinon Hills (Site 15). Design year levels represent no increases over existing levels in Los Alamos and Pinon Hills, 1 to 6 dBAs in White Rock, and 0 to 7 dBAs along Buckman Road, depending upon the alternative and location considered. With the currently planned access control features of the proposed facility, no noise impacts (as defined in the first paragraph of Section IV-

I.3) are expected to occur in any of these residential areas with any of the Build Alternatives.

In summary, the predicted noise levels for each Build Alternate indicate, based on federal and state noise abatement criteria, that noise abatement measures would not be required for any of the Build Alternates.

4. SUPPLEMENTAL ANALYSIS

Current plans do not include an intersection or interchange along the proposed highway at CR 62 or at Buckman Road. However, because of the locations of these two roads, their access to Santa Fe, and as a result of substantial public interest, a supplemental noise analysis was completed for various design variants along these roadways. The design variants investigated were as follows:

For Mortandad or Sandia Canyon Alternates:

1. Buckman Road and CR 62 connected to the proposed Santa Fe - Los Alamos highway, with neither road improved;
2. Buckman Road and CR 62 connected to the proposed highway, with both roadways improved;
3. Buckman Road not connected to the proposed facility, and CR 62 connected and improved.
4. Buckman Road not connected to the proposed facility, and CR 62 connected and unimproved.

For Montoso Peak or Chino Mesa Alternate:

Only design variants 3 and 4 were investigated. The others are not applicable.

The sites that were investigated were the same as those that were analyzed in the initial study along Buckman Road (sites 11, 12, 13 and 14) and along CR 62 (site 15).

Table IV-11 presents the worst case noise levels at each site for the four Mortandad/Sandia Canyon Alternate design

variants and for the two Montoso Peak/Chino Mesa Alternates design variant.

Comparing the predicted noise levels for the four design variants with those at the same locations under the initial study the following conclusions were made:

For Design Variant 1 - connecting Buckman Road and CR 62 (unimproved) to any of the proposed alternates would not change the noise levels substantially.

For Design Variant 2 - connecting and improving both Buckman Road and CR 62 would increase the noise levels on these two roads between 1 and 6 dBA. At one location (Site 12) on Buckman Road, the design year noise level is predicted to equal the NAC for Land Use Category B.

For Design Variant 3 - connecting and improving CR 62 without connecting Buckman Road would have little effect on the receptors in the vicinity of CR 62. One of the reasons being that the receptors in the vicinity of CR 62 are approximately 500 feet away from CR 62.

For Design Variant 4 - connecting CR 62 without connecting Buckman Road and without improving CR 62 would have little or no effect on the receptors in the vicinity of CR 62 due to the low volume of estimated traffic and the location of the receptors off the road.

The one location where the noise level would be anticipated to equal the NAC (Site 12 under Design Variant 2) was investigated for possible noise abatement measures. A noise barrier was considered, but found to be unacceptable because it would restrict the sight distance at an adjacent intersection. Since the impacted site is a recreational facility (tennis court), the noise from the nearby roadway may not be objectionable to the users.

TABLE IV-11

NOISE LEVELS ALONG BUCKMAN ROAD AND CR-62 FOR DESIGN VARIANTS^a

| Site No. | Existing Conditions 1987 | DESIGN VARIANT | | | |
|---|--------------------------|---|--|--|--|
| | | (1) | (2) | (3) | (4) |
| | | Buckman Rd/CR 62 Not Connected to Proposed Highway 2015 | Buckman Rd/CR 62 Connected to Proposed Hwy and Improved 2015 | Buckman Road not Connected to Proposed Highway CR 62 Connected and Improved 2015 | Buckman Road not Connected to Proposed Highway CR 62 Connected and Unimproved 2015 |
| | | No Build 2015 | Buckman Rd/CR-62 Connected to Proposed Hwy and Unimproved 2015 | Buckman Rd/CR 62 Connected to Proposed Hwy and Improved 2015 | Buckman Road not Connected to Proposed Highway CR 62 Connected and Unimproved 2015 |
| | | | | | |
| MORTANDAD/SANDIA CANYON ALTERNATES | | | | | |
| 11 | 55* | 55* | 55* | 55* | 55* |
| 12 | 54* | 61** | 62* | [67] | 61** |
| 13 | 59* | 59** | 59** | 60** | 59** |
| 14 | 60* | 62** | 63** | 65** | 62** |
| 15 | 55* | 55** | 55** | 57** | 55** |
| MONTOSO PEAK/CHINO MESA ALTERNATES | | | | | |
| 15 | 55* | 55* | NA | NA | 55** |

a LEQs in dBAs
 * Measured Levels
 ** Ambient Contributed to Composite Noise Level
 [67] Value Equals NAC for Land Use Category B

Source: New Mexico State Highway and Transportation Department, "Noise Study Report: Santa Fe - Los Alamos Corridor Study, June 1990.

In summary, the noise investigation performed in this study indicated that there would be no violations of either the federal or state noise criteria for the given study parameters. However, under one of the design variants considered, it was determined that there would appear to be one location where the noise level would equal the NAC for Category B Land Use. That site was identified as a tennis court adjacent to Buckman Road in La Tierra. The design variant condition assumed that Buckman Road would be connected to either the Mortandad or Sandia Canyon Alternates and that Buckman Road would be improved. Abatement measures do not appear to be feasible at this location.

J. WATER QUALITY IMPACTS

1. GROUNDWATER

As noted by the New Mexico Interstate Stream Commission, there are no designated groundwater recharge or sole source aquifers in the study area (See Appendix C, Exhibit 5). Therefore, potential short and long term impacts to groundwater supplies are not anticipated as a result of project implementation. Both the Mortandad and Sandia Canyon Alternates are located in the vicinity of the Buckman well fields near the Rio Grande. However, due to the depth of these wells (over 700 feet) no impacts from the proposed highway would be anticipated.

2. SURFACE WATER

Located within the Rio Grande Basin, the Rio Grande is the primary surface water resource potentially impacted by any of the build alternates. The Rio Grande is the only permanent surface water body crossed by the proposed facility. The portion of the Rio Grande within the study area is designated in Part 2, paragraph 2-110, of the State of New Mexico Water Quality Control Commissioners "Water Quality Standards for Interstate and Intrastate Streams in New Mexico", as amended through March 8, 1988. Designated uses for this portion of the Rio Grande include irrigation, livestock and wildlife watering, marginal coldwater fishery, secondary contact recreation, and warmwater fishery.

Results from stormwater research by the Federal Highway Administration indicate stormwater runoff from low to medium traffic volumes (under 30,000 vehicles per day) on rural highways exerts minimal to no impact on the aquatic components of most receiving waters.³ As previously noted, year 2015 average daily traffic (ADT) projections for the alternatives at the point where the Rio Grande would be crossed is as follows:⁴

- 13,700 ADT under Montoso Peak Alternate
- 13,700 ADT under Chino Mesa Alternate
- 14,300 ADT under Mortandad Alternate
- 14,300 ADT under Sandia Canyon Alternate
- 31,300 ADT under No-Build Alternative (SR 502)

Given the low traffic projections for the design year 2015, stormwater runoff from any of the build alternates would have a minimal impact on the long-term water quality of the Rio Grande.

Erosion and sedimentation impacts are not expected to be substantial. Potential erosion and sedimentation impacts will be controlled during construction by strict adherence to the NMSHTD's Standard Specification for Road and Bridge Construction and other Best Management practices as outlined in Section IV-W. The stormwater management system for the facility will be designed to minimize erosion and sedimentation impacts to water quality after the facility is in place. This stormwater management system would contain features to provide for the attenuation and treatment of runoff, including detention areas, spreaders, and vegetated swales.

K. PERMITS

Construction of either the Mortandad or the Sandia Canyon Alternate would necessitate the construction of a temporary bridge over the Rio Grande. Construction of the temporary work bridge would likely not involve the discharge of more than 200 cubic yards of temporary or permanent fill material below the plane of ordinary

high water. The project would satisfy the conditions for a nationwide permit for minor road crossings. If, during final design, it is determined that the temporary bridge would require an individual Section 404 permit from the U.S. Army Corps of Engineers, it would be obtained by the contractor. The necessary provisions would be included in the construction contract documents.

L. WETLAND IMPACTS

In accordance with Executive Order 11990 "Protection of Wetlands" the corridors of the four build alternates have been searched for wetlands. Area Flood Hazard Boundary Maps,¹⁹ Soil Surveys for Santa Fe and Los Alamos Counties,^{20,21,22} and applicable National Wetlands Inventory Mapping²³ were studied to identify potential wetland areas within the proposed project corridors. Each of the build alternates was walked and visually inspected to verify or locate wetland areas. Wetland determinations were made using the 1989 Federal Manual for Identification and Delineation of Jurisdictional Wetlands.³³

The Rio Grande and some of its adjacent floodplain are the only areas that qualify as wetlands based on the presence of hydric soils, hydrology, and hydrophytic vegetation. According to "Classification of Wetlands and Deepwater Habitats of the United States",²⁴ these areas are classified as Riverine Unconsolidated Bottom and Palustrine;Forested. The latter area supports some Cottonwood (*Populus fremontii*) and Tamarix (*Tamarix sp.*). This type of wetland area is found along the fringe of the Rio Grande in the entire project area and for substantial lengths north and south of the project area. The size of the linear wetland is impossible to measure because of its association with the Rio Grande.

Because all of the build alternates include a bridge that would completely span the Rio Grande and its associated wetlands, there would be no impacts to these areas. However, should the

Mortandad or Sandia Canyon Alternate be chosen, a temporary construction bridge would be required. As shown on Exhibit IV-8, this temporary construction bridge would be anticipated to be placed at the previous Buckman Bridge location. The temporary construction bridge would impact approximately one-half acre of wetland area. This impact is not considered substantial because 1) it is minute compared to the total amount of this type of wetland habitat present along the waterway, and 2) it is a temporary impact. This temporary impact would not have an effect on the stability of the linear wetland system. This impact, while temporary, would be unavoidable.

Proposed mitigation for this impact would be to restore the wetland by revegetating all areas which were impacted for construction purposes. All of the Tamarix, a non-native species, would be removed from the work zone during construction and only native plant species would be used for revegetation. Therefore, the temporary construction impact would have a positive long-term impact by enhancing habitat values.

M. WATER BODY MODIFICATION

There would be no water body modification impacts under the No-Build Alternative or the Montoso Peak, Chino Mesa, or Mortandad Alternates. None of these would require impoundment, relocation, channel deepening, or filling of the natural water bodies within the corridors of these three build alternates.

Under the Sandia Canyon Alternate, a minor water body modification would be required. Along Sandia Canyon, east of SR 4, the proposed alignment would encroach on a small (1.7 acres) floodplain area. While the alignment has been designed to avoid water body modifications to the extent practicable, the floodplain through this area is unavoidable. Minor modification of the existing natural drainage channel would be required. This would involve diverting the drainage from its existing alignment and re-directing a portion of it along the construction limits, then

re-diverting it to its original drainage channel east of the immediate construction area. This intermittent natural drainage channel is not used for recreation or other purposes. No impacts to fish and wildlife resulting from the loss, degradation, or temporary modification of this area would be expected to occur.

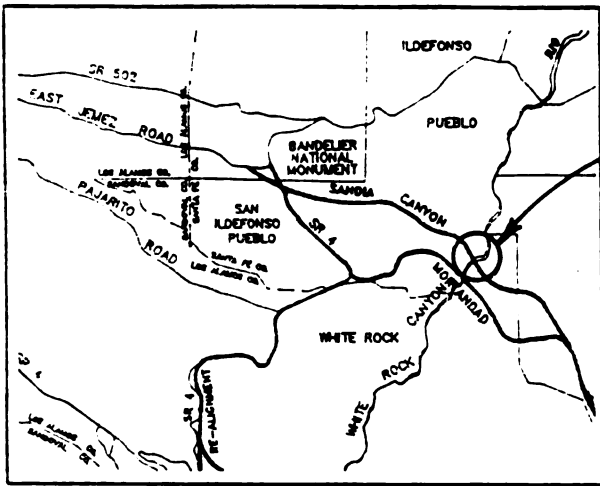
The upper limit of Cochiti Reservoir (top of flowage easement elevation at 5,465.5 feet) behind Cochiti Dam is near the Sandia Canyon and Mortandad Alternate bridge alignments being evaluated. None of the four alternate bridges under consideration, however, would have piers in the Rio Grande. As a consequence, no impoundment impacts are anticipated. A discussion of construction impacts is contained later in this Section.

N. FLOODPLAIN IMPACTS

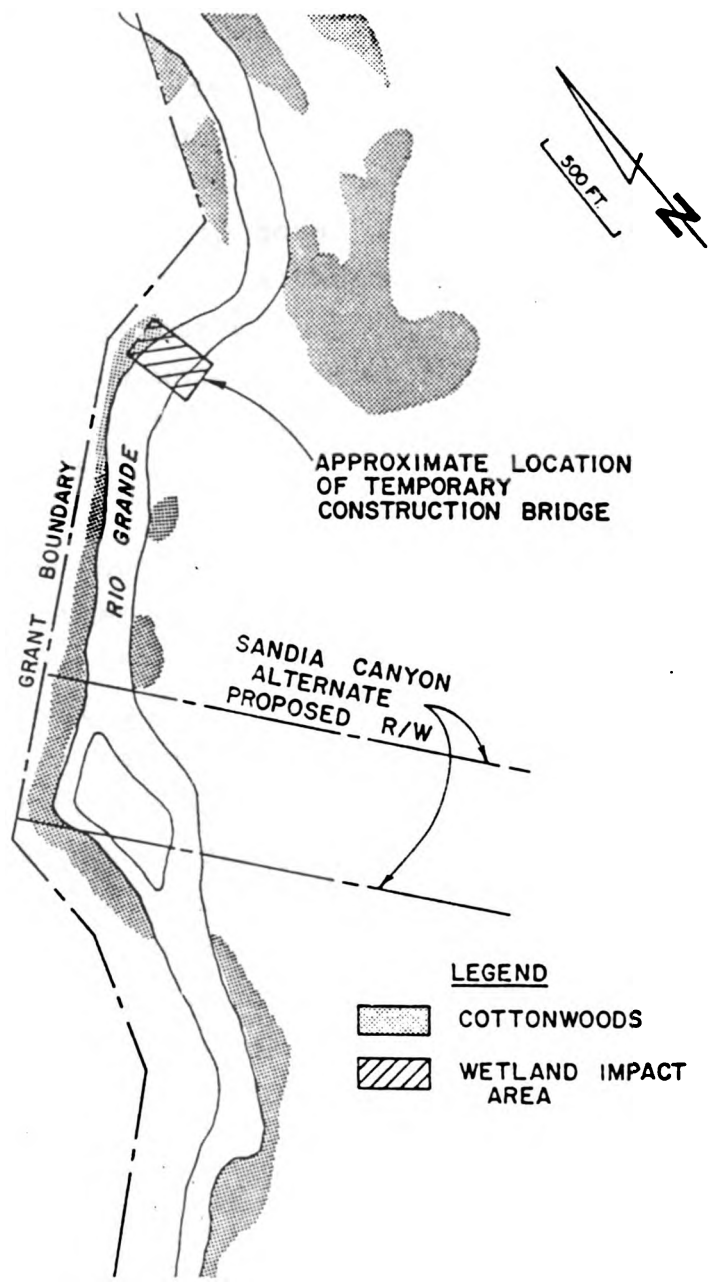
1. FLOODPLAIN ENCROACHMENTS AND RISK

In accordance with Executive Order 11988, potential impacts to floodplains have been evaluated. Base (100-year) floodplains were identified utilizing the Federal Emergency Management Agency's "Flood Insurance Rate Maps", Community Panel Numbers 350069 - 0075b/0175b/0226b and 0150b.¹⁹

Eleven base (100-year) floodplains have been identified which would potentially be impacted by the build alternates. As shown in Exhibit IV-9, the eleven potential impacts would be the result of perpendicular or near perpendicular crossings of floodplain areas. Acreages for each potential impact and proposed structure are presented in Table IV-12. These figures represent the amount of floodplain area that would exist in the proposed right-of-way. The structures proposed are based on the results of the hydraulic analysis performed for each potential crossing.²⁵ With the proposed structures there would be no increase in backwater or upstream floodrisk and no overtopping of the



LOCATION OF
WETLAND IMPACT
AREA



SANTA FE-
LOS ALAMOS
CORRIDOR
STUDY

WETLANDS

EXHIBIT
IV-8

highway facility from a one-hundred year storm event.

As shown in Table IV-12 and depicted in Exhibit IV-10, Site 1, Arroyo de los Frijoles, would be impacted by all of the build alternates. Because all of the alternates share this alignment location and the Arroyo de los Frijoles must be crossed, an impact to this floodplain is unavoidable. This is also the case for the Arroyo Calabasa, Sites 2a and 2b, with the exception that the potential impacts would be at different locations along the arroyo, depending on the build alternate.

Sites 3 through 9 would be impacted with the selection of either the Mortandad or Sandia Canyon Alternate. As depicted in Exhibit IV-10, local drainage patterns in this area flow west to the main body of the Canada Ancha which lies at the base of the Pankey Mesa. Impacts to these sites would be the result of perpendicular or near perpendicular crossings of these drainages.

A high-level bridge would be proposed for the crossing of the Rio Grande at each of the four build alternates. This bridge would completely span both the floodplain and associated wetlands of the Rio Grande without piers in the floodplain. However, to build the bridge for either the Mortandad or Sandia Canyon Alternate, a temporary bridge may be required during the construction period. The temporary bridge structure would be approximately located near the old Buckman Bridge crossing, Site 10. This encroachment would only last as long as the construction of the main bridge is underway. Impacts to the natural and beneficial values of this area would be mitigated by removing all fill required for the temporary bridge and revegetating the area.

Site 11 is a small, 1.7 acre, longitudinal encroachment of the floodplain located in Sandia Canyon, east of SR 4. The proposed alignment through Sandia Canyon has been designed to avoid the associated floodplain to the greatest degree practicable. The floodplain through this canyon, however, cannot

TABLE IV-12
100-YEAR FLOODPLAIN ENCROACHMENTS

| SITE NO. | FLOODPLAIN AREA | PROPOSED STRUCTURE | BUILD ALTERNATES | | | |
|----------|-------------------------------------|-------------------------------|------------------|------------|-----------|---------------|
| | | | Montoso | Chino Mesa | Mortandad | Sandia Canyon |
| 1 | Arroyo de los Frijoles | Double 10'x8' CBC | 2.8 | 2.8 | 2.8 | 2.8 |
| 2a | Arroyo Calabasas | Double 10'x8' CBC | 1.4 | 1.4 | | |
| 2b | Arroyo Calabasas | Double 10'x8' CBC | | | 1.4 | 1.4 |
| 3 | Canada Ancha | 10'x10' CBC | | | 0.7 | 0.7 |
| 4 | Alamo Creek | Double 10'x8' CBC | | | 2.8 | 2.8 |
| 5 | Unnamed Arroyo | 10'x8' CBC | | | 0.8 | 0.8 |
| 6 | Calabasas Arroyo | 12'x10' CBC | | | 2.8 | 2.8 |
| 7 | Unnamed Arroyo | 10'x10' CBC | | | 0.7 | 0.7 |
| 8 | Unnamed Arroyo | 84" PC | | | 0.7 | 0.7 |
| 9a | Canada Ancha | Bridge | | | | 4.8 |
| 9b | Canada Ancha | Bridge | | | 4.8 | |
| 10 | Rio Grande | Temporary Construction Bridge | | | 0.5 | 0.5 |
| 11 | Sandia Canyon | No Structure | | | | 1.7 |
| 12 | Sandia Canyon Interchange with SR 4 | 8'x8' CBC | | | | 5.5 |

a Floodplain encroachments are in acres of impact.
CBC = Concrete Box Culvert
PC = Pipe Culvert

Source: New Mexico State Highway and Transportation Department, "Location Hydraulics Study: Santa Fe - Los Alamos Corridor Study", April 1990.

SANTA FE- LOS ALAMOS CORRIDOR STUDY



LEGEND

- PEAKS
- MESAS
- RIVERS & ARROYOS
- CANYON RIMS
- FLOODPLAIN ENCROACHMENT *

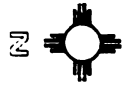
* SEE EXHIBIT IV-10 FOR MORE DETAIL.

100-YEAR FLOODPLAIN

ES&S CONSULTANTS



SANTA FE- LOS ALAMOS CORRIDOR STUDY

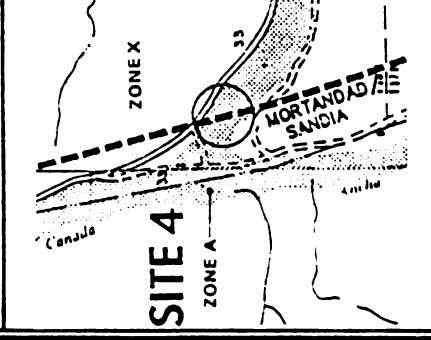
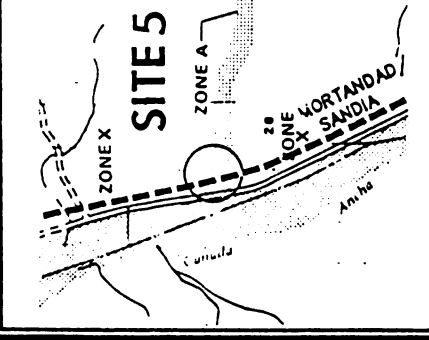
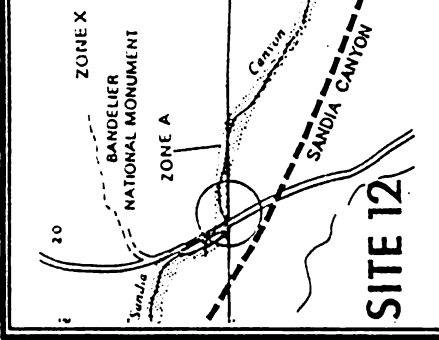
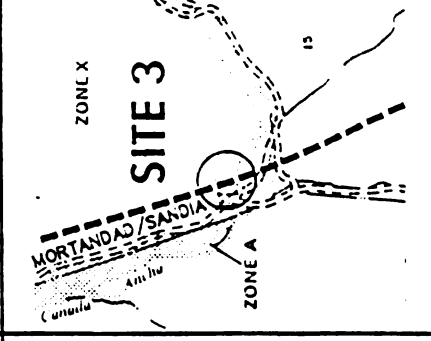
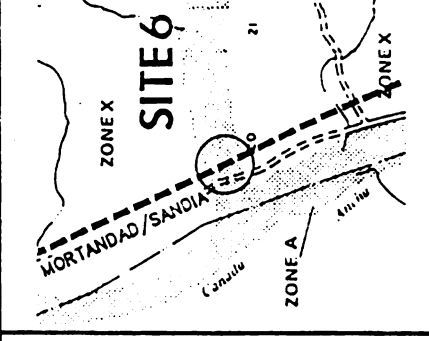
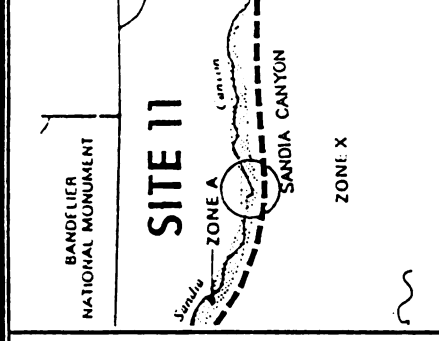
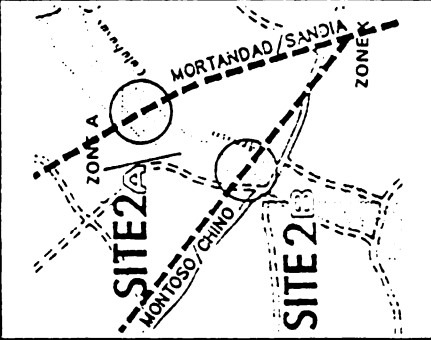
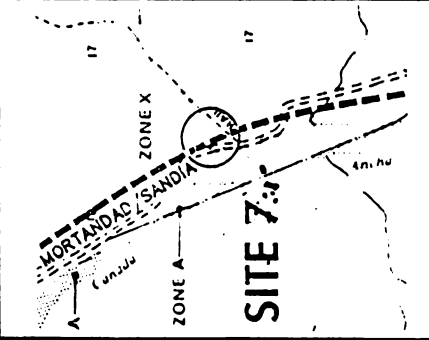
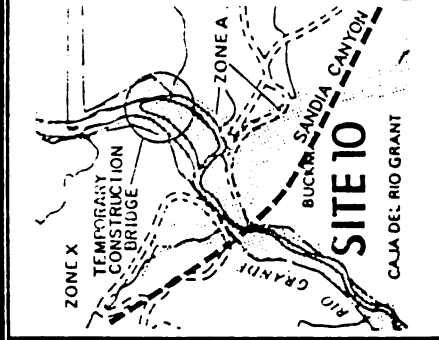
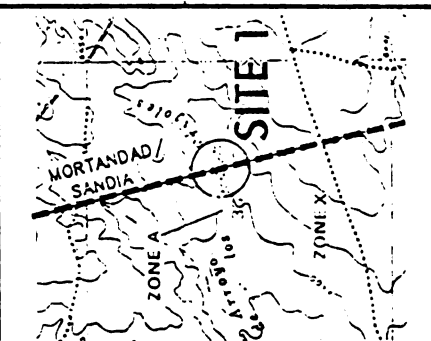
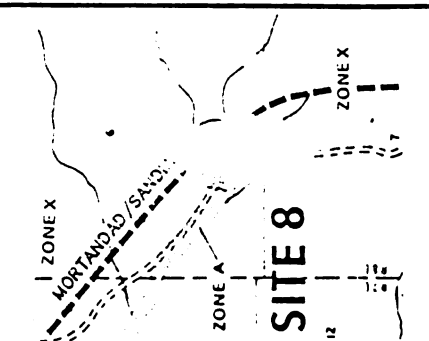
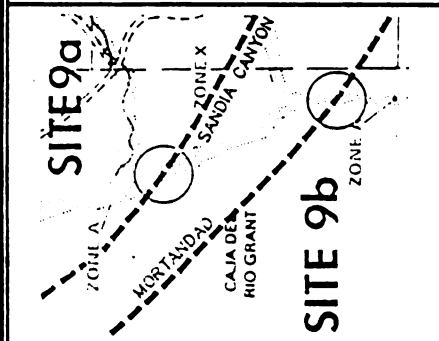


LEGEND

- ZONE A - SPECIAL FLOOD HAZARD AREAS INUNDATED BY 100-YEAR FLOOD. (NO BASE FLOOD ELEVATIONS DETERMINED)
- ZONE X - AREAS DETERMINED TO BE OUTSIDE 500-YEAR FLOODPLAIN
- - - - PROPOSED CENTERLINE OF ALIGNMENT
- APPROXIMATE LOCATION OF ENCROACHMENT

SOURCE: FEDERAL EMERGENCY MANAGEMENT AGENCY, NATIONAL FLOOD INSURANCE PROGRAM, COMMUNITY PANEL NOS. 350069 0075 B, 350069 0175 B, 350069 0150 B, USGS QUAD SHEET AGUA FRIA, T. MF.800.

100-YEAR FLOODPLAIN BOUNDARIES



be completely avoided and would require some modifications to the natural channel. This encroachment would not increase flood risks or backwater elevations.

Site 12 includes the floodplain area that exists in the proposed SR 4/Sandia Canyon Alternate interchange area. Because of the expanse of the interchange area, 5.5 acres of floodplain would be within the right-of-way. Because an interchange is required with SR 4, an encroachment to the floodplain in this area with this alternate is unavoidable.

2. FLOODPLAIN VALUES

Except for Site 10, all of the potential encroachment areas are devoid of vegetation which generally increases habitat values associated with floodplains. Because there is an absence of vegetation, other beneficial values such as stormwater quality abatement and natural moderation of floodwaters are also lacking.

It is expected that increases in backwater elevations and velocities at floodplain encroachments would be nonexistent or minimal. Limits within which construction activity could take place would be restricted to that necessary for the conduct of work and would be defined. Under the conditions described herein, any impacts to natural and beneficial floodplain values would be negligible.

3. FLOODPLAIN DEVELOPMENT

As previously described in Section IV-D, future land use plans generally call for a continuation of existing land uses. The agricultural grazing lands and vacant lands on federally owned properties will remain relatively unchanged. This project would not induce or promote development in floodplain areas that are not already permitted or planned by local and regional authorities.

4. MITIGATION

Potential impacts incurred with the temporary bridge structure for either the Mortandad or Sandia Canyon Alternate would be mitigated and enhanced through revegetation. Fill material placed in floodplains for construction purposes would be removed upon the completion of the project.

O. WILD AND SCENIC RIVERS

The National Park Service's "Nationwide Rivers Inventory" lists no rivers that have been identified as meeting the minimum criteria for further study and/or inclusion in the National Wild and Scenic Rivers System.^{10,11} Based on the Nationwide Rivers Inventory and the National Wild and Scenic Rivers System, there are no listed or eligible wild and scenic rivers within the study area.

P. ECOLOGICAL IMPACTS

The No-Build Alternative would not impact the natural environment in the study area. However, the build alternates would impact the terrestrial and aquatic ecology as a result of highway and bridge construction.

1. TERRESTRIAL ECOLOGY

The conversion of terrestrial habitat from primarily natural ground cover to open right of way would be an immediate impact. Based on the proposed right of way requirements, the alternate with the largest total acreage is Sandia Canyon (1,742 acres), followed by Mortandad (1,642 acres), Montoso peak (1,439 acres), and Chino Mesa (1,291 acres). A majority of the land to be converted to right of way would be Santa Fe National Forest lands under the Montoso and Chino Mesa Alternates (50 and 54 percent of the total right of way, respectively), and Bureau of Land Management lands under the Mortandad and Sandia Canyon Alternates (81 and 77 percent, respectively). Much of the land within the Forest Service and Bureau of Land Management boundaries is intended for wildlife habitat, and forage and firewood production. The conversion of these acres to right of way would represent a decrease of less than one percent of the acreage

intended for these uses in the study area.

While both the Mortandad and Sandia Canyon Alternates would necessitate larger right of way acquisitions, the impact of such acquisitions would be greater under either the Montoso or Chino Mesa Alternate. Both the Mortandad and Sandia Canyon Alternates closely follow in the vicinity of the existing boundary between National Forest and BLM land. Land conversion along the edge of the lands would not have as large an impact as land conversion through a portion of such properties, because this edge is already impacted with its use as a utility and transportation corridor.

In the Santa Fe National Forest, Management Area L has been identified by the New Mexico Department of Game and Fish as a high-priority transplant site for the endangered species Rocky Mountain bighorn sheep, Ovis Canadensis Canadensis. Coordination with the Forest Service indicates the Montoso and Chino Mesa Alternates would split the potential bighorn sheep habitat into two parcels with approximately two-thirds laying to the north of the highway and one-third to the south. The bighorn sheep is basically a shy animal. Construction of Montoso or Chino mesa would fragment available habitat and could potentially lead to harassment by humans due to increased accessibility. Under either the Montoso or Chino Mesa Alternate, it would be likely that the bighorn sheep would be relocated to other suitable habitat within the state. Neither the Mortandad nor Sandia Canyon Alternate would cause bighorn sheep habitat fragmentation or increase the potential for human disturbance of the sheep.

In addition to fragmenting possible bighorn sheep habitat, the Montoso and Chino Mesa Alternates would split the existing habitat of the wild horses found in the Santa Fe National Forest, as shown on Exhibit III-3. A 1990 U.S. Forest Service survey estimated the wild horse population at 50 to 60 animals. Because the right of way boundaries for the project are proposed

to be fenced, the wild horses and other larger animals would be prevented from roaming freely between the two areas. This could result in the loss of genetic exchange between these animals. In an effort to mitigate this impact, concrete box culverts or corrugated metal arches would be placed in arroyos to allow for stock passage under the highway. Where feasible and practicable, fencing would be designed to funnel animals toward the passages. Neither the Mortandad nor the Sandia Canyon Alternate would split wild horse habitat.

Impacts to other wildlife resources within the study area would primarily result from habitat loss and alteration. Each alternate would bisect wildlife habitat and potentially alter movement patterns of the more mobile wildlife species. Given the expanse of remaining available habitat, both large and small species of wildlife displaced by habitat conversion would likely be absorbed into adjacent areas under any of the build alternates. An increase in the number of roadkills would not be expected.

Impacts on terrestrial ecology would be mitigated by the enhanced habitat preserved in the greenbelt. This would be fenced and, therefore, protected from grazing impacts.

2. AQUATIC ECOLOGY

In general, aquatic wildlife populations would not be seriously affected by any of the build alternates and would not be affected at all by the No-Build Alternative. The major components of the aquatic ecosystem present in the study area are water quality, macrobenthic conditions, and fisheries. Water quality impacts have been addressed previously in this Section.

The overall impact to the benthic community or river bottom organisms, regardless of the build alternate, would be minimal. All of the proposed crossings of the Rio Grande completely span the river and would not require the placement of piers or other structures in the river. However, short-term

impacts due to construction would be anticipated. Deposition of sediments in the river during construction could result in temporary reductions in the density of the benthic community. This would be most likely under the Sandia Canyon and Mortandad Alternates which call for the construction of a temporary work bridge. However, benthic populations are known to recover quickly after construction is completed. Temporary erosion and siltation control measures would be applied to reduce potential impacts. (See Section IV-X).

Fish species would also be impacted to a minor degree during construction of any build alternate. Potential impacts include short-term, minor changes in water quality and temporary loss of habitat. However, these changes would result in little impact on fisheries.

3. COORDINATION

Coordination with the U.S. Department of the Interior Fish and Wildlife Service has been ongoing since the beginning of this project. The results of this coordination effort is contained in Appendix A - Exhibit 14, Appendix B - Exhibit 8, and Appendix C - Exhibit 15.

4. MITIGATION

While impacts to terrestrial ecology, aquatic ecology, and wildlife resources would not be substantial, measures would be taken to minimize impacts to these resources. Mitigative techniques would include strict adherence to state erosion and sedimentation controls, selective clearing and grubbing, and selective seeding of native herb, shrub, and tree species typical of the habitats impacted. The greenbelt will provide enhanced terrestrial habitat.

Q. THREATENED AND ENDANGERED SPECIES

Early and ongoing coordination efforts have been conducted with the New Mexico Department of Game and Fish, the New Mexico

Energy, Minerals, and Natural Resources Department, and the Department of Interior - Fish and Wildlife Service regarding special concern terrestrial and aquatic species that occur or are likely to occur in the study area. (See Appendix A, Exhibits 7, 14, and 15; Appendix B, Exhibits 8 and 13; and Appendix C, Exhibits 7 and 15 for documentation of coordination). This coordination identified the following list of federally endangered species of concern for the project.

| | | |
|-----------------|---------------------------------|--------------|
| Bald Eagle | <u>Haliaeetus leucocephalus</u> | (Endangered) |
| Peregrin Falcon | <u>Falco peregrinus</u> | (Endangered) |
| Whooping Crane | <u>Grus americana</u> | (Endangered) |

The list of animal species potentially located in the study area and listed as endangered in the State of New Mexico is as follows:²⁶

Mollusks:

| | |
|-----------------------|----------------------------|
| Lilljeborg's Pea-Clam | <u>Psidium lilljeborgi</u> |
|-----------------------|----------------------------|

Fishes:

| | |
|---------------------------|---------------------------|
| Rio Grande Silvery Minnow | <u>Hybognathus amarus</u> |
|---------------------------|---------------------------|

Amphibians:

| | |
|---------------------------|-------------------------------|
| Jemez Mountain Salamander | <u>Plethodon neomexicanus</u> |
|---------------------------|-------------------------------|

Birds:

| | |
|--------------------------|------------------------------|
| Broad-Billed Hummingbird | <u>Cynanthus latirostris</u> |
|--------------------------|------------------------------|

| | |
|-------------------|---------------------------|
| Willow Flycatcher | <u>Empidonax traillii</u> |
|-------------------|---------------------------|

| | |
|------------|-----------------------|
| Gray Vireo | <u>Vireo vicinior</u> |
|------------|-----------------------|

| | |
|------------------------|-------------------------|
| White-tailed Ptarmigan | <u>Lagopus leucurus</u> |
|------------------------|-------------------------|

Mammals:

| | |
|----------------------|------------------------|
| Meadow Jumping Mouse | <u>Zapus hudsonius</u> |
|----------------------|------------------------|

| | |
|-------------|-------------------------|
| Pine Marten | <u>Martes americana</u> |
|-------------|-------------------------|

A list of plant species of concern was also received from the State of New Mexico's Energy, Mineral, and Natural Resources Department. The list was comprised of twelve plant species (some without common names) which included:

| | |
|-------------------------|---|
| Cyanic milkvetch | <u>Astragalus cyaneus</u> |
| Santa Fe milkvetch | <u>Astragalus feensis</u> |
| New Mexico kentrophyta | <u>Astragalus kentophyta var. neomexicana</u> |
| Cholla, green flowering | <u>Opuntia viridiflora</u> |
| | <u>Pediocactus simpsonii</u> |
| Gramma grass cactus | <u>Pediocactus papyracanthus</u> |
| Fish-hook cactus | <u>Mammillaria wrightii</u> |
| Giant heleborine | <u>Epipactis gigantea</u> |
| Tiger lily | <u>Lilium philadelphicum andinum</u> |
| Adder's mouth orchid | <u>Malaxis soulei</u> |
| | <u>Viola pedatifida</u> |

This project has been evaluated for potential impacts to all of these federally endangered and state special concern species. A literature search was conducted to identify the general habitats for each species listed above. These habitat requirements were then compared to the habitats traversed by the project alternates. If general habitat requirements for a specific species were not encountered during field surveys the species was eliminated from further consideration. The following animal species were eliminated from further study because their general habitat requirements are not applicable in the project area and were not sighted during the biological survey: Lilljeborg's Pea Clam, Jemez Mountain Salamander, White-Tailed Ptarmigan, Broad-Billed Hummingbird, Willow Flycatcher, Meadow Jumping Mouse, and Pine Marten.

Further investigations were conducted for those plant and animal species whose general habitat requirements would be encountered by the build alternates. Additional literature searches were conducted and each build alternate corridor was walked and searched for specific habitat requirements or evidence that the species exists within the proposed study corridor. These additional investigations were conducted for three federally listed

animal species (the Bald Eagle, Peregrine Falcon, and Whooping Crane) and two state listed animal species (Gray Vireo and Rio Grande Silvery Minnow).

As documented in the "Biological Resources Evaluation Report" prepared for this project, field surveys for biological resources were conducted between April 4, 1990 and April 24, 1990.²⁷ Field research and historic data concerning the bald eagle and peregrine falcon were provided by Mr. Terrell Johnson. Expert opinion concerning the proposed alternates' impact to these two species was also provided by Mr. Johnson.

Although some plant species were less likely to be found than others, field searches for each of the plants previously listed were also conducted. These investigations were undertaken by a team of biologists walking each project alternate, in a zig-zag fashion, searching for any of the listed plant species. Aerial photographs were used to record the locations of any of the animal or plant species.

As the results of the field survey indicate, the following plant species were found to not be present within the study corridors due to unsuitable habitat: Santa Fe Milkvetch, New Mexico Kentrophyta, Erigeron pulcherrimus, Cholla, Green Flowering, Pediocactus simpsonii, Giant Heleborine, Tiger Lily, Adder's Mouth Orchid, and Viola pedatifida.

The following is a summary of the animal and plant species potentially impacted by the implementation of this project.

1. ANIMAL SPECIES

a. Bald Eagle

Field surveys for the bald eagle were concentrated in the potential bridge crossing areas west of the Rio Grande. Each canyon was surveyed for potential and suitable roost sites that may be used by the wintering eagles. Factors that were

taken into account in determining roost site suitability included the existence of available large trees or protected areas in the rock formations, protection from the wind where large trees were found, and physical evidence that the eagles may indeed roost in the area.

The following findings were made with respect to the alternates: 1) the Sandia Canyon Alternate has no confirmed roost sites and lacks suitable habitat such as tall trees; 2) while neither the Mortandad nor the Chino Mesa Alternate have confirmed roost sites, they both contain suitable habitat; and 3) the Montoso Peak Alternate does contain a roost site which has been confirmed by Mr. Johnson. As a result, the Montoso Peak and Chino Mesa Alternates may affect the bald eagle and would require consultation with the U.S. Fish and Wildlife Service prior to location approval. (See Appendix C, Exhibit 15).

Except for the Montoso Peak and Chino Mesa alignments, it does not appear that the other alternates would have a direct effect on existing eagle populations. However, because Cochiti Reservoir is an activity center for the bald eagle, the design and management of which may have a positive impact on eagle populations, the destruction of suitable roost habitat in close proximity to the reservoir should be taken into account.

b. Peregrine Falcon

Suitable habitat requirements for peregrine falcons that are presently being utilized or possess all highly desirable habitat characteristics have been identified in the project area. In accordance with a Master Interagency Agreement between the USDA, Forest Service, the New Mexico Department of Game and Fish, and the U.S. Department of Interior-Fish and Wildlife Service, disclosure of this information is only on a need-to-know basis. With respect to the project alternates, only the Montoso Peak Alternate passes through a sensitive area for falcon nesting habitat. The remaining alternates are outside of the defined

sensitive areas. The Montoso Peak Alternate may affect existing peregrine falcon habitat and would require consultation with U.S. Fish and Wildlife authorities. (See Appendix C, Exhibit 15).

c. Whooping Crane

The potential for endangered birds to collide with large transmission lines is extensively documented in "The Biological Assessment on Public Service Company of New Mexico's Proposed Ojo Line Extension 345 kV project and Three Federally Endangered Species" prepared for the Bureau of Indian Affairs (BIA 1986). It includes statistical data concerning the birds' flight heights and migration routes. In general, sandhill cranes (Grus canadensis) and whooping cranes were found to travel through five major flight paths, three west of the White Rock area and two east of the Rio Grande over the Caja del Rio. Two of the migration routes west of the Rio Grande were located several miles west of White Rock, with the remaining western migration route located directly over the White Rock area.

Information concerning the height of the migrating birds was collected as the flocks of cranes flew over the observation areas. Flight height observations were recorded and placed in one of the following categories: 1) Very High - greater than 1,000 feet above ground level (AGL); 2) High - 300 to 1,000 feet AGL; 3) Medium - 150 to 300 feet AGL; 4) Low - 0 to 150 feet AGL; 5) Canyon Rim - rim to 300 feet below rim; and 6) Lower Canyon - 300 to 900 feet below the canyon rim.

Of the 12,000 cranes for which data was available, over 88 percent were at observed heights greater than three hundred feet above the canyon rim. All of the proposed bridge alternates would support the main deck with structures located under the main deck. There would be no towers from which to suspend the main deck, and thus the highest elevation would be the main deck. The elevation of the highest point on the bridge would not exceed the existing elevation of the canyon rim.

Therefore, it is reasonable to assume that the flight paths of the majority of migrating cranes would not be hindered by the bridge structure. However, the potential impact to migrating cranes would be considered to be less with a lower bridge structure. The bridge height over the Rio Grande for each of the build alternates is as follows:

| | | |
|-------------------------|---|------------|
| Montoso Peak Alternate | - | 1,020 feet |
| Chino Mesa Alternate | - | 810 feet |
| Mortandad Alternate | - | 460 feet |
| Sandia Canyon Alternate | - | 290 feet |

Also included in the BIA report are the recommendations for construction requirements placed on transmission lines to make the wires more visible to the migrating birds. It is not plausible that a bridge structure would be difficult for a crane to locate during flight. Therefore, this project would not be expected to affect the continued existence of the whooping crane population in the study area.

d. Gray Vireo

According to the Handbook of Species Endangered in New Mexico, the breeding habitat for the vireo is generally open woodlands/shrublands featuring evergreen trees and shrubs of various kinds. Junipers are the dominant element in most areas of occurrence. Except for small pockets of ponderosa pine located in the canyons, almost the entire project area is in the Pinon/Juniper vegetational zone which is characterized by open woodlands and shrublands. While no vireos were sighted during field investigations, impacts to this type of habitat could not be avoided with any of the build alternates.

e. Rio Grande Silvery Minnow

None of the four build alternates would severely impact the Rio Grande Silvery Minnow since no bridge pilings would be placed directly into the Rio Grande. However, a temporary construction bridge used to help erect the Mortandad or Sandia

Canyon bridges over the Rio Grande may cause short-term water quality impacts. These short-term construction impacts, previously discussed in this section, would be minimized by strict adherence to Best Management Practices during the construction period. Following guidelines set forth under best management practices will help ensure the survival of the species.

2. PLANT SPECIES

a. Cyanic Milkvetch

This perennial is generally restricted to dry slopes in the pinon-juniper association at 7,000-7,500 feet elevation. This species was located in the Buckman Road area, near Montoso Peak and on San Ildefonso Pueblo lands, and appears to be locally abundant. There would be impacts to this species with all of the project build alternates.

b. Gramma Grass Cactus

Several populations of this cactus, Pediocactus papyracanthus, were found on the Sandia Canyon and Mortandad Alternates. They were located in the sandy areas of the Buckman wells and less common approaching Santa Fe. Some of the larger populations were located on the west of the Rio Grande on basaltic benches. A population of about twenty plants was located at the proposed west bridge abutment on the Mortandad alignment. Populations of five, eight, and two were located on the Sandia Canyon Alternate. No specimens of Gramma Grass Cactus were located on the Montoso or Chino Mesa Alternates, which may reflect the difference in grazing pressures on Bureau of Land Management and National Forest lands. Approximate locations of the cacti are shown on Exhibit IV-11.

c. Fish-Hook Cactus

Seven specimens of Mammillaria wrightii were located along the Sandia Canyon/Mortandad Alternate while only one specimen was located along the Chino Mesa/Montoso Peak Alternate. In most cases they were located in intermittent drainages with a

few specimens located in clayish soils near Santa Fe. Approximate locations of the cacti are depicted on Exhibit IV-11.

In addition to the aforementioned species, the Forest Service requested information be provided for four additional species. These include:

- Spotted Bat
- Flammulated Owl
- Goshawk
- Mexican Spotted Owl

Of these four species only the Spotted Bat has protection status. The New Mexico Department of Game and Fish lists the Spotted Bat as Endangered Group 2. The remaining three species are listed as sensitive by the Forest Service. According to the New Mexico Department of Game and Fish Handbook of Species Endangered in New Mexico, the Spotted Bat has no history of sightings in either Santa Fe or Los Alamos Counties.

The Flammulated Owl may be found in areas where the Ponderosa Pine is the dominant vegetation. The only stand of Ponderosa Pines located within the project corridor is in Ancho Canyon, which would be bridged if the Montoso Peak alignment were to be selected.

Both the Mexican Spotted Owl and the Goshawk are associated with the spruce and fir forests. The project corridors are located well below elevation where this type of vegetation is encountered. No spruce or fir were located along the four Build Alternates.

The proposed project does not traverse areas or habitat where the four additional species would be likely to be found.

3. RECOMMENDATIONS AND MITIGATION

This project may have adverse effects on species listed as threatened or endangered by the federal and of concern

to state regulatory authorities. Avoidance of potential impacts is always preferred to mitigation. It appears that none of the build alternates would completely avoid sensitive species. Selection of the Sandia or Mortandad Alternates would avoid impacts to the bald eagle and peregrine falcon, and would reduce the potential for whooping cranes colliding with structures. However, these alternates would potentially impact the greatest number of Pediocactus papyracanthus and Mammillaria wrightii.

Minor alignment shifts could be incorporated to avoid the populations of Pediocactus papyracanthus and Mammillaria wrightii. However, if alignment shifts are not feasible during final design, then transplanting the species to a preservation area would be warranted. Transplanting would require that a long-term monitoring program be established to ensure the continued survival of the transplanted specimens.

If the Montoso Peak Alternate is selected, the ongoing consultation process with the U.S. Fish and Wildlife Service will establish appropriate mitigation for the bald eagle and the peregrine falcon.

R. HISTORIC AND ARCHAEOLOGICAL PRESERVATION

Historic and archaeological resources have been identified and will be evaluated in accordance with the requirements of state and federal historic preservation laws. This assessment included background research and field surveys for each alternate. Results of the Cultural Resources Assessment are documented in various technical reports prepared for this project and are available from the Department. Should a build alternate be selected, a 100 percent inventory of the selected alternate will be performed prior to authorization of the project.

Prior to field reconnaissance activities, existing records were checked for previously recorded cultural resources in the files of the Santa Fe National Forest, the Bureau of Land

SANTA FE-
LOS ALAMOS
CORRIDOR
STUDY



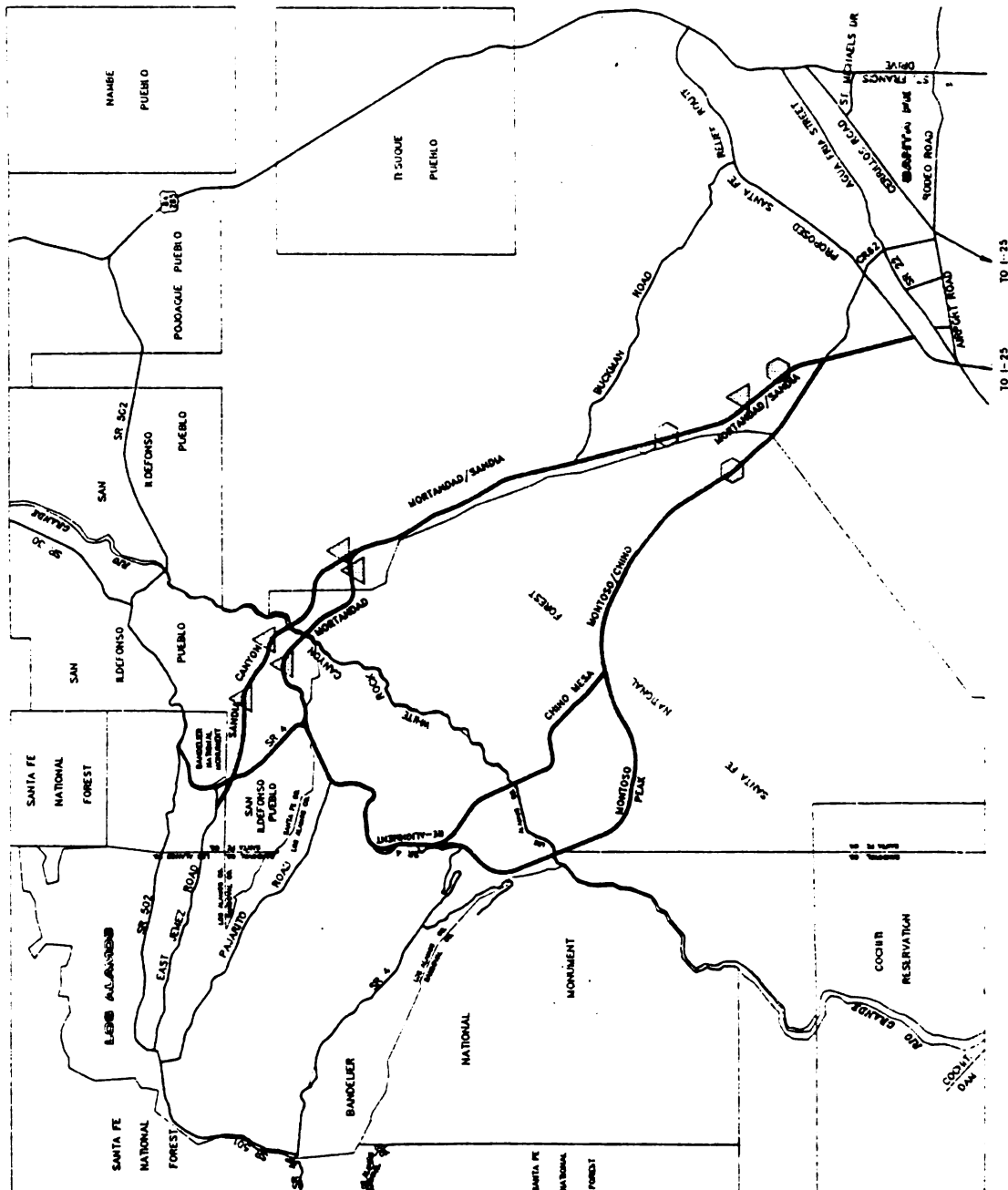
LEGEND

- ◻ FISH HOOK CACTUS,
MAMILLARIA VERBIFLII
- △ GRAMA GRASS CACTUS,
PEDIOCACTUS PAPYRACANTHUS

NOTE: LOCATIONS ARE APPROXIMATE

SENSITIVE
CORRIDOR
LOCATIONS

ES&S CORP. 10/1/78



Management files, and the State Historic Preservation Division's Archaeological Resource Management Systems (ARMS) files. In addition, consultation with Los Alamos National Laboratory archaeologists was carried out to ensure coordination with LANL's files. Research of existing files indicated that, for all of the build alternate corridors, there are no sites currently listed as eligible for or that have been nominated to the National Register of Historic Places. In addition, none of the known, existing and documented sites in the build alternate corridors are included in the New Mexico State Register of Cultural Properties. There are no locally important landmarks in the study corridors because there are no duly established procedures in New Mexico for designating locally significant cultural resources other than the requirements of the New Mexico State Register of Cultural Properties.

A field survey of each alignment was conducted along an approximately 600 to 1,000 foot corridor width. Corridor width varied, depending on terrain and other factors. The width surveyed, however, was in all cases beyond the proposed right of way requirements of any of the build alternates. On Forest Service lands, sample transects were walked perpendicularly to the corridors at one mile intervals. Both sides of the centerline of the corridors through these lands were walked in a zig-zag fashion across the corridor width, and along the corridor length. On lands other than Forest Service lands, the same survey methodology was utilized with the exception that the entire length of the build alternate corridors was walked. Particular effort was made to relocate previously recorded sites in the vicinity of the proposed corridor.

Table IV-13 summarizes the historic and archaeological sites located within the corridors of each build alternate. The sites listed on this table include those sites identified during the course of this project's field survey, as well as those sites previously recorded. For some of the previously recorded sites, exact locations within the build alternate corridors could not be

TABLE IV-13
HISTORIC AND ARCHAEOLOGICAL SITES

| SITE DESCRIPTION | Montoso Peak | Chino Mesa | BUILD ALTERNATES | | Total Sites |
|--------------------|--------------|------------|------------------|---------------|-------------|
| | | | Mortandad | Sandia Canyon | |
| Lithic | 13 | 9 | 5 | 5 | 21 |
| Shrine | 1 | 0 | 2 | 2 | 5 |
| Field House | 3 | 0 | 0 | 4 | 7 |
| Pueblo | 2 | 2 | 1 | 0 | 5 |
| Petroglyph | 0 | 0 | 1 | 1 | 2 |
| Historic | 2 | 1 | 1 | 1 | 5 |
| Unidentified | 2 | 0 | 0 | 0 | 2 |
| Total Sites | 23 | 12 | 10 | 13 | 47 |

Note: Number of sites for individual alternates do not add to the total number of sites since some sites apply to more than one alternate.

field verified. The following summarizes the findings of the cultural resources assessment and provides recommended mitigation measures for those resources potentially impacted by the project.

A total of 47 sites were identified within the corridors of the build alternates. Of these 47 sites, it has been recommended that 46 sites have sufficient resources to justify additional investigations to determine site significance and potential eligibility for listing on the National Register of Historic Places. One site, a pre-Manhattan Project debris area is not recommended for further study on the basis that the potential significance of the site does not warrant additional investigation.

Of those sites identified, the Montoso Peak Alternate contains the most sites (23), followed by Sandia Canyon (13), Chino Mesa (12), and Mortandad (10). Where feasible and practicable, avoidance of these sites would be the preferred mitigation effort. Given the preliminary nature of the project, the degree of importance associated with these 47 sites has yet to be determined. A full investigation of the sites along any selected alternate would be undertaken prior to final EIS. Full compliance with Section 106 of the National Historic Preservation Act of 1966 for any selected alternate would be maintained.

Current research and the results of the assessment indicate there are no sites of such magnitude that they would warrant preservation in place. All sites appear to be (criteria D-NRNP) important only for their information potential. It is expected that, development and implementation of a data recovery plan in accordance with SHPO and Advisory Council on Historic Preservation guidelines will mitigate project effects. Various cultural resource assessment technical reports have been prepared for the build alternates and SR 4. All materials will be submitted to the SHPO, federal and state land managers, and if necessary, to the Advisory Council on Historic Preservation for review and approval.

S. VISUAL IMPACTS

The effect of adding the proposed highway and bridge facility to the visual resources within the area has been evaluated and is documented in the "Visual Impact Assessment" prepared in conjunction with this project.³¹

The basis for the visual assessment is the Federal Highway Administration's "Visual Impact Assessment for Highway Projects".⁴⁰

This visual impact assessment process is based on the visual resource management (VRM) system used by several federal agencies. The major components of this process include establishing the visual environment of the project, assessing the visual resources of the project area, and identifying viewer response to those resources. These components define the existing or baseline conditions. With these components established, the degree of visual impact has been determined based on the changes introduced by the project and the associated viewer response.

1. PUBLIC ACCESS TO THE STUDY AREA

Nearly all of the land surrounding the four project alignments is publicly owned and generally accessible. Areas designated as public parks and recreational facilities tend to have greater public use than other, lesser known, public areas.

The main public access areas along White Rock Canyon include Bandelier National Monument, White Rock Overlook/Park, Pinon Park, the Rio Grande Tract and three parks in Pajarito Acres. Another important public area is the Tsankawi Unit of Bandelier National Monument located along SR 4 at East Jemez Road. Also accessible to the public are the Caja del Rio and Buckman areas, in the Santa Fe National Forest, east of the Rio Grande. Each of these sites is shown on Exhibit IV-12 along with each of the proposed roadway alignments. Of the locations mentioned, Bandelier, Tsankawi, and the White Rock Overlook receive the most visitors.

2. VIEWER SENSITIVITY

The viewer's sensitivity to the visual environment is dependent on the nature of the viewer's activity, the significance of the visual resource, and the attitudes of the viewer. The primary viewer-sensitive activities within the project area are hiking, photography, experiencing nature, scenic viewing of the natural beauty of the area, and viewing pre-historic Indian ruins and dwellings. There are three primary visual perspectives associated with the study area. These are the view of and from White Rock Canyon, the Caja del Rio, and the Pajarito Plateau. The presence of a highway or bridge through these areas would be viewed differently by different persons. To some, a bridge and road that have been carefully designed to blend with the natural surroundings would be aesthetically pleasing to view and may even contribute to their visual experience. To others, the same bridge and highway would represent an unfortunate imprint of human activity upon nature and would strongly detract from their visual experience.

3. VISUAL IMPACTS

A rating scale was used to qualify the relative degree of project impact based on the importance of the visual resource, the volume of viewer activity, and the sensitivity of the viewer. The ratings are characterized as follows:

No Impact - The project would not be visible to viewers.

Low Impact - The view of the project would be limited, the visual resource is limited in importance, the level of viewer activity is low, the nature of viewer activity is not affected, there are dominating visual intrusions in the viewshed from other sources, or there is a weak visual contrast between the facility and the landscape.

Moderate Impact - The view of the project would be a moderate intrusion into the visual environment with greater contrast than the low impact but not as great as a high impact.

High Impact - The project would be in proximity and visible to viewers, would have a strong contrast with the landscape, would be in an area of substantial visual importance with limited other visual intrusions, or would involve substantial viewer activity and sensitivity.

The following visual impact assessment of each alternate with respect to the various public access areas of the project is summarized below.

a. **Bandelier National Monument**

Within Bandelier, five areas were evaluated. These included the entrance road, the visitors center in Frijoles Canyon, the hiking trail to the Rio Grande, the wilderness area, and Tsankawi Ruins, as shown in Exhibit IV-12.

Entrance Road: The Montoso Peak Alternate would be briefly visible to visitors as they drive along the park entrance road that leads to the visitor's center. Because of the speed of the vehicle, the surrounding topography, and existing vegetation, these views would be limited to brief glimpses of the proposed bridge and roadway over Chaquehui Canyon, about 1,500 feet away. The visual impact at this location is considered to be low since there are other existing modern intrusions into the viewshed, such as facilities associated with technical areas of LANL; the viewer's exposure would be limited in duration; and viewer sensitivity is low. The only places where one could stop a vehicle along the entrance road that is in the vicinity of the Montoso Peak Alternate is at the scenic overlook and the fire tower. No visual impacts would be associated with the scenic overlook since the view is into Frijoles Canyon toward the visitor's center, away from the project. At the fire tower, the view of the Montoso Peak Alternate would be more distant as the roadway traverses the area near Montoso Peak and the Caja del Rio, some 10,000 to 18,000 feet away. The other three alignments would have no impact on the entrance

SANTA FE LOS ALAMOS CORRIDOR STUDY

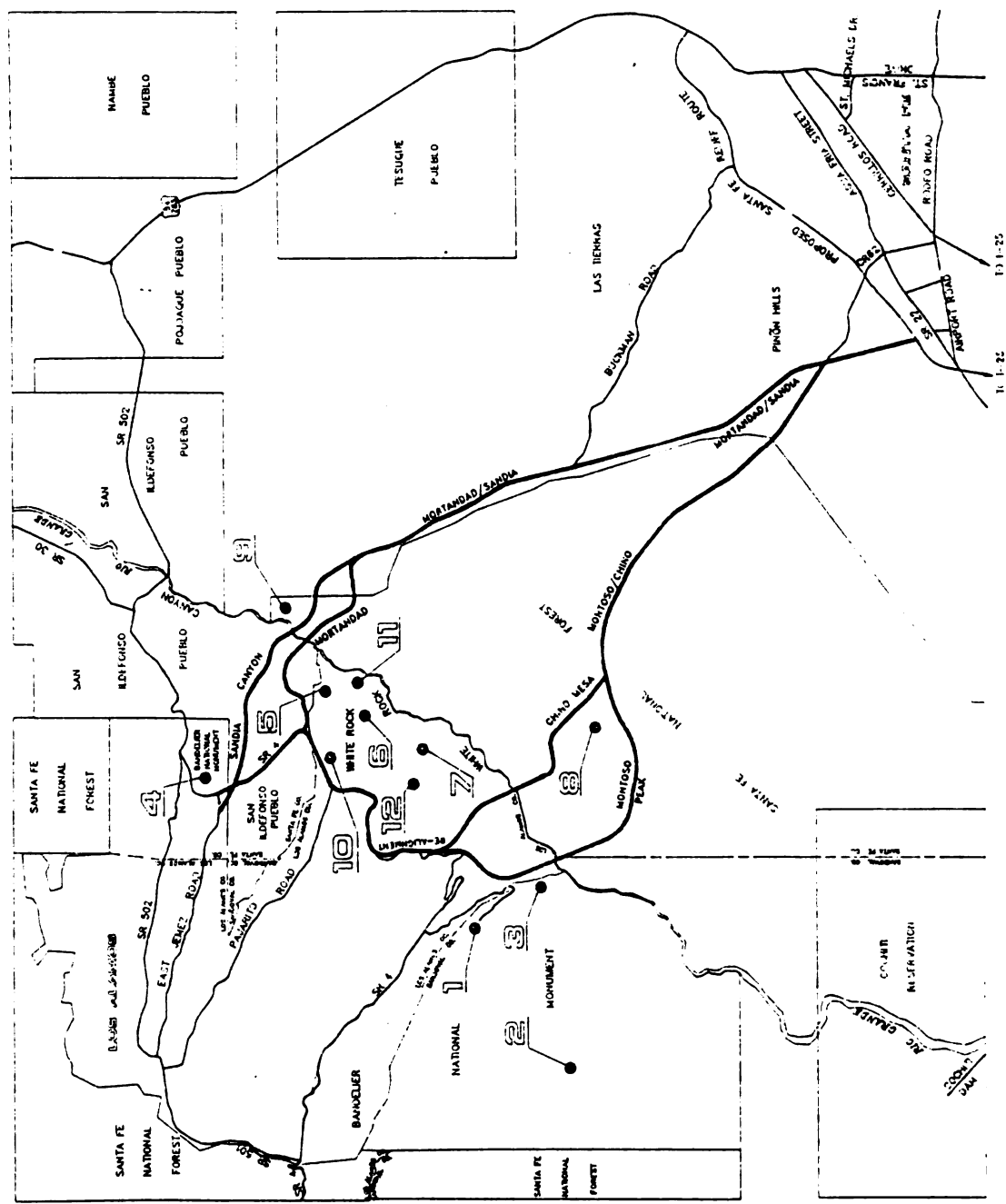


LEGEND

- 11 BANDELLER NATIONAL MONUMENT
- 2 VISITORS CENTER/ENTRANCE ROAD
- 3 BANDELLER NATIONAL MONUMENT
- 4 WILDERNESS AREA
- 5 BANDELLER NATIONAL MONUMENT
- 6 FALLS TRAIL
- 7 TSANKAWI UNIT
- 8 WHITE ROCK OVERLOOK/PARK
- 9 LA SEIDA PARK
- 10 WATER CANYON PARK
- 11 CAJA DEL RIO
- 12 BUCKMAN PICNIC AREA (PROPOSED)
- 13 PIÑON PARK
- 14 RIO GRANDE TRACT
- 15 PAJARITO PARK

WORLD LEAD,
 ASSOCIATED ENGINEERS
 11000 EAST 11TH AVENUE

PLANNING AND DESIGN DIVISION



road to Bandelier.

Visitor's Center/Frijoles Canyon: Over 90 percent of the visitors to Bandelier limit their experience to the visitor's center area and Frijoles Canyon, including the waterfall area. None of the proposed alternates would be visible to the visitors of these areas.

Falls Trail/Rio Grande: For those visitors to Bandelier who make the 2.5 mile hike down the Falls Trail to the Rio Grande, most would not see the proposed alternates. Many visitors end their hike along the trail at the upper and lower falls and then return to the visitor's center. For those that do continue down the trail to the Rio Grande, they would have to cross a clearing area and hike up White Rock Canyon to be in a position to see the bridge associated with the Montoso Peak Alternate. A graphical representation of this bridge crossing, as seen from the river, is shown in Section II. The Montoso Peak bridge would be clearly visible and in great contrast with the surrounding environment. For the limited number of viewers at this location, the Montoso Peak Alternate would represent a high impact. However, because the number of viewers is small and most of the 300,000 visitors do not use this area, the overall impact is considered moderate. The other alternates would have no impact on visitors to this area since they would not be visible.

Wilderness Area: The majority of Bandelier National Monument is a designated wilderness area along the Pajarito Plateau. This area has a number of hiking trails and numerous scenic vistas. For the 3,500 to 4,000 visitors each year, their primary activities include hiking and visiting pre-historic ruins. Visitors have an expectation of viewing a natural wilderness area as they hike. The Montoso Peak and Chino Mesa Alternates would be visible to persons in this area. For the Montoso Peak Alternate most would have a distant view of the roadway as it traverses the Caja del Rio Plateau near Montoso Peak.

For the Chino Mesa Alternate, a portion of the bridge over the Rio Grande and the roadway alignment along Ancho Canyon would be visible. The current view from the wilderness area contains some distant visual intrusions related to LANL and existing residential areas as the visitor looks across the Pajarito Plateau. The Montoso Peak and Chino Mesa alignments would add an additional visual intrusion to the viewshed. This impact would not exist everywhere in the wilderness area and, when it does occur, would vary depending on the location of the viewer within the wilderness area. However, because of the sensitivity of the viewer, the nature of the viewer's activity, and the undeveloped nature of the area around Montoso Peak, the Montoso Peak Alternate would have a high visual impact. The impact of the Chino Mesa Alternate would be more moderate because the visual impact is less pronounced, more distant from the park, and away from Montoso Peak.

Tsankawi: The analysis of visual impacts at the Tsankawi Unit of Bandelier National Monument was based on the assumption that the facility would be open to the public now and in the future. Based on this assumption, the location of the Sandia Canyon and Mortandad Alternates would impact the view from Tsankawi. The Chino Mesa Alternate would be in the far distance from certain points in Tsankawi.

The view to the southwest from the trail leading up to the top of the mesa at Tsankawi would be altered by the Sandia Canyon and Mortandad Alternates. This alteration would primarily occur as the result of the construction of an interchange between the proposed road, SR 4, and East Jemez Road some 2,000 feet away. For the purposes of this SDEIS, a three-level interchange has been selected as being feasible to accommodate traffic at the intersection of SR 4 and East Jemez Road for the Mortandad Alternate. Portions of this interchange would be visible from Tsankawi. The highest ramp in the interchange would be approximately 40 feet higher than existing SR 4 in the area of Tsankawi. The interchange along the Sandia Canyon Alternate would

involve a two-level interchange. The proposed roadway would be depressed in a cut section and existing SR 4 would be elevated approximately 15 feet higher than current conditions. Again, a portion of the interchange would be visible from Tsankawi.

In addition to the interchanges, other improvements associated with these alternates would be visible from Tsankawi. As previously indicated, SR 4 south of East Jemez Road is currently visible from Tsankawi. Because of this, a portion of the widening improvements along SR 4 under the Mortandad Alternate would intensify the existing visual intrusion. For the Sandia Canyon Alternate east of SR 4, a portion of the alignment will be visible. The limiting factor on visibility from Tsankawi involves two hills or ridges that occur between Tsankawi and the alignments.

The Chino Mesa Alternate would be visible from the southern rim of the main mesa. Primarily this view would be a portion of the roadway alignment near Montoso Peak. The Chino Mesa alignment would be about 40,000 feet (7.5 miles) away from Tsankawi.

The visual environment at Tsankawi is different from the remainder of the Bandelier National Monument. At Tsankawi, the nature and sensitivity of the viewer is less affected by visual intrusions, the importance of the visual resource is reduced, and there are more outside visual intrusions in the existing viewshed.

During periods when visitors are allowed into Tsankawi in the future, the visual impact would be moderate as related to the Mortandad Alternate due to the orientation and height of the interchange area, as well as to improvements along SR 4. For the Sandia Canyon Alternate, the visual impact would be less intrusive and considered low due to its being partially hidden within the canyon and due to a less complex interchange with reduced elevations. No impacts would occur with the remaining two

alternates.

b. White Rock Overlook/Park

The Mortandad, Sandia Canyon, and Chino Mesa Alternates would be visible from the public overlook and park in White Rock. For the Mortandad and Sandia Canyon Alternates, the closest view of either bridge over the river would occur from the overlook. Graphical representations of alternate bridge crossings along these alignments are shown in Section II Exhibits. Views of these crossings from other areas of the park along the canyon rim would be more distant and sometimes partially obscured by topographic features. This distance between the overlook and these two alignments would be approximately 4,000 feet for Mortandad and 5,000 feet for Sandia Canyon. The distance from the southernmost point of the park along the canyon rim to Mortandad would be approximately 11,500 feet and 12,500 feet to the Sandia Canyon alignment. The bridges along the Mortandad alignment are approximately 400 to 450 feet above the canyon floor. The bridges along the Sandia Canyon Alternate are approximately 250 to 300 feet above the canyon.

A small portion of the Chino Mesa Alternate as it crosses White Rock Canyon would be visible from points along the canyon rim in White Rock. The distance from the alignment to the park would range from 18,000 to 25,000 feet. The visibility of this alignment would be substantially restricted due to the topography of the canyon walls.

There would be no visual impact for visitors to the White Rock Overlook Park from the Montoso Peak Alternate. The impact associated with Chino Mesa would be low due to the limited visibility and intervening distance. For the Mortandad Alternate, the visual impact would be high due to the proximity of the alignment to the overlook, the height of the structure over the river, and the change in the visual characteristics of the area. A more moderate visual impact would occur with the Sandia Canyon

Alternate since it is further removed from the overlook and has a lower profile across the river.

c. Pinon Park

This park is located at the intersection of SR 4 and Sherwood Boulevard in White Rock. Park facilities include athletic fields, tennis courts, picnic areas, restrooms, hiking trails, and a community building. A portion of the Mortandad Alternate will be visible from the higher elevations of this local park. The proposed interchange at SR 4 on the Mortandad alignment as well as improvements along SR 4 would be visible. The proposed interchange would be over 4,000 feet away from the park. Currently, portions of SR 4, including commercial areas along the road, as well as parts of White Rock, are visible from the park. Because of the nature of the activity at Pinon Park and the existing visual environment, the visual impact of the Mortandad Alternate would be low. None of the other build alternates would impact this park.

d. Rio Grande Tract

This recreational area is located within White Rock Canyon along the west of the Rio Grande. The property is bounded on the north by the San Ildefonso Pueblo near the White Rock Overlook and extends to the south to Water Canyon at the southern end of the Pajarito Acres subdivision. The land was granted to Los Alamos County as a park in the early 1970s by the U.S. General Services Administration. Primary recreational activities include hiking and horseback riding. Three designated trails have been established through the area. The blue dot trail begins in the White Rock Overlook Park and extends to the river. The red dot trail begins in La Senda Park in the Pajarito Acres subdivision and extends to the river. The river trail connects the other two trails along the Rio Grande.

The Chino Mesa, Mortandad, and Sandia Canyon Alternates would be visible from portions of the Rio Grande Tract.

The bridge crossings over White Rock Canyon would represent the greatest visual intrusion for users of the park. Portions of the roadway alignments would also be visible. The extent of the visibility would be dependent on the location of the viewer within the park and the surrounding terrain. The nearest view of the Chino Mesa Alternate would be from the southern boundary of the park and would be approximately 6,500 feet away from the bridge crossing. For the Mortandad and Sandia Canyon Alternates, the nearest view would be at the north end of the park, some 2,000 and 3,000 feet away, respectively.

There would be no visual impact for the Mortandad Alternate from this park. The degree of impact from the remaining three alternates would vary within the park area. For the closest locations, the impact would be most pronounced. For the visitors to these locations, the impact would be substantial because the view toward the bridge crossings would be upwards from the canyon resulting in sharp contrasts against the sky. However, the overall impact of each alternate on the Rio Grande Tract would be moderate because of the size of the recreation area, the location of the designated trails away from the areas of greatest visual impact, and the number of users of the area.

e. Pajarito Acres

The public has access to White Rock Canyon via two access points in the Pajarito Acres Subdivision. Other than these two locations, the canyon rim is private property and not open to the public. A third park in the subdivision provides access to Potrillo and Water Canyons along the southern boundary of the development.

La Senda Park: La Senda Nature Park and Trail Head provide canyon access near the northeast corner of the development and close to Pajarito Canyon. Only portions of the Mortandad, Sandia Canyon and Chino Mesa Alternates would be visible

from this park and the extent of the view would be restricted due to the distance from the alignment (13,000 feet, 14,000 feet, and 13,000 feet) and the surrounding terrain of the canyon. Therefore, a low visual impact would result for these alternates at this location. No impact is associated with the other alternate.

Water Canyon Park: This park is located at the southern tip of the subdivision along the Water Canyon rim and extends to White Rock Canyon. The Chino Mesa alternate would be visible from this park and would be approximately 7,000 feet away. This crossing of White Rock Canyon and adjacent Ancho Canyon is depicted on Section II Exhibits for two different bridge types. The Chino Mesa Alternate would involve a low visual impact since the park is used by limited numbers of local residents for hiking, jogging, and horse-back riding activities. None of the other alternates would be visible from this park.

Pajarito Acres Park: This small park is located within the Pajarito Acres subdivision near the junction of Potrillo Canyon and Water Canyon, west of White Rock Canyon. The park is northwest of Water Canyon Park and removed from White Rock Canyon. Because of the location of this park and the surrounding terrain, only a portion of the roadway alignment of the Chino Mesa Alternate will be visible to park users. This view would be down Water Canyon and the alignment would be approximately 15,000 feet away from the park. The bridge over the Rio Grande would not be visible from the park. The Chino Mesa Alternate would involve a low visual impact since the park is used by limited numbers of local residents and the alignment is removed from the park. No impact is associated with the remaining build alternates.

f. Los Alamos National Laboratory

Some of the laboratory technical areas located east of SR 4 are open to the public for hiking. As visitors to these areas reach the rim of White Rock Canyon, they would be able to see the Chino Mesa and Montoso Peak alignments. The extent of

the visual impact is relative to the location of the viewer at any given point in the area. Since the number of visitors to this area is believed to be relatively small in comparison to other public areas, the impact is considered low.

g. Caja del rio Plateau

The Chino Mesa and Montoso Peak Alternates cross portions of the Santa Fe National Forest along the Caja del rio Plateau. Because of these crossings, visitors to the National Forest would view the roadway and bridge when they are in the vicinity of these alignments. Generally, the roadway through this area has been developed to follow the natural terrain, to the extent possible, within design guidelines. Proposed cut and fill slopes would be as flat as possible with rounded edges and would be revegetated to blend with the surrounding terrain. As such, the visual impacts would be low for Management Area G, the area designated for wildlife habitat, forage production, and firewood production with dispersed recreation.

Along much of the northern rim of the Plateau, the Mortandad and Sandia Canyon Alternates would be visible from the National Forest. However, due to the elevation differential, alignment location, and the presence of other man-made intrusions such as water tanks, transmission lines, and a power substation, these alternates have also been assigned a low visual impact rating for the dispersed recreational area.

The view from Management Area L, the semi-private, non-motorized area of the National Forest along White Rock Canyon would be altered by the presence of a bridge over the Rio Grande. The extent of this impact depends on the proximity of the viewer to the crossing and the magnitude of the crossing. Because the number of viewers would be relatively small from this area, the visual impact associated with the Montoso Peak, Chino Mesa, and Mortandad Alternates would be moderate. The Sandia Canyon Alternate would have a lesser impact due to its lower

profile and more northern location.

h. Private Residences

Private residential areas which would be affected by the build alternates include Pajarito Acres Subdivision, along the rim of White Rock Canyon; the homes in White Rock, along Joya Loop, Isleta Drive, and Hacienda Drive which abut San Ildefonso Pueblo lands; several subdivisions along Buckman Road, northeast of the Caja del rio; and the Pinon Hills subdivision along CR 62. Given such factors as the existing terrain, the limited viewer exposure, the relatively small number of viewers, and the distance between the viewer and the proposed alignments, visual impacts to these residential areas would be considered low to non-existent.

4. MITIGATION MEASURES

Because all of the study corridors are generally undeveloped natural areas, the construction of a new highway facility on new location would have an impact on the overall visual aesthetics of the land area. These visual impacts are unavoidable, regardless of the alternate alignment. No changes in aesthetics would be anticipated for the No-Build Alternative.

In general, the areas of the Caja del Rio, White Rock Canyon, and the Pajarito Plateau are viewed by many as pristine, historic, and extremely scenic. However, there are some modern visual intrusions into the scenic views of the area. These include existing highways, developed areas of White Rock, transmission lines, water tanks, and facilities associated with the Los Alamos National Laboratory. The impact of these other visual intrusions is dependent on the nature and location of the viewer. In general though, the existing visual intrusions do not appreciably alter the aesthetics of the area due to the expanse of the vistas.

In order to minimize or eliminate some of the visual impacts identified for the various alternates, the following mitigation measures would be followed if a build alternate were

selected:

- National Park Service landscape architects would be consulted throughout the design of any roadway features or structures which have been identified as having a potential visual impact on National Park lands.
- Final roadway design and engineering would attempt to blend the new road into the existing topography and natural landscape.
- In areas where the alignment would follow an existing road, trail, or utility corridor, the horizontal and vertical alignment of the new road would match the existing facility to the extent possible within the design criteria.
- Within sensitive viewsheds, the roadway would be depressed, where feasible, and concealed by natural or semi-natural barriers such as a contoured earthen/rock berm. These barriers would be revegetated to blend into the surrounding scenery.
- Selective clearing of the right of way would be used to minimize the loss of vegetation.
- Beyond the edge of paving, rounded slopes would be utilized to attempt to blend the facility with the natural terrain and surrounding landscape.
- In areas other than rugged terrain, the use of flatter cut and fill slopes would be used. These slopes would be reseeded and landscaped with native plant material to aid in revegetation.

- In areas of rugged terrain, large rock cuts would be evaluated for the best method of construction that produces the least visual intrusion. Opportunities for broken face blasting with staggered benches and flared ends would be included where practicable.
- Construction of natural rock and/or vegetative barrier screens would be used to impede the view of the facility where possible. These barriers would be designed to blend with the surroundings and appear as a natural element in the viewshed.
- For all bridge crossings, particularly those over the Rio Grande, architectural and aesthetic design considerations would be included as part of the final bridge design.
- Bridge design features would be selected on the basis of their ability to blend into the adjacent scenery. This could include unobtrusive paint colors and coating materials or naturally weathering materials.
- Close coordination would be maintained during design with National Park Service, U.S. Forest Service, Bureau of Land Management, Department of Energy, New Mexico State Land Office, Los Alamos National Laboratory, and all interested property owners in the vicinity of any selected alignment.

T. IMPACTS ON PUBLICLY-OWNED PARKLANDS, RECREATIONAL AREAS, AND WILDLIFE AND WATERFOWL REFUGES

Based on the information assembled for this study and previous studies, there would not be any use of land from known existing publicly-owned parks, recreational areas, wildlife and waterfowl refuges, or any historic sites listed on the National Register or State Register of Cultural Properties within the study area of the Build Alternatives. Therefore, provisions of Section

6(f) of the Land and Water Conservation Act of 1965 and Section 4(f) of the Department of Transportation Act as related to direct use of land would not apply for this project.

Concerns have been expressed during the course of this study related to impacts to Bandelier National Monument, Tsankawi, and local parks in the vicinity of the build alternates. Primarily, these concerns have focused on air quality impacts, visual intrusions, noise impacts, and increased access for visitors at Bandelier and Tsankawi. Each of these concerns are addressed in this section of the SDEIS and the Section 4(f) Evaluation in the following section.

1. BANDELIER NATIONAL MONUMENT

President Woodrow Wilson signed a proclamation in 1916 which created Bandelier National Monument. The proclamation stated that "...certain prehistoric aboriginal ruins...are of such unusual ethnologic, scientific, and educational interest...that the public interest would be promoted by preserving these relics of a vanished people, with as much land as may be necessary for the proper protection thereof". The purpose of Bandelier was further delineated in the National Park Service Organic Act of 1916 as "...to conserve the scenery and the natural and historic objects and the wildlife therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations". National Park Service plans indicate that the major significance of Bandelier relates to its combination of archaeological, natural-history, and wilderness values.³⁷

From the beginning in 1916 until 1932, Bandelier National Monument was administered by the U.S. Forest Service and remained relatively inaccessible to the public. In 1932, President Herbert Hoover signed a proclamation transferring responsibility for the monument over to the National Park Service (NPS). One of the first activities of the NPS was to construct an access road to

the floor of Frijoles Canyon for automobile travel.³⁸ Since the mid 1930's through today, visitation at the monument has steadily increased.

The creation of a large national park on Pajarito Plateau has been a goal of the NPS for many years. Initially, the NPS viewed the area as a prime location for an archaeological national park. However efforts in the early 1930's failed to produce the desired results. Following this effort, an attempt was made to establish a national park based on the geological significance of the area. This proposal also failed to achieve the desired status. Beginning in the 1940's, the NPS began to take a broader view of the attributes of the region. They began to emphasize the natural-history, archaeological, and wilderness aspects of the area in hopes of establishing a more comprehensive national park focus. To date, the area remains as a national monument and no concerted efforts are underway to achieve full national park status for Bandelier.

The advent of the research and testing facility at Los Alamos in the 1940's signified a change in the use and management of Bandelier. As the laboratory expanded and new residents moved to the area, park use began to shift toward a more local use for purposes other than those begun for the monument. In response to these changes the NPS initiated planning to make the monument more accessible to visitors for a variety of uses. The net result has been greater park utilization.

In 1976, 23,267 acres of the monument were designated by Congress as wilderness under the provisions of the Wilderness Act of 1964.³⁹ The NPS originally opposed this designation on the grounds that it would limit their means of administering the back-country areas of the monument and would make archaeological investigations more difficult. Since the mandate for Bandelier made the monument an archaeological area, not a natural area, the NPS believed it had to uphold its mandate and oppose the wilderness

designation. In 1971, a public hearing was held in Los Alamos on the subject and the wilderness concept was overwhelmingly supported by those present and those providing written comments. In response to public pressure, NPS reconsidered its position on the wilderness issue and in 1972 recommended that the back-country area of Bandelier be established as a wilderness area.³⁸

The NPS has expressed concerns about air quality, noise, visual, and access issues relative to the Montoso Peak and Chino Mesa Alternates. (See Appendix C, Exhibit 1). Previous portions of this section have indicated that air quality will not be adversely affected by any of the proposed alternates. Noise evaluations were conducted within Bandelier National Monument at its closest point to the Montoso Peak Alternate. Results of that analysis indicate no substantial increase in noise levels and no violations of current noise standards for this activity.

For portions of the wilderness area, the view toward Montoso Peak would be substantially altered by the Montoso Peak Alternate. Mitigation measures have been proposed to minimize this impact to the extent possible.

The location of the Montoso Peak and Chino Mesa Alternates would improve access to the monument for persons from Santa Fe and points south. The National Park Service is concerned that any of the Build Alternates could induce additional visitation in Frijoles Canyon at Bandelier. The National Park Service believes that increased visitation could result in deterioration of sites featured at the Park.

2. TSANKAWI

Tsankawi is a detached section of Bandelier National Monument located some 12 miles from the main unit along SR 4 near East Jemez Road. This 800 acre tract was once part of the larger Otowi Section of the national monument. In 1963, the NPS traded 3,925 acres of the Otowi Section to the Atomic Energy Commission

for 2,882 acres that were contiguous with the main monument area. The presidential proclamation indicated that land in the Otowi area contained "...limited archaeological values which have been fully researched and are not needed to complete the interpretive story of the Bandelier National Monument...". The only portion of the Otowi Section to be retained by the NPS was the Tsankawi area.³⁸

The most important resource at Tsankawi remains the unexcavated ruins on the top of the mesa. The NPS in its 1977 master plan for the monument indicated that excavation of the Tsankawi Ruin was an objective to provide more effective interpretation for the visitor. No substantial excavation efforts have been undertaken during the past 13 years. Visitor interpretation is limited to a self-guided tour along the marked loop trail.

Operations at Tsankawi have been temporarily suspended in recent years. Previously, this unit of the monument was open to the public year round. However, due to the NPS's lack of staff to properly protect the archaeological resources, Tsankawi was closed to the public in December 1989. The facility was reopened in May, 1990 for the summer months only. According to the NPS, much of the use of Tsankawi is by local visitors for day usage.

The NPS has commented that the Mortandad and Sandia Canyon Alternates would affect Tsankawi relative to air quality, noise, and visual impact issues. Previous portions of this section have indicated that air quality would not be affected by the project. Noise evaluations were done at two sites at Tsankawi: one near SR 4 at a picnic area and the other along the trail leading to the top of the mesa. Neither location's evaluation resulted in substantial noise increases or violations of standards. A visual intrusion occurs with the proposed interchange at SR 4 and East Jemez Road for these two alternates as well as with portions of the alignments of the proposed alternates. The Mortandad interchange would be substantially more visible than the Sandia Canyon interchange. Similarly the Mortandad alignment along

existing SR 4 would be more visible than the Sandia Canyon alignment because of the required elevation changes for SR 4. However, due to the nature of the visitors' activity, the sensitivity of the viewer, and the other visual intrusions in the area, these visual intrusions are considered a moderate visual impact.

3. LOCAL PARKS

Los Alamos county and local citizens maintain and operate several parks in the White Rock area. The parks affected by this project include Overlook Park in White Rock as well as La Senda Park and White Rock Canyon Park in Pajarito Acres. All three of these parks overlook White Rock Canyon and the Rio Grande.

A portion of White Rock Canyon below White Rock and Pajarito Acres is owned by the Department of Energy but reserved for recreational use. Primarily, this area is used for hiking along trails that connect the Overlook Park in White Rock with La Senda Park in Pajarito Acres through White Rock Canyon and along the Rio Grande.

While none of these parks and recreation areas will be directly impacted by any of the build alternates, certain portions of these public areas will have a visual impact from some of the alternates. The extent of this visual intrusion was presented in the previous section.

U. HAZARDOUS WASTE AND MATERIALS

1. HAZARDOUS WASTE SITES

Hazardous waste sites are regulated by the Resource Conservation and Recovery Act (RCRA) and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). Coordination with the appropriate federal and state agencies was undertaken to determine the location of permitted and non-regulated hazardous waste sites potentially located within the corridors of the build alternates. The evaluation of hazardous waste sites has

been documented in the "Hazardous Materials Evaluation Report" prepared for this project.²⁸

The methodology for the hazardous materials evaluation consisted of two steps. First, a letter of inquiry concerning the existence of known hazardous materials or waste sites along any of the project alternates was sent to each of the property managers and regulatory authorities. Second, in conjunction with other studies conducted during this project, such as the Archaeological Survey and Biological Resources Survey, each alternate route was visually searched in the field so that non-recorded hazardous waste sites could be identified and recorded.

Responses were received from each of the property managers of the federal, state, and Pueblo lands, as well as from the state regulatory authorities. (See Appendix C, Exhibits 9 through 14). Each letter received contained a statement to the effect that there would be no hazardous materials involvement with the build alternates, except for the response received from the Los Alamos National Laboratory. The response from LANL reported that slightly radioactive shot-debris may exist at the bottom of Ancho Canyon, potentially affecting the Chino Mesa Alternate. If this alternate is selected, LANL would be required to remove this debris prior to right-of-way acquisition.

In addition to coordination with federal and state agencies and the San Ildefonso Pueblo authorities, the hazardous materials evaluation also included a visual inspection of each build alternate. During the visual field inspection, no hazardous materials or hazardous waste sites were discovered on federal, state, Indian, or private lands. Litter, such as empty bottles, aluminum cans, and paper, was located throughout the project corridor. Larger items, such as refrigerators and furniture, were also located along existing roads.

Although not located within the proposed right-of-way of any of the alternate alignments, potential hazardous waste sites were identified near the proposed right-of-way of the four build alternates. These sites included the Santa Fe County Landfill, the Caja del Rio Gun Club, an electric power substation, and a gas station along SR 4.

The Santa Fe County Landfill and the Caja del Rio Gun Club are both located near the southern end of the build alternates. The landfill is located some 200 feet from any proposed construction activity. The Build alternates would each impact a small portion of gun club's buffer zone or overshoot area. No potential hazardous waste sites were located in this buffer zone area, however, litter in the form of gun shells and clay pigeons was found throughout the property.

Norton Station, an electric power substation, is located approximately 6000 feet north of the Mortandad and Sandia Canyon Alternates. These alternates will not impact the site through right-of-way acquisition or construction activities. The site was not listed as having reported problems with hazardous materials or wastes.

The gas station along SR 4 in White Rock will not incur any impacts through the redesign of SR 4 or through property acquisition or construction activities. There will be no displacements of existing underground storage tanks on this property.

Based on the information provided by the regulatory authorities, property managers, and field surveys, it is reasonable to assume that none of the build alternates would encounter hazardous materials or waste sites, with the exception of the Chino Mesa Alternate's crossing of Ancho Canyon on LANL property. If this alternate is selected, the current property manager would be responsible for the safe removal and disposal of this material

prior to the New Mexico State Highway and Transportation Department's acquisition of these lands.

2. TRANSPORT OF HAZARDOUS MATERIALS AND WASTE

One of the purposes of the proposed project is to provide for the safer transport of hazardous materials to and from Los Alamos. The means by which the proposed project would meet this objective include designing a transportation facility which meets or exceeds AASHTO roadway design standards and locating the new highway to avoid the more populated portion of the metropolitan Santa Fe area. Using desirable design standards (versus minimum design standards) the safety of the highway will be maximized and accident potential minimized.

Concern has been expressed over the potential for hazardous materials accidents and resulting damages to areas and the population in the vicinity of the proposed project. Previous research efforts have been undertaken on the transport of hazardous materials and the various mechanisms needed to ensure the safety of hazardous waste transport. Documentation prepared for the "Santa Fe Relief Route - Finding of No Significant Impact (FONSI)" included a discussion of the transport of these materials.²⁹ Because the southern portion of the Santa Fe Relief Route, from the intersection with the proposed Santa Fe - Los Alamos highway to the intersection with I-25, is the southern terminus for this project, it would accommodate the same hazardous materials. Consequently, the findings of that study are directly applicable to the transport of hazardous materials in this study area. The following paragraphs summarize the key findings of that study.

The transport of hazardous materials, now is routed on St. Francis Drive (US 84-285) through Santa Fe. Chemical materials, especially flammable materials such as gasoline, make up most of the hazardous material transport.

In a one-month survey done by the New Mexico Transportation Department in 1983, approximately 1200 vehicles carrying hazardous materials passed through the Santa Fe. Six of these vehicles carried radioactive materials.

From 1971 to 1983, approximately 1300 hazardous materials incidents on highways were reported in New Mexico according to the U.S. Department of Transportation. Sixty-three percent involved flammable liquids, 25 percent involved corrosives and one incident involved radioactive material (.001 percent of incidents). Two percent (29) of the incidents during this 12-year period occurred in Santa Fe County.

Projected shipments of low-level radioactive waste received at the WIPP site near Carlsbad will vary between four and seven per day. Not all of these will be routed through Santa Fe but at this time, the total number of trucks carrying radioactive materials through Santa Fe is not known. Shipments of low-level radioactive material from LANL to the WIPP site has been estimated at two to three trucks per week.

A new route location in a rural area between Los Alamos and Santa Fe which avoids the currently used urban street system will minimize population exposure to the transport of hazardous materials.

In order to further improve the safety of transporting radioactive hazardous materials, double containment containers, which will be used to transport low-level radioactive waste to the WIPP site in southeastern New Mexico, are being redesigned and tested for added safety. Radioactive materials transported to the WIPP site will have to be in these containers which meet the criteria established. In addition, 49 CFR Section 178 requires by law that transport containers for flammables, corrosives and explosives meet established criteria. Transport containers are inspected by manufacturers to insure containers meet

specifications. In addition, the Transportation Division of the Tax and Revenue Department employs inspectors who enforce safety requirements by inspecting motor carriers. When a truck with violations is found, the truck is ticketed and not allowed to continue until the deficiency is corrected.

In the event that an incident involving hazardous materials occurs, an adopted emergency response procedure would be implemented. The New Mexico Emergency Management Act as amended, which sets forth authority for comprehensive procedures which can be applied statewide by persons responding to a hazardous materials incident. The Hazardous Materials Emergency Response Plan and Procedures Manual describes the "authority, responsibility and organization for management of hazardous materials emergencies in New Mexico" and details procedures for these emergencies. Incidents are coordinated through the State Police and response may involve various state agencies, such as the Environmental Improvement Division, local response teams, private industry and federal response teams. Involvement is dependent upon the nature of the incident.²⁹

V. SECONDARY IMPACTS

Highway improvements may cause indirect or secondary impacts as a result of construction. Secondary impacts cannot be precisely predicted in a quantitative way; however, the extent of these impacts can be generalized from experience gained from construction of similar facilities in similar areas.

The construction of a new highway between Santa Fe and Los Alamos could have an impact on the future of the two communities and the region as a whole. Currently, movement between Santa Fe and Los Alamos via existing SR 4, SR 502, and US 84/285 is viewed as inefficient, time consuming, and indirect. However, implementation of the Build Alternative would substantially improve this movement, thereby improving access to facilities, services, and employment opportunities as well as improving the movement of

goods and services between the two areas.

Based on public meetings held during the course of this project and responses to project surveys, the prospect of improved access in the area is generally supported by commuters coming to Los Alamos from outside the area, by employers and residents of Los Alamos that depend on resources beyond the local area, and by emergency response planners. In contrast with these views, there are those persons and groups that view improved access as the cause for increased traffic volumes, additional development pressure, expanded utilization of local and regional public facilities, and a general loss of isolation for the area. The National Park Service has expressed concern that improved access would generate higher visitation at Bandelier National Monument, negatively impacting the monument.

Increased growth and development as a major secondary impact of the project are not considered substantial. Almost all of the land along the proposed routes is publicly held property. The potential for development in these areas would be very unlikely. In Los Alamos, the potential for this growth is limited due to the lack of large quantities of available developable privately owned land. Some potential exists on lands owned by the San Ildefonso Pueblo for growth and development. In Santa Fe, the areas west and southwest of the city are currently planned for growth over the next several years. Approximately 7,000 dwelling units have been approved or construction but have yet to be built. Actual construction will depend on market and financial conditions. The implementation of this project may accelerate development but planning controls are in place to manage the growth in the area.

The potential for adverse secondary impacts would be least with the No-Build Alternative. This potential would be greater under the Build Alternative and the overall secondary impacts would be essentially equal among the build alternates.

W. CONSTRUCTION IMPACTS

All of the build alternates under consideration would, for the most part, have similar construction impacts. All of the construction impacts listed below would be temporary in nature. Construction activities for the proposed Santa Fe - Los Alamos highway would have air, noise, water quality, traffic flow, and visual impacts for those residents and travelers within the immediate vicinity of the project.

The air quality impact would be temporary and would primarily be in the form of emissions from diesel powered construction equipment and dust from embankment and haul road areas. Air pollution associated with the creation of airborne particles would be effectively controlled through the use of watering or other techniques in accordance with all local laws and ordinances and regulations of the New Mexico State Implementation Plans for Air Quality. In addition, all construction activities would follow the Best Management Practices and NMSHTD Standard Specifications for Road and Bridge Construction.

Noise and vibration impacts would be from the heavy equipment movement and construction activities. General construction noise impacts, such as temporary speech interference for those individuals living, working, or passing near the project, can be expected, particularly from paving operations and from the earth moving equipment during grading operations. Overall, construction noise impacts are expected to be minimal since all alternate alignments generally traverse through low (population) density areas. Considering the relatively short term nature of construction noise, these impacts are not expected to be substantial. To ensure minimal noise impact from highway construction, NMSHTD stipulates in their Standard Specifications for Road and Bridge Construction, specific noise abatement procedures that are to be adhered to on all their construction projects.

A temporary increase in sedimentation and turbidity levels in the waters of the Rio Grande may result from construction activities. The degree of this impact would be relative to storm frequency during construction and the proximity of surface waters to construction activities. Comments received during the coordination process indicate a concern for impacts from stormwater runoff on the Rio Grande and Cochiti Reservoir, both during and after construction. Concern was expressed that this runoff not enter into the river and thereby reduce the quality of the surface waters. Given the erosion and slope stability problems frequently encountered in mountainous terrain, high priority would be given to erosion and sediment control techniques during the final design and construction of the project. Cuts and fills would be required regardless of the build alternate selected. (See Section IV-X). Erosion from cut and fill slopes could potentially result in some siltation into surface waters.

In order to minimize any potential adverse impact caused by construction of the facility, construction of access roads, and bridge construction activities, the contractor will be required to devise an erosion control schedule before work is started. This schedule, which the contractor would be required to follow, would show the time relationship between phases of the work which must be coordinated to reduce erosion and would describe construction practices and temporary erosion control measures which would be used to minimize erosion. In conjunction with the erosion control schedule, the contractor would be required to follow those provisions of the plans and specifications which pertain to erosion and siltation. These contract provisions are in accordance with the erosion control measures as outlined in FHPM 6-7-3-1. Temporary erosion control measures such as the use of berms, dikes, dams, silt basins, silt fences, etc., would be used as needed. The contractor would also be required to comply with any state and local ordinances governing pollution control. This would include adherence to the New Mexico Water Quality Control Commission's "General Standards", including sections 1-102 for A. Stream Bottom

Deposits; B. Floating Solids, Oil, and Grease; E. Plant Nutrients; F. Hazardous Substances; G. Radioactivity; H. Pathogens; and J. Turbidity. Water quality impacts resulting from erosion and sedimentation during construction would be controlled in accordance with the NMSHTD Standard Specifications and through the use of other appropriate Best Management Practices, as recommended by the New Mexico State Water Quality Board, the New Mexico Department of Game and Fish, and the Corps of Engineers.^{1,5} These agencies have requested the following specific mitigation techniques for all likely impacts^{1,5} (See Appendix A, Exhibit 7, and Appendix C, Exhibit 12). These Best Management Practices would be considered for incorporation into the construction phase of the proposed project, as applicable to the final design of the project.

- Measurement of water quality above and below the streamside construction areas would be taken, at Contractor expense, by a trained, independent technician. The results would be reported to the State Water Quality Commission for determination of compliance with state standards.
- No uncured concrete would be placed below the water level and runoff from forms would be contained to prevent contamination of surface water. If construction below the water level is required, pre-cast concrete sections would be used.
- Construction vehicles and motorized equipment would not be serviced or washed at the construction site in the vicinity of receiving surface waters.
- Access roads would be designed to minimize soil erosion and resultant sedimentation of the Rio Grande. Up-slope drainage ditches designed to direct surface runoff into natural sediment settling basins would be constructed.

- Vehicular traffic on temporary access roads would be restricted to essential personnel. Public access would be prohibited.
- No disposal of waste materials would be allowed in any watercourse, perennial or ephemeral.
- All streamside fuel storage areas would be within a berm capable of retaining spilled materials.
- All spills would be reported, as required by state regulation.
- All dry concrete and paving materials would be contained and covered to prevent their becoming airborne.
- Where practicable and feasible, to prevent massive soil erosion along the entire length of the proposed project, all cut-and-fill slopes would be shallow enough to revegetate with a U.S. Forest Service approved grass/herb/shrub mixture.

Maintenance of traffic and sequence of construction would be planned and scheduled so as to minimize traffic delays throughout the project. Signs would be used where appropriate to provide notice of detours and other pertinent information to the travelling public. The local news media would be notified in advance of road closings (which would not be likely for this project) and other construction related activities which could excessively inconvenience the community so that motorists, residents, and businesses could plan their day and travel routes in advance.

Access to all businesses and residences would be maintained to the extent practical through controlled construction scheduling.

Traffic delays would be controlled to the extent possible where many construction operations are in progress at the same time.

For the residents living near the proposed highway right of way, some of the materials stored for the project may be displeasing visually; however, this would be a temporary condition and should pose no substantial problem in the short-term. The use of temporary haul roads will require the removal of existing vegetation. This road will be a visual impact during construction. The contractor will be required to restore all haul roads to their original shape and form along with revegetating these areas with native plant species.

In the long-term, the cut and fill areas necessary for the construction of any of the build alternates would permanently alter the existing viewshed. Exhibit IV-13 identifies the locations of the large cut and/or fill sections along each build alternate. The typical sections of these large cut and fill areas are shown on Exhibit IV-14. Under any of the build alternates, the area around the White Rock Canyon crossing would require more extensive cut and fill construction activity. The Mortandad or Sandia Canyon Alternate would require a greater number of cut and fill sections than would either the Montoso or Chino Mesa Alternate. These cut and fill sections would be an unavoidable visual impact to the existing landscape. In order to reduce the degree of impact, the contractor will be required to gently blend in the cut and fill areas with the existing topography, as well as re-vegetate the areas with native plant species.

Construction of the roadway and bridges would require excavation of unsuitable material, placement of embankments and use of materials such as stone, asphaltic concrete, and portland cement concrete. Disposal of debris and waste materials would be in accordance with local and state regulation agencies permitting this operation. The contractor would be responsible for the methods of controlling pollution on haul roads, in borrow pits, and other

materials pits. The NMSHTD will require the contractor to store all petroleum products and any hazardous materials away from all waterbodies and wetlands. No refueling of construction equipment will be permitted in or near a waterbody or wetland area.

A preliminary evaluation of soils within the build alternate corridors was undertaken and is documented in the various geotechnical reports prepared for this project. The preliminary evaluation indicates that these soils would be suitable for use as roadway construction materials. Some soils, such as clayey soils, may require additional treatment in order to be suitable construction materials. However, the additional cost associated with special soils treatment would not be substantial enough to negate the viability of any build alternate. Further soils testing will be undertaken during final design.

Surplus excavation material will be available with the Chino Mesa Alternate west of the Rio Grande. If this alternate is selected, LANL has expressed interest in receiving this excess material for use in leveling a site for a proposed new test facility. Should this not be practical the contractor would be required to find a suitable off-site disposal area for the material. The contractor would be required to grade and vegetate the disposal site. The remaining three alternates do not involve substantial surplus or borrow material.

A temporary work bridge would be required for the Sandia Canyon and Mortandad Alternates. The Montoso Peak and Chino Mesa Alternates, would be constructed from each side of White Rock Canyon toward the midspan. Needed materials would be moved over the partially completed span, so a work bridge would not be required. For the Sandia Canyon and Mortandad Alternates, the work bridge location would cross the river at the site of the previous Buckman bridge, as shown on Exhibit IV-8. The one-half

SANTA FE- LOS ALAMOS CORRIDOR STUDY



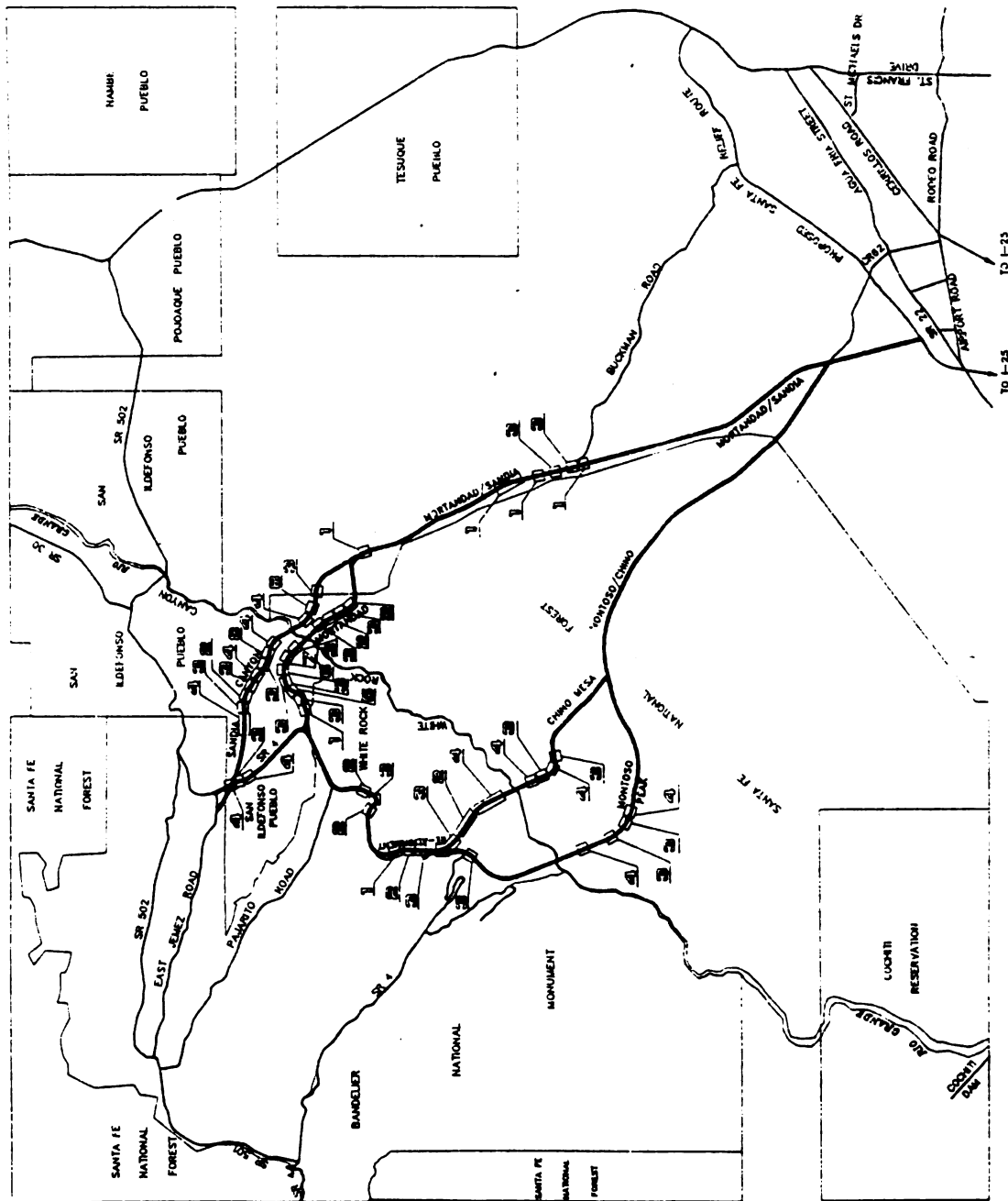
LEGEND

TYPICAL CUT-AND-FILL
SECTION NUMBER
(SEE EXHIBIT IV-14)

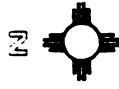
SEGMENT LOCATION

SEGMENTS WITH LAND CUTS AND/OR FILLS

EXHIBIT IV-12



SANTA FE- LOS ALAMOS CORRIDOR STUDY

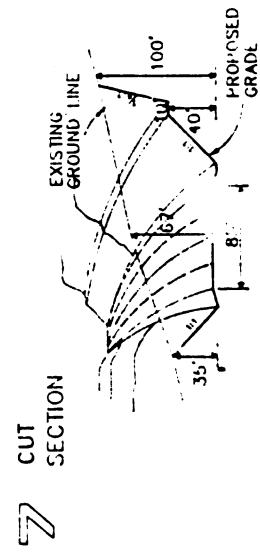
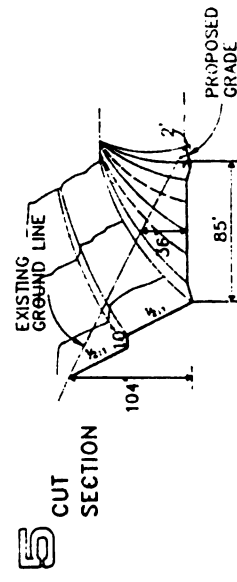
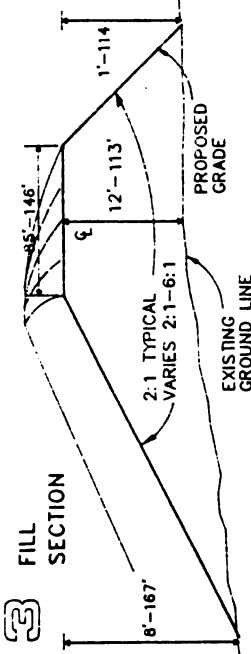
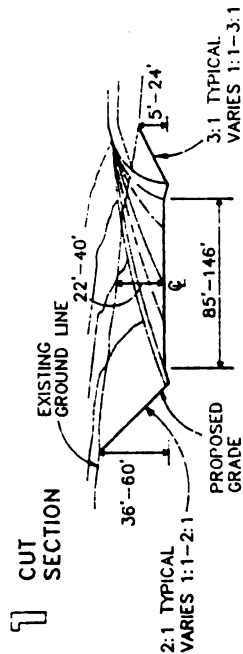
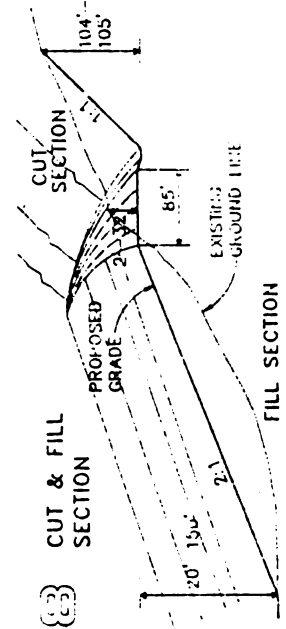
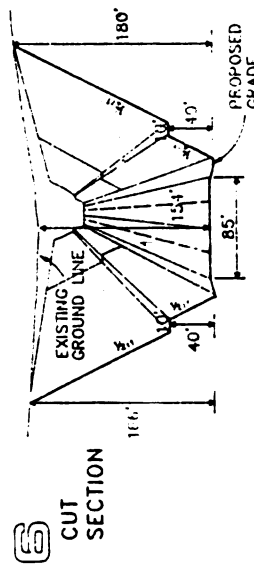
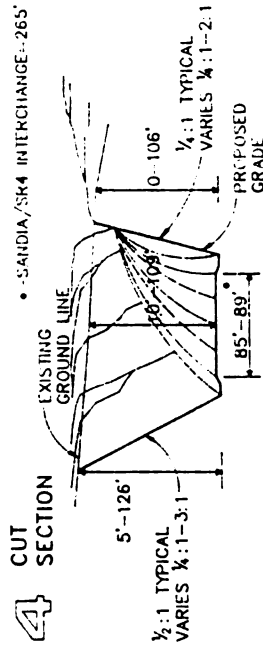
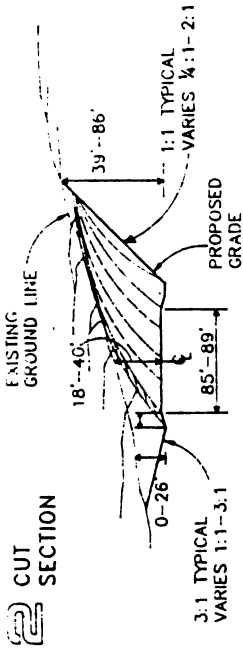


LEGEND

CUT SECTION
LOCATIONS WHERE CROSS SECTIONS APPLY ARE SHOWN ON EXHIBIT 13.

LANDS OUT AND/OR FILL DETAILS

DATE: 11/20/73



acre wetland impact at this site would be mitigated following removal of the construction bridge by revegetating the area with native plant species.

For the work bridge, the stringers typically would be placed about three feet above normal high water and would span from high watermark to high watermark. However, height of the stringers would be controlled by the need for clearance by river pleasure rafters. Piers will be required below the normal high water elevation. The bridge would be needed for approximately three years while construction is taking place. The work bridge will be constructed during river low-water conditions, to minimize turbidity and erosion.

An access road will be required to get to the construction bridge. Temporary easements will be required from adjacent land owners. All fill materials and temporary structures would be removed following construction and all impacted areas would be restored and revegetated.

Construction impacts on existing residential areas along Buckman Road and CR 62 would be minimal. Some increase in traffic along these routes could be anticipated until sufficient work is completed along the highway corridor to permit construction access. This impact would be minimized by requiring the contractor to construct an access road along the highway corridor at the beginning of the project and restricting construction traffic to the access road.

The New Mexico State Highway and Transportation Department's Standard Specifications for Road and Bridge Construction are comprehensive with regard to authorized contractor activities and the need for compliance with all applicable laws, rules, and regulations. Proper enforcement of the specifications would be provided to produce an environmentally sound construction project.

X. RELATIONSHIP OF LOCAL SHORT-TERM USES VERSUS LONG-TERM PRODUCTIVITY

In general, the build alternates would have similar impacts on the local short-term uses of resources and the maintenance and enhancement of long-term productivity.

The construction phase of the project would cause limited adverse effects on man's environment which are deemed to be of short-term nature. There may be siltation of local surface waters during construction; however, careful attention would be given to these problems during design and current requirements for erosion control, siltation, and pollution would be applied. These control measures, both temporary and permanent, would minimize adverse short-term effects and avoid any substantial long-term damage.

The proposed project would be classified as a long-term productive facility. This project, with its desirable design characteristics, would provide for safe and efficient vehicle operation for future, as well as present, traffic volumes. The benefits such as reduced operating costs, reduced travel time, reduced accidents, and general economic enhancement of the area offered by the long-term productivity of this project should more than offset the short-term inconvenience and adverse effects on the human environment.

Y. IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

Implementation of the proposed Build Alternative involves a commitment of a range of natural, physical, human, and fiscal resources. Land used in the construction of the proposed facility is considered an irreversible commitment during the time period that the land is used for a highway facility. However, if a greater need arises for use of the land or if the highway facility is no longer needed, the land can be converted to another use. At present there is no reason to believe such a conversion will be necessary or desirable.

Considerable amounts of fossil fuels, labor, and highway construction materials such as cement, aggregate, and bituminous material would be expended. Additionally, large amounts of labor and natural resources would be used in the fabrication and preparation of construction materials. These materials are generally not retrievable. They are not in short supply, and their use would not have an adverse effect upon continued availability of these resources. Any construction would also require a substantial one-time expenditure of both state and federal funds which are not retrievable.

The commitment of these resources is based on the concept that residents in the immediate area, state, and region would benefit by the improved quality of the transportation system. These benefits would consist of improved accessibility and safety, savings in time, fuel savings, and greater availability of quality services which are anticipated to outweigh the commitment of these resources.

Z. SUMMARY OF MITIGATION MEASURES

The following summarizes the mitigation measures identified throughout Section IV. More detailed mitigation measures would be developed following the selection of a preferred alternative. The contract plans will include specific mitigation measures that must be followed by the contractor.

1. MITIGATION OF RELOCATION IMPACTS

Should either the Mortandad or Sandia Canyon Alternate be selected, the NMSHTD would reimburse the owners of the Santa Fe Ranch for the loss of their well and corral at Dead Dog well.

2. MITIGATION OF SOCIAL IMPACTS

Under either the Mortandad or Sandia Canyon Alternate, increased access to Pueblo and public lands could result in increased trespassing and vandalism. Access control features on Pueblo and public lands will be designed to provide adequate

protection to these lands. The roadway would be designed such that either slopes or fencing would serve as a barrier. At the request of land owners/managers, barrier fences would be provided at selected locations.

3. MITIGATION OF WATER QUALITY IMPACTS

Given the erosion and slope stability problems frequently encountered in mountainous terrain, high priority would be given to erosion and sediment control techniques during the final design and construction of the project. Cuts and fills would be required regardless of the build alternate. Erosion from cut and fill slopes could potentially result in some siltation into surface waters.

In order to minimize any potential adverse impact caused by construction of access roads and bridge construction activities, the contractor will be required to adhere to an erosion control schedule during construction. This schedule would show the time relationship between phases of the work which must be coordinated to reduce erosion and would describe construction practices and temporary erosion control measures which would be used to minimize erosion. In conjunction with the erosion control schedule, the contractor would be required to follow those provisions of the plans and specifications which pertain to erosion and siltation. These contract provisions are in accordance with the erosion control measures as outlined in FHPM 6-7-3-1. Temporary erosion control measures such as the use of berms, dikes, dams, silt basins, silt fences, etc., would be used as needed. The contractor would also be required to comply with any state and local ordinances governing pollution control. This would include adherence to the New Mexico Water Quality Control Commission's "General Standards", including sections 1-102 for A. Stream Bottom Deposits; B. Floating Solids, Oil, and Grease; E. Plant nutrients; F. Hazardous Substances; G. Radioactivity; H. Pathogens; and J. Turbidity.

Both the New Mexico State Water Quality Board and the New Mexico Department of Game and Fish have requested the following specific mitigation techniques for all likely impacts (See Appendix). These techniques would also be incorporated in the construction phase of the proposed project.

- Measurement of water quality above and below the streamside construction areas would be taken, at Contractor expense, by a trained, independent technician. The results would be reported to the State Water Quality Commission for determination of compliance with state standards.
- No uncured concrete would be placed below the water level and runoff from forms would be contained to prevent contamination of surface water. If construction below the water level is required, pre-cast concrete sections would be used.
- Construction vehicles and motorized equipment would not be serviced or washed at the construction site in the vicinity of receiving surface waters.
- Access roads would be designed to minimize soil erosion and resultant sedimentation of the Rio Grande. Up-slope drainage ditches designed to direct surface runoff into natural sediment settling basins would be constructed.
- Vehicular traffic on temporary access roads would be restricted to essential personnel. Public access would be prohibited.
- No disposal of waste materials would be allowed in any watercourse, perennial or ephemeral.

- All streamside fuel storage areas would be within a berm capable of retaining spilled materials.
- All spills would be reported, as required by state regulation.
- All dry concrete and paving materials would be contained and covered to prevent their becoming airborne.
- To prevent soil erosion along the entire length of the proposed project, all cut-and-fill slopes shallow enough to revegetate with a U.S. Forest Service approved grass/herb/shrub mixture will be revegetated.

4. MITIGATION OF WETLAND IMPACTS

Should the Mortandad or Sandia Canyon Alternate be selected, a temporary construction bridge would disturb a 0.5 acre wetland area. Mitigation measures would be to restore the wetland by revegetating all wetland areas which were impacted for construction purposes. All of the Tamarix, a non-native species, would be removed from the work zone during construction and only native plant species would be used for revegetation.

5. MITIGATION OF FLOODPLAIN IMPACTS

Potential impacts incurred with the temporary bridge structure for either the Mortandad or Sandia Canyon Alternate would be mitigated and enhanced through revegetation of native plant species. Fill material placed in the floodplains for construction purposes would be removed upon project completion.

6. MITIGATION OF WILDLIFE IMPACTS

Possible adverse impacts to the genetic viability of the wild horse population, cattle grazing activities, and the possible relocation of the Bighorn sheep would primarily result under either the Montoso or Chino Mesa Alternate. However, under any of the build alternates, these impacts would be mitigated by

the provision of concrete box culvert stock passes at locations designated by BLM, the Forest Service, and San Ildefonso Pueblo. Where practicable and feasible, fencing of the right of way would be designed to funnel animals toward the passages. The NMSHTD would maintain the stock passes as part of the normal highway maintenance program. Water sources would be provided to replace those cut off from current grazing activities. New water sources would be provided in conjunction with the Forest Service to provide for wild horse management needs.

Additional measures to minimize the terrestrial and aquatic ecology impacts would include strict adherence to state erosion and sedimentation controls, selective clearing and grubbing, selective planting of native herb, shrub, and tree species of the habitats impacted, and enhancement of habitat value in the greenbelt.

7. MITIGATION OF THREATENED AND ENDANGERED SPECIES IMPACTS

While avoidance of potential impacts is always preferred to mitigation, it appears none of the build alternates would completely avoid sensitive species.

Selection of the Sandia Canyon or Mortandad Alternates would avoid impacts to the bald eagle and peregrine falcon, and would reduce the potential for whooping cranes colliding with structures. However, these alternates would potentially impact the greatest number of Pediocactus papyracanthus and Mammillaria wrightii, considered threatened under state guidelines.

Minor alignment shifts could be incorporated to avoid the populations of Pediocactus papyrancanthus and Mammillaria wrightii. However, if design shifts are not feasible, then transplanting the species to a preservation area could be warranted. Transplanting would require that a long-term monitoring program be established to ensure the continued survival of the

transplanted specimens.

If the Montoso Peak Alternate is selected, appropriate mitigation of impacts to endangered species will be established through consultation with the U.S. Fish and Wildlife Service.

8. MITIGATION OF HISTORIC AND ARCHAEOLOGICAL PRESERVATION IMPACTS

Further testing of identified sites impacted by the build alternates will be required before appropriate mitigation can be determined. At this time, preservation-in-place does not appear to be warranted for any of the identified sites since they appear to be important only for their information potential. Any mitigation plans would be developed in accordance with SHPO and Advisory Council on Historic Preservation guidelines. Compliance with Section 106 of the National Historic Preservation Act will be maintained.

9. MITIGATION OF VISUAL IMPACTS

In order to minimize or eliminate some of the visual impacts identified for the various alignments, the following mitigation measures will be followed if a build alternate was selected:

- National Park Service landscape architects would be consulted throughout the design of any roadway features or structures which have been identified as having a potential visual impact on National Park lands.
- Final roadway design and engineering would attempt to blend the new road into the existing topography and natural landscape.
- In areas where the alignment would follow an existing road, trail, or utility corridor, the horizontal and vertical alignment of the new road would match the

existing facility to the extent possible within the design criteria.

- Within sensitive viewsheds, the roadway would be depressed, where feasible, and concealed by natural or semi-natural barriers. These barriers would be revegetated to blend into the surrounding scenery.
- Selective clearing of the right of way would be used to minimize the loss of vegetation.
- Beyond the edge of paving, rounded slopes would be utilized to attempt to blend the facility with the natural terrain and surrounding landscape.
- In areas other than rugged terrain, the use of flatter cut and fill slopes would be used. These slopes would be reseeded and landscaped with native plant material to aid in revegetation.
- In areas of rugged terrain, large rock cuts would be evaluated for the best method of construction that produces the least visual intrusion. Opportunities for broken face blasting with staggered benches and flared ends would be included where practicable.
- Construction of natural rock and/or vegetative barrier screens would be used to impede the view of the facility where possible. These barriers would be designed to blend with the surroundings and appear as a natural element in the viewshed.
- For all bridge crossings, particularly those over the Rio Grande, architectural and aesthetic design considerations would be included as part of the final bridge design.

- Bridge design features would be selected on the basis of their ability to blend into the adjacent scenery. This could include unobtrusive paint colors and coating materials or naturally weathering materials.
- Close coordination would be maintained during design with National Park Service, U.S. Forest Service, Bureau of Land Management, Department of Energy, New Mexico State Land Office, Los Alamos National Laboratory, and all interested property owners in the vicinity of any selected alignment.

10. HAZARDOUS WASTE SITE MITIGATION

No hazardous waste sites or materials were identified in any of the alignments field surveyed. Based on discussions with LANL, some slightly radioactive shot-debris may exist in Ancho Canyon, potentially affecting the Chino Mesa Alternate. Should any sites be located within a selected alternate corridor on LANL lands, the Department of Energy would be responsible for the safe removal and disposal. This would occur prior to the NMSHTD's acquisition of these lands.

11. MITIGATION OF CONSTRUCTION IMPACTS

Measures to mitigate construction-related impacts would be the same under any of the build alternates.

a. Air Quality, Noise, and Water

The creation of airborne particles would be effectively controlled through the use of watering or other techniques in accordance with all local laws and ordinances and regulations of the New Mexico State Implementation Plans for Air Quality. In addition, all construction activities would follow the Best Management Practices and NMSHTD Standard Specifications for Road and Bridge Construction in order to minimize noise and water quality impacts.

b. Maintenance of Traffic and Access

Maintenance of traffic and sequence of construction would be planned and scheduled so as to minimize traffic delays throughout the project. Signs would be used where appropriate to provide notice of detours and other pertinent information to the travelling public. The local news media would be notified in advance of road closings (which would not be likely with this project) and other construction related activities which could excessively inconvenience the community so that motorists, residents, and businesses could plan their day and travel routes in advance.

Access to all businesses and residences would be maintained to the extent practical through controlled construction scheduling. Traffic delays would be controlled to the extent possible where many construction operations are in progress at the same time.

c. Visual

Temporary haul roads would require the removal of existing vegetation. The contractor will be required to restore all haul-roads to their original shape and form along with revegetating these areas with native plant species.

d. Debris

Construction of the roadway and bridges would require excavation of unsuitable material, placement of embankments and use of materials such as stone, asphaltic concrete, and portland cement concrete. Disposal of debris and waste materials would be off-site in an approved landfill and no on-site disposal or burial will be permitted. The removal of structures and debris would be in accordance with local and state regulation agencies permitting this operation. The contractor would be responsible for the methods of controlling pollution on haul roads, in borrow pits, and other materials pits. The NMSHTD will require the contractor to store all petroleum products and any hazardous materials away

from all waterbodies and wetlands. No refueling of construction equipment will be permitted in or near a waterbody or wetland area.

Surplus excavation material will be available with the Chino Mesa Alternate west of the Rio Grande. LANL has expressed interest in receiving this excess material for use in leveling a site for a proposed new test facility. Should this not be practical the contractor would be required to find a suitable off-site disposal area for the material. The contractor would be required to grade and revegetate the disposal site. The remaining three alternates do not involve substantial surplus or borrow material.

e. Temporary Bridge

A temporary work bridge would be required for the Sandia Canyon and Mortandad alignments. The Montoso Peak and Chino Mesa alignments would be constructed from each side of White Rock Canyon toward the midspan. Needed materials would be moved over the partially completed span, so a work bridge would not be required. For the Sandia Canyon and Mortandad alignments, the work bridge location would cross the river at the site of the previous Buckman bridge as shown on Exhibit IV-8. The one-half acre wetland impact at this site would be mitigated following removal of the construction bridge by revegetating the area with native plant species.

For the work bridge, the stringers typically would be placed about three feet above normal high water and the bridge would span from high watermark to high watermark. However, height of the stringers would be controlled by the need for clearance by river pleasure rafters. Piers will be required below the normal high water elevation. The bridge would be needed for approximately three years while construction is taking place. The work bridge will be constructed during river low-water conditions, to minimize turbidity and erosion.

An access road will be required to get to the

construction bridge. Temporary easements will be required from adjacent land owners. All fill materials and temporary structures would be removed following construction and all impacted areas would be restored and revegetated.

The New Mexico State Highway and Transportation Department Standard Specifications for Road and Bridge Construction are comprehensive with regard to authorized contractor activities and the need for compliance with all applicable laws, rules and regulations. Proper enforcement of the specifications would be provided to produce an environmentally sound construction project.

SECTION IV. REFERENCES

- 1 Philip B. Mutz, Interstate Stream Engineer, New Mexico Interstate Stream Commission, letter dated March 20, 1990.
- 2 State of New Mexico Water Quality Control Commission, "Water Quality Standards for Interstate and Intrastate Streams in New Mexico" (as amended through March 8, 1988), April 1988.
- 3 U.S. Department of Transportation, Federal Highway Administration, Effects of Highway Runoff on Receiving Waters-Technical Summary, Reports No. FHWA/RD-84/062-066, June, 1987.
- 4 New Mexico State Highway and Transportation Department "Supplemental Traffic Analysis: Santa Fe - Los Alamos Corridor Study", May 1990.
- 5 Harold F. Olson, Director, State of New Mexico, Department of Game and Fish, letter dated November 23, 1987.
- 6 Albia Carlson, Environmental Scientist, New Mexico Environmental Improvement Division, Air Quality Bureau, letter dated March 15, 1990.
- 7 Federal Highway Administration and New Mexico State Highway and Transportation Department, "Draft Environmental Impact Statement: Santa Fe - Los Alamos Corridor Study", July 26, 1988.
- 8 City of Santa Fe, City Council, "Resolution No. 52-1987," November 14, 1987
- 9 John P. Borland and Linda V. Beal, "Water Resources Data-New Mexico: Water Year 1988", U.S. Geological Survey Water-Data Report NM-88-1, 1988.
- 10 U.S. Department of Interior, National Park Service, "The Nationwide Rivers Inventory", January 1982.
- 11 U.S. Department of Interior, National Park Service, "National Wild and Scenic Rivers System Components-New Mexico", 1981.
- 12 Robert E. Meehan, P. E., Chief, Construction-Operations Division, Department of the Army, Albuquerque District Corps of Engineers, letter dated September 29, 1988.
- 13 Tim Sanders, Bureau of Land Management-New Mexico State Office, letter dated May 23, 1990.
- 14 U.S. Travel Data Center, "The Economic Impact of Travel on New Mexico Counties-1987", November 1988.

- 15 U.S. Department of Agriculture, National Forest Service, "Santa Fe National Forest Plan", July 1987.
- 16 Santa Fe County, Board of County Commissioners, "Resolution No. 1987-88", November 14, 1987.
- 17 U.S. Department of Interior, National Park Service, letter dated November 17, 1988.
- 18 U. S. Department of Energy, Los Alamos National Laboratory, "Site Development Plan", Revised Preliminary Draft, August, 1989.
- 19 Federal Emergency Management Agency, National Flood Insurance Program, Community Land Numbers 350069 0075 B, 350069 0175 B, and 350069 0150 B.
- 20 U.S. Department of Agriculture, Soil Conservation Service and Forest Service, "Soil Survey of Santa Fe Area, New Mexico", August 1975.
- 21 U.S. Department of Agriculture, Forest Service, Revised Soils Survey of Santa Fe National Forest-Caja del Rio, January 1989.
- 22 U.S. Department of Energy, Los Alamos Scientific Laboratory, "Soil Survey of Los Alamos County, New Mexico", June 1978.
- 23 U.S. Department of the Interior, Fish and Wildlife Service, "National Wetlands Inventory", on USGS quad sheets Agua Fria, Montoso Peak, White Rock, and Horcado Ranch.
- 24 U.S. Department of the Interior, Fish and Wildlife Service, "Classification of Wetlands and Deepwater Habitats of the United States", December 1979.
- 25 New Mexico State Highway and Transportation Department "Location Hydraulics Study: Santa Fe - Los Alamos Corridor Study", April 1990.
- 26 New Mexico Department of Game and Fish, "Handbook of Species Endangered in New Mexico", 1989.
- 27 New Mexico State Highway and Transportation Department, "Biological Resources Evaluation Report: Santa Fe - Los Alamos Corridor Study", May 1990.
- 28 New Mexico State Highway and Transportation Department, "Hazardous Materials Evaluation Report: Santa Fe - Los Alamos Corridor Study", May 1990.
- 29 Federal Highway Administration, New Mexico State Highway and Transportation Department, "Northwest Santa Fe Relief Route - Finding of No Significant Impact", February 1988.

- 30 New Mexico State Highway and Transportation Department, "Noise Study Report: Santa Fe - Los Alamos Corridor Study", June 1990.
- 31 New Mexico State Highway and Transportation Department, "Visual Impact Assessment: Santa Fe - Los Alamos Corridor Study", June 1990.
- 32 Transportation Research Board, National Research Council, "Highway Capacity Manual", Special Report 209, 1985.
- 33 Federal Manual for Identifying and Delineating Jurisdictional Wetlands, January 1989.
- 34 American Association of State Highway and Transportation Officials, A Policy on Geometric Design of Highways and Streets, 1984.
- 35 New Mexico State Highway and Transportation Department, "Phase C Engineering Report: Corridor Location Study: Santa Fe - Los Alamos Corridor Study", May 1990.
- 36 New Mexico State Highway and Transportation Department, "Phase C Traffic Analysis: Santa Fe - Los Alamos Corridor Study", July 1988.
- 37 U.S. Department of Interior, National Park Service, "Statement for Management: Bandelier National Monument", March 1976.
- 38 Hal Rothman, Bandelier National Monument: Administrative History", Southwest Cultural Resources Center, Professional Papers No. 14. 1988.
- 39 U.S. Department of Interior, National Park Service, "Final Master Plan: Bandelier National Monument", April 1977.
- 40 Federal Highway Administration, "Visual Impact Assessment for Highway Projects", March 1981.
- 41 Santa Fe Extraterritorial Zoning Authority, "Santa Fe Comprehensive Extraterritorial Plan", August 1988.
- 42 Santa Fe Public Transportation Advisory Committee, "Santa Fe Public Transportation Resource Report and Findings ", 1986.
- 43 Los Alamos County, "Los Alamos County Comprehensive Plan", June 1987.

SECTION V

SECTION 4 (f) EVALUATION

V. SECTION 4(f) EVALUATION

23 U.S.C. 138 (Section 4(f) of the DOT Act), states that "no Federal Highway Administration project will use land from a significant publicly owned park, recreation area, wildlife refuge, or any significant historic site unless a determination is made that:

- a. There is no feasible and prudent alternative to the use of land from the property, and
- b. the proposed action includes all possible planning to minimize harm to the property resulting from such use."

None of the Build Alternate alignments will require the acquisition of land from any property covered by the provisions of Section 4(f) of the Transportation Act. However, concerns have been expressed during the course of this study related to impacts to Bandelier National Monument, its separated Tsankawi Ruins Unit, and cultural resources in the vicinity of the build alternates. Primarily, these concerns have focused on air quality impacts, visual intrusions, noise impacts, and impacts due to increased visitation at Bandelier and Tsankawi. These potential proximity impacts have been identified as areas of potential controversy in the Summary section of this SDEIS.

Each of the four alignments being evaluated in this SDEIS has the potential of impacting Bandelier National Monument, the Tsankawi Ruins Unit, and other public parks or recreation areas. Potential impacts to historic and archaeological resources are discussed in Section IV-R of this SDEIS.

This section will 1) describe the proposed action, 2) describe all of the properties in the project area which are, or could be, covered under the provisions of Section 4(f) of the Transportation Act, 3) discuss all of the possible impacts which each Build Alternate may have on the properties, 4) discuss all possible alternatives to avoid the properties, 5) list or

reference feasible measures to minimize harm to the affected properties, and 6) summarize coordination with all agencies having jurisdiction over the properties.

In addition to the avoidance of all of the Section 4(f) properties, none of the Build Alternates will cause a substantial impairment to the value of any of the Section 4(f) properties, in terms of their prior significance and/or enjoyment. None of the proximity impacts are so great that the purposes for which the sites exist are substantially impaired.

A. PROPOSED ACTION

This proposed action is described in the Summary section of this SDEIS. The purpose of, and need for the action is described in Section I of this SDEIS.

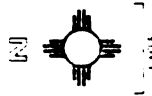
B. SECTION 4(f) PROPERTIES (See Exhibit V-1)

1. BANDELIER NATIONAL MONUMENT

Bandelier National Monument is located south and west of the Montoso Peak Alternate in the southern half of Los Alamos County (see Exhibit V-1). The main body of Bandelier consists of 31,911.2 acres, including the wilderness area, which makes up the greatest portion of the land area. The property is bounded on the north by SR 4, on the east by the Rio Grande, on the south by the Canada de Cochiti Grant, and on the west by public lands under the management of the US Forest Service. Vehicular access to Bandelier National Monument is from SR 4. Although the boundary of the property is fenced, there are pedestrian access points in the wilderness area.

Bandelier National Monument is administered by the National Park Service. This property is listed in the National Register of Historic Places. The Bandelier Visitor Center records show that more than 300,000 people visit the monument annually.

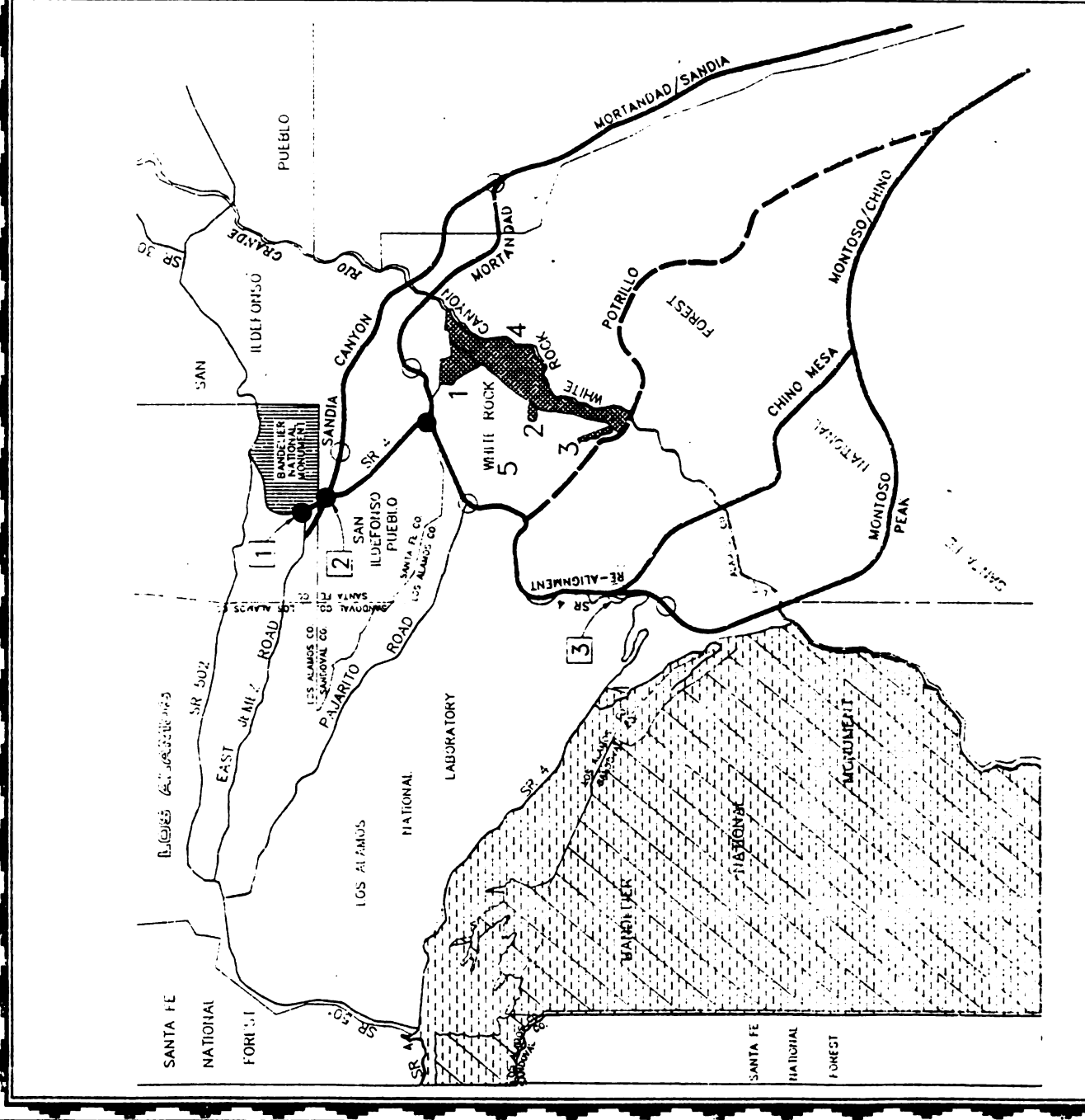
SANTA FE LOS ALAMOS CORRIDOR STUDY



LEGEND

- BANDOLIER NATIONAL MONUMENT
- BANDOLIER NATIONAL MONUMENT
- BLM WILDERNESS AREA
- TSAGAIWAI BURNS UNIT
- CORRIDOR PARKS
- 1 WHITE ROCK OVERLOOK PARK
- 2 LA SENDA HAIHRE PARK & TRAIL HEAD
- 3 WATER CANYON PARK
- 4 RIO GRANDE TRACT
- 5 OTHER COUNTY PARKS IN WHITE ROCK
- PROPOSED ACCESS POINTS
- INTERCHANGE
- AT-GRADE INTERSECTION
- [1] THREE-LEVEL INTERCHANGE WITH MORTANDAD ONLY
- [2] TWO LEVEL INTERCHANGE WITH SANDIA CANYON ONLY
- [3] AT-GRADE INTERSECTION WITH CHICO MESA ONLY
- ALTERNATES
- BUILD ALTERNATES
- POTRILLO ALTERNATE (DISMISSED)

SANTA FE
CORRIDOR
STUDY
PREPARED BY
1980



The central attraction at this location are the extensive ruins with self-guided, interpretive tours. Other activities include hiking, back packing, and picnicking. There are two designated camp grounds on the property. Juniper Campground is located near the intersection of the entrance road and SR 4. This camp ground is developed for use by tenters as well as recreation vehicles, and the usage was approximately 20,300 visitor-nights in 1989. The other camp ground is Ponderosa Campground, and is located near SR 4, 5.5 miles west of the entrance road. This camp ground is designated for use by organized groups on a reservation basis, and the usage was approximately 2,300 visitor-nights in 1989.

The Bandelier Wilderness Area offers hiking, horse pack trips, and camping. Visitors to the wilderness area are required to register and obtain permits to use area. Approximately 3,570 visitors registered to enter and use the wilderness area in 1989.

2. TSANKAWI RUINS UNIT - BANDELIER NATIONAL MONUMENT

The Tsankawi Ruins Unit of Bandelier National Monument is located on SR 4, adjacent to the intersection of SR 4 and East Jemez Road. The area consists of approximately 826 acres. The property is bounded on the north by SR 4 and SR 502, on the west by SR 4, and is bounded on the south and east by lands of the San Ildefonso Pueblo. There is no vehicular access to the Tsankawi Ruins Unit. Visitors currently park in the SR 4 right of way and enter the property through a pedestrian gate.

The Tsankawi Ruins Unit is administered by the National Park Service. This property is listed in the National Register of Historic Places. The Bandelier Visitor Center records show that 41,900 people visited the monument's Tsankawi Ruins Unit in 1989 (nine month figure, the unit was closed in October, November, December).

The central attraction at this location are the unexcavated ruins with self-guided, interpretive tours. There is

a developed trail leading to the Tsankawi Ruins on the top of a central mesa, with the trail returning along the southern aspect of the mesa. The hiking trail is approximately 1.5 miles in length, and permanent ladders are installed in two locations where the trail is steep. The entire unit is open to the public for hiking, however there is only the one developed trail.

Other activities include hiking, back packing, and picnicking. The Tsankawi Ruins Unit closes at dark, and is not available for overnight camping.

3. WHITE ROCK OVERLOOK PARK

The White Rock Overlook Park is located on the northeast corner of the community of White Rock. The area of the park is 156.129 acres, and was granted to Los Alamos County by the Atomic Energy Commission in July of 1967. Vehicular access to the site is by Grand Canyon Drive. The park is administered by Los Alamos County, and features baseball parks, picnicking and an observation platform on the northeast point.

The observation platform at the White Rock Overlook Park is a local and area-wide attraction. From the observation platform and the canyon rim, visitors are afforded a view of the White Rock Canyon of the Rio Grande. The area of the platform is only a few hundred square feet, and it is estimated that the average visit is completed in less than one half hour.

There are no estimates of the number of visitors to the park.

4. LA SENDA NATURE PARK AND TRAIL HEAD

The La Senda Nature Park and Trail Head is located in Pajarito Acres Subdivision No. 2. The area is dedicated for use as a park area. The park is bounded on the north by residential properties along Mariposa Court, on the west by Piedra Loop, on the east by the rim of White Rock Canyon, and on the south by residential properties on Piedra Loop and Bajada Way. The park

area is 6.29 acres. There is no vehicular access to the park. Pedestrians and equestrians enter from Piedra Loop.

There is no estimate of visitor use to this park area.

La Senda Nature Park and Trail Head provides pedestrian and equestrian canyon access near the northeast corner of the subdivision. There are no developed recreational facilities in this area.

5. WATER CANYON PARK

The area known as Water Canyon Park is located at the southern tip of the Pajarito Acres Subdivision No. 2 along the Water Canyon rim and extends to White Rock Canyon. The property is bounded on the north and east by residential properties on Estante Way, Hopi Lane, and Dakota Lane, and on the west and south by the rim of Water Canyon. The area of the property is approximately 18.603 acres. This area was dedicated to public use by the developers of the subdivision in 1965. There is no vehicular access to the property. Pedestrians access the property via an easement between two residential properties from Estante Way.

There is no estimate of visitor use to this park area.

There are no developed recreational facilities in this area.

6. RIO GRANDE TRACT

This property is located east of White Rock and Pajarito Acres Subdivision, and consists of the area below the rim of the White Rock Canyon of the Rio Grande to the west bank of the Rio Grande. The area was granted to Los Alamos County by the United States of America for use as a park in 1972. The park is bounded on the north by the Santa Fe county line, on the west by the canyon rim, on the east by the Rio Grande, and on the south by the bottom of Water Canyon. The park area is 1,120.94 acres. There

is no vehicular access to the park. Pedestrians and equestrians enter from various places along the canyon rim, or from access points elsewhere along the Rio Grande.

There is no estimate of visitor use to this park area.

There are no developed recreational facilities in this area.

7. OTHER PARKS

The following are descriptions of other parks and/or recreation areas in the White Rock or Pajarito Acres area. All of the areas are owned by Los Alamos County.

a. Shirlane Place

" This is a small, unimproved park located northwest of 108 Shirlane Place, in the White Rock No. 2 Subdivision. The area of the park is 0.0974 acre.

b. Pinon Park

This is a developed park located at the intersection of SR 4 and Sherwood, in White Rock. The area of the park is 19.532 acres.

c. Rover Park

This is a developed park located on Rover Boulevard west of Kimberly Lane, in White Rock. The area of the park is 6.235 acres.

d. La Senda Road

This is an unimproved park located on La Senda Road, between 105 and 107 La Senda Road, in the La Senda Subdivision. The area of the park is 0.70 acre.

e. Piedra Loop

This is an unimproved park located at the intersection of Piedra Loop and Sherwood, in the La Senda Subdivision. The area

of the park is 0.80 acre.

f. Pajarito Acres

This is an unimproved park located at the end of Bacabi Lane, in the Pajarito Acres No. 1 Subdivision. The area of the park is 5.084 acres.

g. Mountain Meadows Playlot

This is a playground lot located on Meadow Lane adjacent to Chamisa Elementary School, in the Mountain Meadows No. 2 Subdivision. The area of the playground is 3.30 acres.

h. White Rock Canyon Playlot

This is a playground lot located north of Jeffrey Lane in the White Rock Canyon Subdivision. The area of the playground is 1.595 acres.

C. IMPACTS ON THE SECTION 4(F) PROPERTIES

None of the Build Alternate alignments will require the acquisition of land from any Section 4(f) property.

In the course of an environmental study, there are environmental qualities such as noise impacts and air quality which can be modeled and quantified. These modeling exercises give planners, engineers, and resource managers information with which to make decisions. There are other environmental qualities such as visual intrusions or impacts, the perception of how a new facility will affect the demand on existing recreational facilities, social programs, and the economy which cannot be quantified.

Impacts on the Section 4(f) properties in the study area fall into both of these categories, the quantifiable and the not quantifiable.

Air quality impacts have been modeled for this study, and therefore are quantifiable. Air quality impacts in the project

area are discussed in Section IV-H. There are no areas in any of the Section 4(f) properties which are closer to any of the Build Alternates than several of the air quality analysis sites, nor are there any topographical features which would contribute to CO concentrations that would exceed the National Ambient Air Quality Standards.

Noise impacts have also been modeled and quantified for this study. The construction of any one of the Build Alternates will introduce minor impacts to some of the listed properties. Noise evaluations were conducted within Bandelier National Monument and the Tsankawi Ruins Unit, as well as the White Rock Overlook Park and several properties along SR 4 in White Rock. Results of that evaluation and subsequent analysis indicate that there would be no substantial increase in noise levels at any of the evaluation points for any of the Build Alternates, and Noise Abatement Criteria for Activity Category B would not be equaled or exceeded. See Section IV-I for a discussion of noise impacts.

An assessment of the visual impacts of the various Build Alternates has been made, and is presented in Section IV-T of this SDEIS. Because the perception of visual impacts is dependent upon the viewer's attitudes toward the resource and the viewer's activities while visiting the resource, visual impacts are not as quantifiable as other engineering and environmental data. Further study of the visibility of the four Build Alternates from the listed Section 4(f) properties was performed.

This study consisted of study of topographic mapping to determine areas of the Build Alternate alignments which may be visible from the various Section 4(f) properties, and visits to the properties to verify the visibility of the alignments. The results of this study are described, by Build Alternate, in this section.

The perception of the National Park Service that 1) the construction of either the Chino Mesa Alternate or the Montoso

Peak Alternate will increase demand on the Bandelier National Monument, 2) that the construction of the Sandia Canyon Alternate will increase incidents of vandalism and looting in the Tsankawi Ruins Unit, and 3) that the neighboring property owner will develop their lands in such a way as to increase the visual and noise impacts to Tsankawi are not impacts that can be quantified.

The identified potential impacts are described, by Build Alternate, in this section.

The following is a discussion of each Build Alternate and its anticipated or identified potential impacts on the listed Section 4(f) properties:

1. MONTOSO PEAK ALTERNATE

Visual Impacts: For portions of the Bandelier Wilderness Area, the view toward Montoso Peak would be altered by the Montoso Peak Alternate. The visibility of the Montoso Peak Alternate is limited to three areas of the alignment; 1) the tangent section of the alignment south of Montoso Peak, 2) the eastern portion of the bridge, and 3) the portion of the route crossing Chaquehui Canyon. The visibility of the bridge from the lower portion of Frijoles Canyon is discussed in Section IV-T.

The areas of the wilderness from which the alignment could be visible are the high portions of the mesas between White Rock Canyon and Alamo Canyon, similar areas between Alamo Canyon and Capulin Canyon and the higher areas west of Capulin Canyon. See Exhibit III-1 for location of these natural features. The distances to the visible portions of the alignment vary from 0.35 miles to 8 miles.

The visibility of the alignment is limited by the local topography and the vegetative cover, which ranges from low brush to large pine and juniper trees. Generally, east-facing slopes above 7000 feet in elevation afford a view which will include these portions of the Montoso Peak alignment. From these same

areas, the distant view shed includes portions of the cities of Santa Fe, Los Alamos, and White Rock. Cochiti Dam, the village of Cochiti Lake, and the lights of Albuquerque can be seen from some of the higher areas in the wilderness area where the view opens to the south and southwest.

Increased Visitation Impacts: Increased visitation is a stated concern of National Park Service officials. On frequent occasions during summer months, the number of visitors exceed the capacity of the park.

The location of the Montoso Peak Alternate would improve access to the monument for persons from Santa Fe and points south. This improved access could result in increased attendance at Bandelier National Monument. The added number of visitors attributable to the improved access is difficult to predict, and the increase may be more heavily influenced by the accommodations at the park than by the ease of access. The National Park Service anticipates a 7% yearly increase under the No Build Alternate. By the time that any of the Build Alternates would be open to the public, the capacity of the Bandelier National Monument will have been exceeded. The management agency will have, of necessity, devised capability to accommodate the demand on the facility.

2. CHINO MESA ALTERNATE

Visual Impacts: For limited portions of the Bandelier Wilderness Area, the view toward the east would be altered by the Chino Mesa Alternate. The visibility of the Chino Mesa Alternate is limited to two areas of the alignment; 1) the bridge, and 2) the portion of the route on the north wall of Ancho Canyon. The areas of the wilderness from which the alignment could be visible are the rim of White Rock Canyon south of Frijoles Canyon and the higher areas west of Capulin Canyon. See Exhibit III-1 for location of these natural features. The distances to the visible portions of the alignment vary from 2.3 miles to 6.6 miles.

The visibility of the alignment is limited by the local topography and the vegetative cover, which ranges from low brush to large pine and juniper trees. Generally, east-facing slopes above 7000 feet in elevation afford a view which will include these portions of the Chino Mesa alignment. From these same areas, the distant view shed includes portions of the cities of Santa Fe, Los Alamos, and White Rock. Cochiti Dam, the village of Cochiti Lake, and the lights of Albuquerque can be seen from some of the higher areas in the wilderness area where the view opens to the south and southwest.

Portions of the Chino Mesa Alternate alignment would be visible from the following listed properties:

Water Canyon Park - A portion of the bridge crossing Ancho Canyon, the entire bridge crossing White Rock Canyon, and approximately 2.2 miles of the alignment on the east side of the Rio Grande would be visible from this park area. The nearest view would be that of the Ancho Canyon bridge at 1.2 miles, and the farthest view would be to the alignment northeast of Montoso Peak at 2.7 miles.

Pajarito Acres - Approximately 1.2 miles of the alignment east of the Rio Grande would be visible from this park area. The nearest view is 2.7 miles, and the farthest view is 3.8 miles.

Rio Grande Tract - From portions of this park area, the entire length of both bridges would be visible, as well as 0.75 mile of the alignment on the east side of the Rio Grande. From the southern portion of the park area, the nearest view is of the Ancho Canyon bridge at 1.2 miles and the farthest view of the alignment is 2 miles.

White Rock Overlook Park - From the observation platform, the eastern half of the White Rock Canyon bridge and 2.3 miles of the alignment east of the Rio Grande

would be visible. The nearest view is that of the bridge at 4.6 miles, and the farthest view is that of the alignment to the northeast of Montoso Peak at 4.9 miles.

La Senda Nature Park and Trail Head - A small length of the alignment on the north face of Montoso Peak would be visible from the rim of the canyon in this park area. The distance to the visible portion of the alignment is 2.5 miles.

Tsankawi Ruins Unit - From the south face and rim of the northern mesa, and from the south rim of the Tsankawi Ruins Mesa, a portion of the Chino Mesa Alternate alignment would be visible. The alignment to the northeast of Montoso Peak would be visible from a distance of 7.4 miles.

Increased Visitation Impacts: Increased visitation is a concern of National Park Service officials for the Chino Mesa Alternate as well as for the Montoso Peak Alternate. See the discussion under the Montoso Alternate.

3. MORTANDAD ALTERNATE

Visual Impacts: Portions of the Mortandad Alternate alignment would be visible from the following listed properties:

Rio Grande Tract - From portions of this park area, the entire length of the bridge would be visible. From the northern portion of the park area, the nearest view of the bridge is 0.4 mile.

White Rock Overlook Park - From the observation platform, the entire White Rock Canyon bridge and approximately 0.2 mile of the alignment west of the Rio Grande would be visible. The distances to the bridge and the distance to the visible portion of the alignment are 0.75 mile.

La Senda Nature Park and Trail Head - The Mortandad Alternate bridge would be visible from the La Senda Nature Park and Trail Head. The distance to the bridge from this park area is 2.5 miles.

Tsankawi Ruins Unit - From the south face and rim of the northern mesa, a portion of the Mortandad Alternate alignment would be visible. The alignment crossing the Canada Ancha would be visible from a distance of 4.2 miles. The proposed interchange at SR 4 and East Jemez Road would be adjacent to the Tsankawi Ruins Unit boundary and would be visible from the western face and portions of the southern face of the Tsankawi Ruins mesa. This interchange would also be visible from the northern and western faces of the small mesa in the southwestern corner of the park area. The relocated parking in the northwest corner of the interchange for the Tsankawi Unit would also be visible from this area.

From the developed hiking trail, only a small portion of the alignment would be visible south of the park boundary, as well as the westernmost portion of the interchange. The relocated parking in the northwest corner of the interchange for the Tsankawi Unit would also be visible from the developed trail.

Pinon Park - The intersection with SR 4 would be visible from the higher elevations of this park area. The distance to the intersection is 0.75 mile.

State Road 4 Impacts: The National Park Service has expressed concern that the expansion, or widening of SR 4 will require that the Tsankawi Ruins Unit find an alternate parking area, either within their boundaries or elsewhere. Currently, visitors to the Tsankawi Ruins Unit park on the SR 4 right of way and enter the property through a pedestrian gate.

4. SANDIA CANYON ALTERNATE

Visual Impacts: Portions of the Sandia Canyon Alternate alignment would be visible from the following listed properties:

Rio Grande Tract - From portions of this park area, the entire length of the bridge would be visible. From the northern portion of the park area, the nearest view of the bridge is 0.5 mile.

White Rock Overlook Park - From the observation platform, the entire White Rock Canyon bridge would be visible. The distance to the bridge from the observation platform is 0.85 mile.

La Senda Nature Park and Trail Head - The Sandia Canyon Alternate bridge would be visible from the La Senda Nature Park and Trail Head. The distance to the bridge from this park area is 2.6 miles.

Tsankawi Ruins Unit - The proposed interchange at SR 4 and East Jemez Road would be adjacent to the Tsankawi Ruins Unit boundary and would be visible from the western face and portions of the southern face of the Tsankawi Ruins mesa. This interchange would also be visible from the northern and western faces of the small mesa in the southwestern corner of the park area. The alignment of the Sandia Canyon Alternate would also be visible by hikers along the top of the mesa in the southwestern corner of the park area, the next small mesa immediately east, and to hikers climbing on the western face of the third mesa east of the western boundary. The separated grade crossing of SR 4 would also be visible from these areas.

From the developed hiking trail, only a small portion of the alignment would be visible south of the park boundary, as well as the westernmost portion of the interchange. The relocated parking in the northwest corner of the interchange for the Tsankawi Unit would also be visible from the developed trail.

Vandalism Impacts: The National Park Service has indicated that the increased highway frontage will result in increased vandalism, looting, and damage to cultural and historical resources at the Tsankawi Ruins Unit.

Adjacent Development: The National Park Service has indicated their concern that possible development activities on property adjacent to the Tsankawi Ruins Unit, increasing the visual and noise impacts.

State Road 4 Impacts: The National Park Service has expressed concern that the expansion, or widening of SR 4 will require that the Tsankawi Ruins Unit find an alternate parking area, either within their boundaries or elsewhere. Currently, visitors to the Tsankawi Ruins Unit park on the SR 4 right of way and enter the property through a pedestrian gate.

D. AVOIDANCE ALTERNATIVES

All of the Build Alternates under consideration in this SDEIS avoid the acquisition of land from properties which fall under the provisions of Section 4(f) of the Transportation Act.

The Potrillo Alternate, which was studied in the DEIS, required the taking of land from a Section 4(f) property, and therefore was eliminated from consideration in this SDEIS.

In order to construct any Build Alternate that would meet the criteria set out in Section I, the route will have to pass between, and in some cases, in close proximity to Section 4(f) properties (see Exhibit V-1). Because of the topography, the requirement for a large bridge (or several bridges), the extremely clear air and attendant uninhibited visibility, there is virtually no way to construct any of the build alternates without some minor impacts to a Section 4(f) resource.

In addition to the avoidance of all of the Section 4(f) properties, none of the Build Alternates will cause a substantial impairment to the value to any of the Section 4(f) properties, in

terms of their prior significance and/or enjoyment. None of the proximity impacts are so great that the purposes for which the sites exist are substantially impaired.

E. MEASURES TO MINIMIZE HARM

Mitigation measures are addressed in Section IV of this document.

Site specific measures will be developed through coordination with the National Park Service and Los Alamos County. Locations of impact will be identified and measures to mitigate the impact will be developed. Such measures will include design or alignment adjustments, construction of earth berms, establishment of vegetative screens, utilization of colored and/or textured concrete, establishment of natural revegetation on slopes, rough cut rock slopes, and retaining walls to minimize visible cut slope areas. Replacement parking for the Tsankawi Ruins Unit will be developed, as well as other design features required to improve the operations of Section 4(f) properties impacted.

F. COORDINATION

Coordination with public officials having jurisdiction over the Section 4(f) properties has taken place throughout the study. The location study team has as one of its members the Director of Public Works for Los Alamos County. The National Park Service, as a cooperating federal agency, has been represented at location study team meetings throughout the study. Los Alamos County has given no indication of concern about environmental impacts to the Los Alamos County parks and recreation properties during the course of the location study.

There has been significant expression of concern from the National Park Service, the administration of the Bandelier National Monument, and the U.S. Department of the Interior, Office of Environmental Project Review about the possible impacts to Section 4(f) properties under their jurisdiction.

A summary of the written correspondence received from these agencies follows:

1. U.S. Department of the Interior, National Park Service, Southwest Region, August 19, 1987. This letter appears in the SDEIS as Appendix A, Exhibit 3.
2. U.S. Department of the Interior, National Park Service Bandelier National Monument, March 1, 1988. This letter appears in this SDEIS as Appendix A, Exhibit 1.
3. U.S. Department of the Interior, National Park Service, Southwest Region, March 15, 1988. This letter appears in this SDEIS as Appendix C, Exhibit 1
4. U.S. Department of the Interior, National Park Service, Southwest Region, June 23, 1988. This letter documents meetings between the location team members and the National Park Service personnel in which a new location for parking at the Tsankawi Ruins Unit was discussed. The National Park Services concern over the potential loss of parking (currently on the SR 4 right of way) was recognized, and a possible replacement area was identified. This letter is located in the project files.
5. U.S. Department of the Interior, National Park Service, Southwest Region, July 7, 1988. This letter appears in this SDEIS as Appendix C, Exhibit 1.
6. U.S. Department of the Interior, Office of Environmental Project Review, November 17, 1988. This letter appears in this SDEIS as Appendix B, Exhibit 8.
7. U.S. Department of the Interior, National Park Service, Southwest Region, December 20, 1988. This letter appears in this SDEIS as Appendix C, Exhibit 1.
8. U.S. Department of the Interior, National Park Service, Bandelier National Monument, July 24, 1989. This letter appears in this SDEIS as Appendix C, Exhibit 1.
9. U.S. Department of the Interior, National Park Service, Southwest Region, May 25, 1990. This letter appears in this SDEIS as Appendix C, Exhibit 1.
10. U.S. Department of the Interior, National Park Service, Southwest Region, June 20, 1990. This letter appears in this SDEIS as Appendix C, Exhibit 17.

In addition to coordination with the managing agencies, this Section 4(f) Evaluation has been sent to the State Historic Preservation Office, for their review and comments.

SECTION VI
LIST OF PREPARERS



VI. LIST OF PREPARERS

This document was prepared by the U.S. Department of Transportation, Federal Highway Administration and the New Mexico State Highway and Transportation Department with assistance from H. W. Lochner, Inc., consulting engineers and planners, in cooperation with Andersen Bjornstad Kane Jacobs, Inc.; Sergent, Hauskins, & Beckwith; Cross-Cultural Research Systems; Yomi Enterprises; and Patricia Barlow.

FEDERAL HIGHWAY ADMINISTRATION (FHWA)

Mr. Jack Petring
Area Engineer

B.S. degree in Civil Engineering
with 26 years experience with
FHWA/Bureau of Public Roads.

NEW MEXICO STATE HIGHWAY AND TRANSPORTATION DEPARTMENT (NMSHTD)

Mr. W. L. (Bill) Taylor
Environmentalist

M.S. degree Biology and 17 years
experience with NMSHTD as an
environmentalist.

Mr. David G. Brauer, PE
Project Development
Engineer

B.S. degrees in Forestry and
Agricultural Engineering and
15 years in civil engineering.

H. W. LOCHNER, INC.

Mr. Roy P. Burns, PELS
Project Manager

B.S. degree in Civil Engineering
with 35 years in highway design
and planning.

Mr. Raymond S. Busch, PELS
Highway and Structural
Project Engineer

28 years in highway and bridge
design.

Mr. Herschel C. Conner, Jr.
Chief Environmental Planner

M.S. degree in Urban and
Regional Planning and 17 years
in environmental analysis and
document preparation.

Mr. Roy D. Bruce, PE
Transportation Engineer

M.S. degree in Civil Engineering
and 13 years in highway design
and environmental analysis and
document preparation.

Ms. Susan Manes-Harrison
Environmental Planner

M.S. degree in Natural Resources
Management and 3 years in
environmental analysis and
document preparation.

Mr. David F. Zawada, PE
Environmental Engineer

M.S. degree in Civil Engineering
and 22 years experience in
environmental analysis and
document preparation.

Mr. Bernard F. Guentner, PE
Traffic Engineer

B.S. degree in Civil Engineering
and 31 years experience in
transportation engineering and
planning.

Mr. Karl R. Kratzer
Environmental Scientist

B.S. degree in Biology and 4
years in environmental analysis
and document preparation.

Mr. Jeffrey J. Schlotter
Environmental Planner

M.A. in Anthropology and 3 years
in environmental planning.

Mr. Kenneth M. Brewer, PE
Drainage Engineer

32 years in drainage design
and construction engineering.

Mr. Robert J. Montoya
Highway Designer

32 years in highway design and
drafting.

Mr. Thomas S. Scanlon, Jr.
Environmentalist

M.A. degree in Public
Administration and 28 years in
meteorology and 12 years in
environmental planning.

Mr. Bruce Poster
Economist

B.A. Degree in Economics and 19
years in economics and planning.

ANDERSEN BJORNSTAD KANE JACOBS, INC.

Mr. John H. Clark, PE
Chief Bridge Engineer

Ph.D. in Civil Engineering and
34 years in structures and
bridge design.

SERGEANT, HAUSKINS, & BECKWITH

Mr. Nicholas Korecki, PE
Geotechnical Engineer

B.S. in Civil Engineering and
14 years in geotechnical
engineering.

CROSS-CULTURAL RESEARCH SYSTEMS

Mr. David H. Snow
Archaeologist

M.A. degree in Archaeology and
27 years in archaeology.

YOMI ENTERPRISES

Mr. Terrell H. Johnson
Ornithologist

M.S. in Physics and 12 years in
endangered species habitat
consultation.

PATRICIA L. BARLOW

Ms. Patricia L. Barlow
Biologist

B.S. degree in Science Education
and 4 years in biological survey
and assessment.

SECTION VII

DISTRIBUTION OF
SUPPLEMENTAL DRAFT
ENVIRONMENTAL
IMPACT STATEMENT

VII. DISTRIBUTION

Copies of the Supplemental Draft Environmental Impact Statement have been distributed to the following agencies and organizations:

A. FEDERAL AGENCIES:

1. Bureau of Land Management
2. Bureau of Reclamation
3. National Park Service
4. United States Bureau of Mines
5. United States Fish and Wildlife Service
6. United States Geological Survey
7. Bureau of Indian Affairs
8. United States Army Corps of Engineers
9. United States Department of the Interior
10. United States Forest Service
11. United States Environmental Protection Agency
12. President's Advisory Council on Historic Preservation
13. Rural Electrification Administration
14. United States Department of Energy
15. Los Alamos National Laboratory
16. United States Soil Conservation Service
17. United States Department of Transportation
18. Council on Environmental Quality

B. STATE OF NEW MEXICO:

1. Department of Game and Fish
2. Environmental Improvement Division
3. Governor's Clearing House
4. State Historic Preservation Officer
5. Historic Preservation Division
6. Economic Development and Tourism Department
7. Energy, Minerals and Natural Resources Department
8. State Engineer Office
9. State Land Office
10. State Library
11. Interstate Stream Commission

C. LOCAL AGENCIES:

1. Santa Fe County
2. Los Alamos County
3. Rio Arriba County
4. Sandoval County
5. Middle Rio Grande Council of Governments
6. San Juan Pueblo
7. San Ildefonso Pueblo
8. Santa Clara Pueblo
9. Pojoaque Pueblo
10. Jemez Pueblo
11. Tesuque Pueblo
12. Santo Domingo Pueblo
13. Cochiti Pueblo
14. City of Santa Fe
15. City of Espanola

D. UTILITIES:

1. Public Service Company of New Mexico
2. Plains Electric Generation and Transmission Cooperative, Inc.
3. Gas Company of New Mexico
4. Mountain Bell Telephone Company

E. PRIVATE ORGANIZATIONS:

1. Sierra Club, Rio Grande Chapter
2. Southwestern Research and Information Center
3. New Mexico Archaeological Council
4. Save the Jemez
5. Caja del Rio Gun Club
6. Road Runners Cycling Club
7. Audubon Society
8. New Mexico Trout Association

F. CONGRESSIONAL DELEGATES:

1. Senator Pete V. Domenici
2. Senator Jeff Bingaman
3. Congressman Bill Richardson

SECTION VIII

COMMENTS & COORDINATION

VIII. COMMENTS AND COORDINATION

A Public Involvement Program has been developed and is being carried out as an integral part of this project. The purpose of this program is to establish and maintain communication with the public-at-large and individuals and agencies concerned with the project and its potential impacts. To ensure open communication and agency and public input, and provide a substantial issue identification/problem solving effort, the New Mexico State Highway and Transportation Department (NMSHTD) has carried out a scoping process as required by the Council of Environmental Quality Guidelines.

In an effort to resolve all issues identified, NMSHTD has conducted an extensive interagency coordination and consultation effort, and public participation process. This section of the document details NMSHTD's program to fully identify, address, and resolve all project-related issues identified through the public involvement program.

A. PRE-DEIS EARLY INTERAGENCY COORDINATION

Prior to the circulation of the Draft Environmental Impact Statement (DEIS) on July 26, 1988, considerable coordination with local, state, and federal agencies occurred.

1. SCOPING PROCESS

The scoping process for this project consisted of a formal scoping meeting, a general solicitation of comments through a Notice of Intent, requests for comments from individual agencies, two early public involvement meetings held in the project area, and formation of a Location Study Team to provide input throughout the study process.

A formal scoping meeting was conducted on June 16, 1987 at the New Mexico State Highway and Transportation Department's District 5 Conference Room in Santa Fe. The following agencies were invited and attended the scoping meeting.

- U.S. Department of Energy, Los Alamos Area Office
- (* U.S. Department of Army, Corps of Engineers
- U.S. Department of Interior, Bureau of Indian Affairs and
Bureau of Land Management
- (* U.S. Department of Agriculture, Forest Service, Santa Fe
National Forest

(* Indicates written comments provided during the scoping process.

An informal scoping meeting was conducted with a project overview presented to the agencies in attendance. Their identification of issues occurred through written statements found in Appendix A.

A Notice of Intent to prepare an EIS was published in the Federal Register on July 9, 1987. In response to this Notice, several agencies responded in writing identifying major issues and concerns regarding the project. Additionally, comments were solicited directly from several federal, state, and local agencies having an interest in the project.

The coordination and cooperation of these federal, state, and other agencies throughout the study process is gratefully acknowledged. Comments were solicited directly from the following agencies:

Federal Agencies:

- (* U.S. Fish and Wildlife Service
Bureau of Reclamation
- (* U.S. Environmental Protection Agency
- (* Los Alamos National Laboratory
- (* U.S. Soil Conservation Service
U.S. Geological Survey
- (* U.S. Department of Agriculture, Forest Service
U.S. Department of Interior, Bureau of Land
Management

- U.S. Department of Interior, Bureau of Indian Affairs
(*) U.S. Army, Corps of Engineers
(*) U.S. Department of Interior, National Park Service

State Agencies:

- Economic Development and Tourism Department
Energy, Minerals and Natural Resources Department
(*) Environmental Improvement Division
(*) Department of Game and Fish
(*) State Historic Preservation Officer
State Land Office
New Mexico National Guard
(*) New Mexico Interstate Stream Commission
State Engineer
Department of Commerce and Industry

City and County:

- (*) City of Santa Fe
(*) County of Santa Fe
(*) County of Los Alamos

Indian Pueblos:

- (*) Pueblo de San Ildefonso

New Mexico Area Agencies:

- Office of Commissioner of Pueblo Lands
North Central New Mexico Economic Development
District
Tri-Area Association for Economic Development

- (*) Indicates written comments provided during scoping
process.

Further identification of major issues and public concerns occurred at two early public involvement meetings held in Santa Fe and White Rock on June 30, 1987 and July 9, 1987, respectively (See Section VII-B). Finally, a Location Study Team was formed to

provide input to the study process on a continuing basis (See Section IV-A.3). The following paragraphs describe in more detail the participants in and results of the various elements of the scoping process.

2. COOPERATING AGENCIES

The Federal Highway Administration is preparing this SDEIS in cooperation with the following federal agencies:

- U.S. Department of Agriculture, Forest Service
- U.S. Department of Interior, Bureau of Land Management
- U.S. Department of Interior, Bureau of Indian Affairs
- U.S. Army, Corps of Engineers
- U.S. Department of Interior, National Park Service
- U.S. Department of Energy

3. LOCATION STUDY TEAM

A Location Study Team (LST) consisting of representatives from FHWA, the Department, local governments, LANL, San Ildefonso Pueblo, and the consultant was established to assist in the identification of major issues and public concerns and facilitate the exchange of information on a continuing basis throughout the study.

Location Study Team Members:

| Name | Agency |
|-----------------|---|
| Jack Petring | Federal Highway Administration |
| David Brauer | NM State Highway and Transportation Dept. |
| Bill Taylor | NM State Highway and Transportation Dept. |
| Charles Barbee | NM State Highway and Transportation Dept. |
| John Balling | Santa Fe County |
| David Mauthe | Los Alamos County |
| Chuck Lange | City of Santa Fe |
| Ed Sitzberger | Los Alamos National Laboratory |
| Joseph Calabasa | San Ildefonso Pueblo |
| Janet Stephens | NM State Land Office |
| R.P. Burns | H.W. Lochner, Inc. |

The LST met on the following dates, which extend from the Pre-DEIS coordination period to the present.

| | |
|--------------------|-------------------|
| February 14, 1985 | October 7, 1987 |
| March 1, 1985 | November 18, 1987 |
| March 25, 1985 | January 7, 1988 |
| April 22, 1985 | February 18, 1988 |
| May 20, 1985 | April 21, 1988 |
| June 17, 1985 | October, 1988 |
| July 30, 1985 | November 3, 1988 |
| September 10, 1985 | January 11, 1989 |
| October 17, 1985 | June 29, 1989 |
| November 21, 1985 | August 3, 1989 |
| January 14, 1986 | January 23, 1990 |
| March 4, 1986 | March 8, 1990 |
| April 27, 1987 | May 3, 1990 |
| June 16, 1987 | May 16, 1990 |
| July 22, 1987 | June 14, 1990 |
| August 19, 1987 | August 2, 1990 |

4. TECHNICAL ADVISORY COMMITTEE

The Los Alamos National Laboratory (LANL) also established an informal Technical Advisory Committee (TAC), which usually met on a monthly basis. Attendance was open to anyone interested in exchanging information regarding the study and usually consisted of local government technical staff, representatives of homeowner associations, and other local interest groups. Members of the LST frequently attended TAC meetings. The TAC met on the following dates, which extend from the Pre-DEIS coordination period to the present.

| | |
|-------------------|-------------------|
| November 10, 1988 | October 19, 1989 |
| December 15, 1988 | November 16, 1989 |
| January 17, 1989 | January 18, 1990 |
| February 16, 1989 | February 15, 1990 |
| March 16, 1989 | March 15, 1990 |
| April 20, 1989 | April 19, 1990 |

May 18, 1989
June 15, 1989
July 13, 1989
August 17, 1989

May 17, 1990
June 21, 1990
July 19, 1990
August 16, 1990

5. RESPONSE TO EARLY COMMENTS

The following written comments on project-specific issues and concerns were received as a result of the early coordination achieved through the scoping process and prior to circulation of the DEIS. The numbered comments below summarize the correspondence contained in Appendix A.

U.S. DEPARTMENT OF INTERIOR
NATIONAL PARK SERVICE
(Appendix A, Exhibits 1 and 3)

COMMENTS #1 and 4: Visual, air quality, noise, and other proximity impacts upon the Bandelier National Monument, including the Tsankawi Unit, are principal concerns.

RESPONSE: Air quality, noise, and visual impacts are discussed in Section IV-H, I, and T, respectively. Noise and air quality impacts will be minimal. Visual impacts will vary depending upon the alternate and visual resource considered, as discussed in Section IV-T. Proximity impacts upon Bandelier National Monument are described in Section IV-S.

COMMENT #2: The NPS had no objection to the Potrillo Alternate from the standpoint of impacts to Bandelier National Monument.

RESPONSE: This Alternate is no longer under consideration, because of direct impacts to other public parkland in the study area.

COMMENTS #3 AND 6: Archaeological sites outside the Tsankawi Unit's present boundaries are a concern. Coordination with the SHPO to insure consideration of historical and archaeological

services should be accomplished.

RESPONSE: Historic and archaeological resources have been considered in the study process (See Section IV-R). Coordination with the SHPO is documented in Appendix A, Exhibit 17 and Appendix C, Exhibit 16.

COMMENT #5: Potential impacts to Bandelier National Monument, including the Tsankawi Unit, should be analyzed, alternatives discussed, and mitigation recommended.

RESPONSE: The DEIS and this SDEIS comparatively evaluate alternate route locations in terms of their impacts on these properties. Section II describes the build alternates under consideration. Although potential impacts are described throughout Section IV, proximity impacts to Bandelier are summarized in Section IV-S.

COMMENT #7: The EIS should include consideration of impacts on state and local recreation resources.

RESPONSE: Section IV-D, S, and T describes the impact of the proposed action on publicly owned parks and recreation facilities. Coordination with the State Liaison Officer for the Land and Water Conservation Fund and local recreation officials was initiated at the same time as with the National Parks Service. No Section 6(f) land will be used for the proposed improvements.

COMMENT #8: NPS suggests that the State Natural Heritage Program of the New Mexico Natural Resources Department could be helpful in identifying natural resources in the project area.

RESPONSE: All existing data sources, including the Natural Heritage Program were utilized in determining the affected environment.

LOS ALAMOS NATIONAL LABORATORY
(Appendix A, Exhibit 2)

COMMENT: Although the northern alternates are preferred, no problems are anticipated with the Montoso Peak Alternate.

RESPONSE: Comment noted.

PUEBLO OF SAN ILDEFONSO
(Appendix A, Exhibit 4)

COMMENT: Tribal attorneys state that some alternates cross Pueblo aboriginal Indian title lands (not presently within the Pueblo) and that it will be necessary to consider these lands as if they were located within Indian reservation boundaries.

RESPONSE: There is disagreement regarding this claim (See Appendix A, Exhibit 5). The Forest Service maintains that the courts have ruled that title to the lands has been extinguished by actions of the United States, but recognizes that compensation claims, however, have not been settled.

CITY OF SANTA FE
(Appendix A, Exhibits 6 and 11)

COMMENT: The City's resolution endorsed a connection of the Los Alamos Route to the Northwest Santa Fe Relief Route west of the South Meadow Road Extension.

RESPONSE: The location of the proposed Santa Fe - Los Alamos Route's interchange with the Northwest Santa Fe Relief Route will be developed consistent with the resolutions of the City and the County, and will be coordinated with the New Mexico State Land Office.

NEW MEXICO DEPARTMENT OF GAME AND FISH
(Appendix A, Exhibits 7 and 15)

COMMENT #1: The proposed action involves a bridge structure 4,000 feet long supported by 400-foot high piers. It will require a temporary work bridge and access roads parallel to the Rio Grande.

RESPONSE: Alternate bridge structures over the Rio Grande range from 2,790 feet to 4,562 feet in length and 290 feet to 1,020 feet in height. Only the Mortandad and Sandia Canyon Alternates will require a work bridge with access roads.

COMMENT #2: The Rio Grande in the project area is classified as a "marginal coldwater fishery and warmwater fishery" and has associated water quality criteria.

RESPONSE: Water quality impacts are addressed in Section IV-J.

COMMENT # 3: Concern is expressed regarding possible habitat destruction for the Mississippi Silvery Minnow (*Hybognathus nuchalis*), which is a state endangered species, and other native fauna.

RESPONSE: The only construction in the Rio Grande will involve a temporary work bridge, if either the Sandia or Mortandad Alternates are selected, in an area well up-stream from the Cochiti dam and reservoir, where the Silvery Minnow is most likely to be found. No permanent loss of habitat will occur. Minimization and mitigation of construction impacts associated with the temporary bridge are found in Section IV-W. An analysis of faunal impacts is found in Sections IV-P and Q.

COMMENT #4: There is concern regarding construction impacts and several measures to minimize impacts to fishes and their habitat are suggested.

RESPONSE: Construction impacts are discussed in Section IV-W. These impacts will be minimized by strict adherence to the New Mexico State Highway and Transportation Department's Standard Specifications for Road and Bridge Construction.

COMMENT #5: Impacts on fish and wildlife including threatened and endangered should be identified and mitigation measures recommended.

RESPONSE: See Sections IV - P and Q.

COMMENT #6: White Rock Canyon is a potential area for transplanting bighorn sheep, which require wilderness conditions. The proposed project may conflict with this plan.

RESPONSE: Cattle crossing structures and other mitigation measures to be determined through coordination with the Department of Game and Fish will be incorporated into the project's final design, if this proposal to transplant bighorn sheep is implemented (See Section IV-P, Q, and Z).

NEW MEXICO INTERSTATE STREAM COMMISSION
(Appendix A, Exhibit 8)

COMMENT #1: All bridges, especially Mortandad, should be designed to accommodate the operation of Cochiti Reservoir.

RESPONSE: All of the proposed bridge alternates would clear the maximum water surface elevation of the Reservoir.

COMMENT #2: The Federal Water Pollution Control Act should be considered in the design and construction of the facility.

RESPONSE: Potential water quality impacts will be minimized by strict adherence to the New Mexico State Highway and Transportation Department's Standard Specifications for Road and Bridge

Construction.

U.S. DEPARTMENT OF THE ARMY, CORPS OF ENGINEERS
(Appendix A, Exhibit 9)

COMMENT: The requirements for an individual Section 404 permit involve temporary or permanent discharges of dredge or fill material into the Rio Grande.

RESPONSE: None of the alternate bridge structures will require 404 permits. At this time it is anticipated that the temporary work bridge and all the crossings of minor drainages can be constructed under a nationwide permit. However, if the fill requirements and acreage exceed the maximum allowed under the Nationwide Permit, a 404 permit application will be prepared during final design of the selected alternate.

SANTA FE COUNTY
(Appendix A, Exhibit 10)

COMMENT: The County's resolution deals with the City and County's application to BLM for lease of land for recreation and other purposes.

RESPONSE: The location of the proposed Santa Fe - Los Alamos Route has been coordinated with these land use intentions of the City and County.

NEW MEXICO ENVIRONMENTAL IMPROVEMENT DIVISION
(Appendix A, Exhibit 12)

COMMENT: More information regarding the proposed project is required before comments are provided.

RESPONSE: The DEIS and SDEIS provides more detailed information regarding project alternatives and their impacts.

U.S. SOIL CONSERVATION SERVICE
(Appendix A, Exhibit 13)

COMMENT: The proposed project will not impact lands designated by the Farmland Protection Policy Act.

RESPONSE: Comment noted.

U.S. DEPARTMENT OF INTERIOR
FISH AND WILDLIFE SERVICE
(Appendix A, Exhibit 14)

COMMENT #1: The Fish and Wildlife Service has requested that consultation be initiated if the project may affect the federally endangered bald eagle, peregrine falcon, or whooping crane.

RESPONSE: Potential impacts on these species have been studied and the results of this biological assessment have been coordinated with the Fish and Wildlife Service (See Section IV - Q and Appendix C, Exhibit 15. It has been determined that the whooping crane will not be affected by any of the alternates under consideration. Only the Montoso Peak Alternate may impact the bald eagle at a confirmed roost site. The peregrine falcon, however, may be affected by both the Montoso Peak and Chino Mesa alternates. Pursuant to Section 7 of the Endangered Species Act, formal consultation has been initiated for the peregrine falcon, with respect to the Montoso Peak and Chino Mesa Alternates, and for the bald eagle for the Montoso Peak Alternate (See Appendix C, Exhibit 15.

COMMENT #2: Concern was expressed regarding other migratory birds utilizing the Cochiti's reservoir area.

RESPONSE: As discussed in Sections IV-P and Q, migratory patterns carry birds well above White Rock Canyon. All alternates would build bridges at or below the canyon rim and consequently would not interfere with migratory patterns. The upper reaches of the reservoir are currently south of all bridge crossings. None of the bridge alternates would involve permanent construction in the Rio Grande or its adjacent wetlands.

COMMENT #3: Army Corps of Engineers Section 404 permits may be required.

RESPONSE: See Response to Army Corps of Engineers above in this section of the document.

COMMENT #4: Erosion and sedimentation in the Rio Grande is a concern.

RESPONSE: Erosion and sedimentation will be controlled through strict adherence to New Mexico State Highway and Transportation Department's Standard Specifications for Road and Bridge Construction. In addition, special measures will be required of the contractors for any temporary bridges and access roads in the vicinity of the Rio grande (See Section IV-J and W).

U.S. FOREST SERVICE - SANTA FE NATIONAL FOREST
(Appendix A, Exhibits 5 and 16)

COMMENT #1: As noted in Exhibit 5, the Forest Service disagrees with the Tribal Attorneys for the San Ildefonso Pueblo regarding their claim of aboriginal rights to lands within the Santa Fe National Forest.

RESPONSE: Comment noted.

COMMENT #2: The Forest Service is concerned about alternatives which bisect the Caja area, particularly wild horse areas. A new

road would also increase public access to the Forest and result in increased wildlife harassment, off-road vehicle use, and associated impacts.

RESPONSE: The Sandia Canyon and Mortandad Alternates are also being considered and will not split the Santa Fe National Forest. All alternates will be limited access, with access to Forest Service land in the form of locked gates only where desired by the Forest Service. There will be cattle passes for wild horses as necessary on the Montoso Peak and Chino Mesa Alternates (See Sections II-C, and IV-Q.3.

COMMENT #3: Threatened and Endangered plant and animal species should be addressed.

RESPONSE: See Section IV-Q.

COMMENT #4: Permits for archaeological surveys on Forest Service land must be obtained.

RESPONSE: Comment noted.

COMMENT #5: All right-of-way should be fenced.

RESPONSE: The proposed right-of-way will be fenced.

COMMENT #6: Access to National Forest lands should be controlled.

RESPONSE: The facility will be limited access.

STATE HISTORIC PRESERVATION OFFICER
(Appendix A, Exhibit 17)

COMMENT #1: Surveys of the preferred alternate will be required to more precisely determine impacts on Cultural Resources.

RESPONSE: As described in Section IV-R, archaeological surveys have been performed for all of the alternates being considered.

B. PUBLIC INVOLVEMENT MEETINGS

As part of the public involvement process for the Santa Fe - Los Alamos Corridor Study, two informational meetings were held with the general public. The first such meeting was held in Santa Fe on June 30, 1987, at the National Guard Headquarters auditorium. Approximately 105 persons attended, of which twenty-one percent were Hispanic. No other minorities were present. The second informational meeting was held in the community of White Rock on July 9, 1987, at the Pinon Elementary School gymnasium. Approximately 100 persons attended, of which three percent were Hispanic. No other minorities were present.

Both meetings began with introductory remarks given by NMSHTD representatives, followed by presentations made by NMSHTD consultants concerning the engineering and environmental aspects of the study. Once the presentations were completed, the audience was invited to make comments and ask questions about the material presented. The substantive comments generated as a result of both information meetings are listed below, along with responses to those comments.

COMMENT: The location of the connection with the Santa Fe Relief Route (the southern project terminus) should be moved west of the Pinon Hills subdivision.

RESPONSE: The southern project terminus and roadway alignment has been moved west, away from the Pinon Hills subdivision, to a location endorsed by the City and County of Santa Fe. Further alignment shifts may be possible within the highway corridor during final design of the project.

COMMENT: A detailed noise analysis should be conducted.

RESPONSE: A detailed noise analysis has been undertaken as part of this SDEIS (See Section IV-I).

COMMENT: The economic benefits and adverse effects of the proposed project should be described.

RESPONSE: The economic effects, both positive and negative, of the proposed project are described in detail in Section IV- G. Other adverse effects are described in detail throughout Section IV.

COMMENT: The proposed project may not be necessary once the scheduled improvements are made to State Road 4.

RESPONSE: Even with improvements to State Road 4, the need for an additional route remains (See Section I).

COMMENT: The Mortandad Alignment should be extended southwesterly, to I-25. The impact on State Road 14 should be described, as should the relationship of the proposed project to Richards Avenue and the Santa Fe Relief Route.

RESPONSE: The southern terminus of the studies prepared for the proposed project, i.e., I-25 and the Santa Fe Relief Route, was chosen because it would, in effect, function as a continuation of the project, allowing distribution and collection of traffic from several key areas in Santa Fe (See Summary and Section I-B and IV-A). The intersection of the Santa Fe Relief Route and the Santa Fe - Los Alamos highway has been shifted away from the proposed Richards Avenue route. SR 14 impacts are outside of the study area.

COMMENT: The benefit of access to the proposed route by individuals living north of it should be described.

RESPONSE: The primary benefit is in shorter trip lengths and thus reduced travel times (See Section I).

COMMENT: The impact of the Potrillo Alternate on Pajarito Acres should be described.

RESPONSE: The Potrillo Alternate has been eliminated from the study.

COMMENT: The cost of the various bridges under consideration should be compared.

RESPONSE: Such a comparison is presented in Section II and in the Phase C Engineering Report.

COMMENT: The possibility that the project could be designed as a toll facility should be discussed.

RESPONSE: The primary funding source is Federal Aid, which precludes a toll facility (See Section I-A).

COMMENT: Detailed and exact traffic counts are necessary.

RESPONSE: Such counts have been made and are analyzed in the traffic study prepared for use in this SDEIS (See Section IV-A).

COMMENT: An air pollution study should be undertaken and the impact of the transportation of hazardous waste should be analyzed.

RESPONSE: Both air quality and hazardous waste transport have been analyzed and are described in Section IV-H and Section IV-U, respectively.

COMMENT: The traffic impact to Camino La Tierra/Buckman Road should be analyzed.

RESPONSE: Such an analysis has been undertaken and is found in Section IV-A.5.

COMMENT: The impact on the Caja del Rio Gun Club's shooting range should be described.

RESPONSE: Although the Montoso and Chino Mesa Alternates would not directly impact the shooting range, the road will pass through its buffer zone.

COMMENT: An estimate of truck traffic is required.

RESPONSE: Truck traffic data are reported in Section IV-A.1.

COMMENT: The use of Bureau of Land Management and Forest Service land should be described.

RESPONSE: Such a discussion is included in Section IV-D and IV-T.

COMMENT: An analysis of the project's impact on property values should be included.

RESPONSE: The impact of the project on individual property values cannot be determined; however, a general discussion of this issue is found in Section IV-L, F, and G.

COMMENT: Negotiations with Native Americans should be discussed.

RESPONSE: Discussions relating to the involvement of Native American groups are found in Sections IV-D and IV-F.

COMMENT: The safety benefits of the new road should be spelled out.

RESPONSE: Safety issues are addressed in Section I-G.

COMMENT: The impact of the project on the use of the Santa Fe Airport should be discussed.

RESPONSE: Modal interrelationships are discussed in Section I-F.

COMMENT: The potential for residential development along the route should be analyzed.

RESPONSE: Because the project would be a limited-access facility, and because it would be located primarily on Federal lands, the potential for inducement of residential development along the route is slight (See Section IV-D).

C. RESPONSE TO AGENCY COMMENTS ON DEIS

The following written comments from federal, state, and local agencies were received during the circulation of the DEIS. The numbered comments below summarize the substantive comments contained in the correspondence found in Appendix B. Editorial comments are not discussed below, but have been utilized in preparing this SDEIS.

U.S. DEPARTMENT OF TRANSPORTATION
OFFICE OF THE SECRETARY
(Appendix B, Exhibit 1)

COMMENT #1: The status of proposed improvements in Los Alamos west of the junction of SR 4 and the proposed facility should be clarified, and impacts addressed.

RESPONSE: The Status of required improvements to sideroads, including East Jemez Road and Pajarito Road in the Los Alamos area are discussed in Section II-C. Impacts associated with these sideroads are described in Section IV-A.5. The environmental impacts of the Santa Fe Relief Route have been identified and evaluated in a separate EA/FONSI for that project.

COMMENT #2: The Final EIS should include more detailed discussion of the preferred alternative's impacts and mitigation

recommendations.

RESPONSE: This Supplemental DEIS does not contain an identification of a preferred alternative, but does provide more information regarding impacts of all the alternatives on 4(f) resources, endangered species, visual resources, and archaeological sites (See Section IV-Q, R, S, T, and Z).

U.S. FOREST SERVICE - SANTA FE NATIONAL FOREST
(Appendix B, Exhibit 2)

COMMENT #1: The Mortandad Alternate is preferred. Visual and wildlife impacts are a concern with the other alternates.

RESPONSE: The Potrillo Alternate is no longer under consideration. The visual impacts of all alternates are discussed in Section IV-T. The impact of alternates on wild horse herds is described in Section IV-P.

COMMENT #2: The No-Build Alternate will have no visual impact.

RESPONSE: Comment noted.

COMMENT #3: The discussion of vegetation and soils in the Affected Environment chapter should be based on the latest soils mapping done by the Forest Service.

RESPONSE: This information has been utilized in preparing this SDEIS. Also, a preliminary geotechnical study has been performed and was utilized as input.

COMMENT #4: Impact on soil resources should be addressed, including amount of disturbance, and cut-and-fill impacts.

RESPONSE: Soil would be disturbed for pavement for each alternate. The relative amount of soil disturbance for each alternate can be

estimated by considering the relative right-of-way requirements for each Alternate, which are summarized in Table IV-2. Impacts on soil resources will be minimal regardless of the alternate selected (See Section IV-E and W). Cut-and-fill impacts are also described in Section IV-W.

COMMENTS #5, 9, AND 12: Concern is expressed with alternates crossing the Santa Fe National Forest's "L" area, identified by the Forest for semi-primitive, non-motorized uses which would potentially impact wild horse herds.

RESPONSE: The Potrillo Alternate is no longer under consideration. Montoso and Chino Mesa Alternates would cross the "L" area and would require continued coordination with the Forest Service during subsequent stages of project development to incorporate all practical measures to minimize harm to wild horses.

COMMENT #6: The gramma grass cactus (Toumeyia papyracantha) is a concern because it is a candidate species for federal protection.

RESPONSE: As discussed in Section IV-Q, each alternate was field surveyed for this species. Locations of colonies have been identified and the Mortandad and Sandia Alternates would have the greatest impact on these species.

COMMENT #7: Concern is expressed regarding federally listed endangered fauna: bald eagle, peregrine falcon, and whooping crane.

RESPONSE: The concerns raised relative to each of these birds has been addressed in Section IV-Q.

COMMENT #8: The project area is being considered for the introduction of Bighorn Sheep. The Mortandad Alternate would have the least impact, if this proposal is implemented.

RESPONSE: Comment noted. If this proposal is enacted, coordination with the Forest Service will be continued to develop appropriate design features in order to minimize harm to the Bighorn Sheep.

COMMENT #10: Estimates of the number of historic and archaeological sites potentially impacted by each alternate are questioned.

RESPONSE: Field surveys for each alternate were performed as part of the preparation of this SDEIS (See Section IV-R).

COMMENT #11: Concern is expressed with visual impacts associated with cut construction techniques.

RESPONSE: As noted in Sections IV-T and W, during final design, minimization of cut-and-fill impacts will be accomplished by incorporating broken face blasting with staggered benches and flared ends where practical.

COMMENT #12: In addition to box culvert stock passes, mitigation measures should include consideration of fencing changes, water developments, erosion control, revegetation, etc.

RESPONSE: Coordination with the Forest Service will continue during subsequent stages of project development to minimize impacts on wild horses and livestock grazing. The only water development potentially impacted is Dead Dog Well, which is addressed in Section IV-C. New Mexico Standard Specifications for Road and Bridge Construction will minimize erosion impacts, require revegetation, and other techniques to minimize and mitigate construction impacts (See Section IV-W).

U.S. FOREST SERVICE - SOUTHWEST REGION
(Appendix B, Exhibit 3)

COMMENT #1: A biological evaluation of threatened, endangered, and sensitive species on National Forest property should be conducted and coordinated with U.S. Fish and Wildlife Service.

RESPONSE: Threatened, endangered, and sensitive species in the project area are identified in Section III-A.5. The biological evaluation undertaken as part of this Supplemental DEIS is described in Section IV-P and Q.

COMMENT #2: Mitigation measures should be identified in the FEIS.

RESPONSE: Mitigation measures are proposed in this SDEIS and are summarized in Section IV-Z.

U.S. DEPARTMENT OF ARMY - CORPS OF ENGINEERS
(Appendix B, Exhibit 4)

COMMENT #1: Impacts and permits for the temporary work bridge (for Mortandad and Sandia Canyon Alternates only) should be addressed.

RESPONSE: Impacts and permits required for the temporary work bridge cannot be precisely determined at this time, because the contractor will ultimately be responsible. However, as discussed in Section IV-K, L, M, N, and W, maximum impacts of the temporary work bridge and associated access roads have been estimated. Commitments to minimize these impacts have been made. If an individual Section 404 permit is required, the contractor will be responsible for obtaining the permit.

COMMENT #2: Discharges of dredge and fill material outside the ordinary high water mark are not regulated under Section 404.

RESPONSE: Comment noted.

U.S. DEPARTMENT OF ENERGY
LOS ALAMOS AREA OFFICE
(Appendix B, Exhibit 5)

COMMENT #1: Safety analysis should include type of containers used to transport transuranic waste.

RESPONSE: The proposed action is a highway facility. The safety analysis incorporated into this SDEIS is related to the design of this facility, not containers, Safe-Service Vehicles and Trailers, or other issues related to the safe transport of special nuclear materials. DOT regulations (49 CFR 171-178) deal with packaging requirements for safe transport of radioactive materials. The Nuclear Regulatory Commission has completed a final EIS on the Transportation of Radioactive Material by Air and Other Modes. Sections I-G and IV-U discuss the proposed highway facility's role in the safe transport of transuranic wastes.

COMMENT #2: Distinctions between hazardous wastes, hazardous materials, transuranic waste, and nuclear materials should be made.

RESPONSE: This SDEIS has been written with the noted distinctions made. Hazardous wastes and materials are inclusive terms, which can refer to transuranic wastes and nuclear materials, respectively.

COMMENT #3: Hazardous materials are in most cases more hazardous to human health than chemical hazardous waste.

RESPONSE: Comment noted.

COMMENT #4: Impact on public health of transporting transuranic waste is not addressed.

RESPONSE: Refer to the response to Comment #1. All of the Build Alternates will have a beneficial impact in terms of limiting exposure of existing population centers to the transport of

transuranic waste, when compared to the existing condition. (See Section I-G). There is no substantial difference among the Build Alternates in terms of their impact on public health.

COMMENT #5: Purpose and Need for Action needs clarification of project justification, and airport issues.

RESPONSE: Section I has been greatly expanded in this SDEIS. The reference to the Los Alamos airport relates to expansion potential and not cost-efficiency.

COMMENT #6: References should be cited in this document.

RESPONSE: References for each Section have been added.

COMMENT #7: Clarify the use of the term "relatively clean air and water" in Affected Environment section.

RESPONSE: More quantitative information relating existing air and water quality to applicable standards has been added to the SDEIS (See Sections III-A.6, and IV-H and J).

COMMENT #8: Environmental Consequences section should address potential environmental contamination and public exposure issues.

RESPONSE: See response to Comment #1.

COMMENT #9: LANL-related terminology should be clarified.

RESPONSE: Comments noted.

COMMENT #10: What is meant by "White Rock could be avoided at the discretion of DOE"?

RESPONSE: There is an alternative to shipping through White Rock.

COMMENT #11: Is a wetland/floodplain notification needed?

RESPONSE: The Final EIS will contain wetland and floodplain findings.

COMMENT #12: What is justification for statement that the project will reduce the present risks associated with hazardous material transport?

RESPONSE: See Section IV-U.

COMMENT #13: Significance/non-significance of environmental consequences is made by agency decision-maker on the basis of information in environmental document.

RESPONSE: Comment noted.

COMMENT #14: Clarification of discussion in summary regarding degree of impact requiring mitigation is needed.

RESPONSE: It is not contradictory to minimize effects of both severe and minor impacts.

COMMENT #15: Quality of Property Ownership Map should be improved.

RESPONSE: The graphics in the SDEIS have been revised. It should be noted, however, that the scale of these maps does not permit great detail in depicting all boundaries. The conceptual design drawings (plan and profile sheets of the alternatives) at the scales of 1" = 200' and 1" = 500' depict more precise depiction of boundaries.

COMMENT #16: The Floodplain analysis should include base floodplain mapping, address natural and beneficial values of floodplains, and generally comply with E.O. 11988 and E.O. 11990.

RESPONSE: Section IV-N has been revised to include mapping of all floodplain encroachments. Because of the general lack of vegetation in the arroyos which constitute most of the floodplain

encroachments, impacts to natural and beneficial values beyond their hydrologic functions will be minimal. All of the Build Alternates' crossings of the Rio Grande completely span the floodplain, except, as noted in Section IV-L, N, and W, the temporary work bridge required for the Mortandad and Sandia Canyon Alternates.

COMMENT #17: Potrillo Alternate would not qualify for COE's Nationwide Permit.

RESPONSE: This alternate is no longer under consideration.

COMMENT #18: Alternate alignments should be overlain on LANL Site Development Plan.

RESPONSE: In as much as LANL is a member of the Location Study Team and extensive ongoing coordination with LANL has been established, this is not necessary.

LOS ALAMOS NATIONAL LABORATORY
(Appendix B, Exhibits 6 and 7)

COMMENT #1: LANL supports the need for and construction of the proposed facility.

RESPONSE: Comment noted.

COMMENT #2: The Salva Tierra Homeowners Association opposes the improvement and connection of Buckman Road to the Mortandad Alternative.

RESPONSE: The options of not paving and/or not connecting Buckman Road to the proposed facility are evaluated in this SDEIS (See Sections IV-A.5 and IV-I).

COMMENT #3: LANL does not favor any particular alternative.

RESPONSE: Comment noted.

U.S. DEPARTMENT OF THE INTERIOR
OFFICE OF ENVIRONMENTAL PROTECTION REVIEW
(Appendix B, Exhibit 8)

COMMENT #1: Visual and noise impacts associated with the Mortandad Alternate may constitute a constructive use of the Tsankawi Unit of the Bandelier National Monument (BNM).

RESPONSE: Visual and noise impacts on the Tsankawi Unit are discussed in Sections IV-S and I, respectively. Although some visual impacts may occur, no noise impacts are anticipated. The degree of impairment of the function of this BNM unit is not severe, as discussed in Section IV-S, and IV-T and Section V of the SDEIS. Evaluation of these impacts has been coordinated with the National Park Service.

COMMENT #2: The Mortandad Alternate should be redesigned to route the majority of traffic to Pajarito Road.

RESPONSE: This design concept is not viable because Pajarito Road is a LANL facility, which is subject to closure on a periodic basis. The Location Study Team is working closely with the National Park Service Regional Office to minimize any impacts to National Park lands.

COMMENT #3: The Montoso Peak Alternate's bridge over White Rock Canyon would visually impact most users of Frijoles Canyon, and introduce noise impacts into BNM.

RESPONSE: As discussed in Section IV-I, although there would be increases in noise levels, there will be no noise impacts on BNM. As discussed in Section IV-S.2, 90 percent of BNM's visitors use

Frijoles Canyon, but the Montoso Bridge will not be visible from the Visitor's Center. Only the very small number of hikers who take the Falls Trail to the Rio Grande will be able to see this bridge.

COMMENT #4: The Wilderness Area of BNM will be negatively impacted by the Montoso Peak Alternate in terms of visual and noise impacts.

RESPONSE: No noise impacts or air quality impacts as defined by FHWA and NMSHTD will occur (See Sections IV-H and IV-I). Visual impacts may occur in some portions of the Wilderness Area, but will not be experienced throughout the entire portion of BNM devoted to wilderness activities (See Section IV-S).

COMMENT #5: Clean scenic vista are the most vulnerable to new increments of pollution.

RESPONSE: Comment noted. Air quality impacts are discussed in Section IV-4.

COMMENT #6: Montoso Peak Alternate would increase visitation to BNM and significantly impact all park operations and the quality of the visitor experience.

RESPONSE: The impacts to BNM are discussed in Section IV-T.1 and Section V.

COMMENT #7: Concern is expressed about accidents involving hazardous materials and their potential to impact park visitors and employees.

RESPONSE: See Section IV-U for a discussion of the transport of hazardous materials.

COMMENT #8: The Montoso Peak Alternate would constitute constructive use of BNM.

RESPONSE: As described in Section IV-I, S, and T, proximity impacts will not significantly impair the function and purpose of BNM, if the Montoso Peak Alternate were constructed.

COMMENT #9: The Potrillo Alternate would have Section 4(f) involvement.

RESPONSE: For this reason and because of other impacts, this Alternate has been dismissed from further consideration.

COMMENT #10: Several specific comments on the DEIS were attached to DOI's letter.

RESPONSE: Most of those comments were of an editorial nature. All substantive specific comments were summarized in the DOI letter (Appendix B, Exhibit 8). All of the specific editorial comments were utilized in developing this SDEIS.

COMMENT #11: Cultural Resource Surveys should be completed before alternative selection and site significance is coordinated with the SHPO and ACHP.

RESPONSE: As described in Section IV-R, surveys of cultural resources for each alternates have been completed and are being coordinated with the SHPO.

COMMENT #12: Consultation with the U.S. Fish and Wildlife Service (FWS) under Section 7 of the Endangered Species Act may be required for the Montoso and Potrillo Alternates, and appropriate mitigation incorporated into the project.

RESPONSE: The Potrillo Alternate is no longer under consideration. Coordination with FWS regarding all alternates currently under consideration has been initiated (See Appendix C, Exhibit 15). Mitigation measures are addressed in Section IV-Q.3.

COMMENT #13: Section 404 permits may be necessary for the temporary work bridge, and FWS would require several conditions for permit approval.

RESPONSE: As discussed in Section IV-K, if a Section 404 permit is required for the temporary bridge, it will be the responsibility of the contractor to obtain it. As discussed in Section IV-L and X, several mitigation measures will be stipulated in the contract plans by NMSHTD. The contractor would, of course, be required to meet all conditions of the permit required by COE and FWS.

COMMENT #14: The Department of Interior feels that all alternates would have 4(f) impacts, but would approve the Mortandad Alternate, if measures to minimize harm were incorporated.

RESPONSE: The Potrillo Alternate has been dismissed. The proximity impacts of Montoso and Mortandad are not severe, as documented in Section IV-I, IV-S, IV-T, and Section V. The Noise Study indicates that, although increases in noise levels will occur, no noise impacts to BNM would occur. The visual assessments revealed that, although some impacts would occur within the wilderness area, at the end of Falls Trail and at Tsankawi, these impacts will not severely impair the function of these areas (See Section IV-S, IV-T, and Section V).

COMMENT #15: The transport of hazardous materials in the vicinity of Bandelier National Monument is a concern and emergency response procedures should be established.

RESPONSE: The transport of hazardous materials and emergency response procedures are addressed in Section IV-V.2.

U.S. ENVIRONMENTAL PROTECTION AGENCY
(Appendix B, Exhibit 9)

COMMENT #1: With the incorporation of the mitigation measures described in the DEIS, EPA has no objection (Lack of Objection (LO)) to this project.

RESPONSE: Comment noted.

NEW MEXICO STATE CLEARINGHOUSE
REVIEW CERTIFICATION
(Appendix B, Exhibit 10)

COMMENT #1: The proposed action is supported and is not in conflict with state, areawide, or local plans.

RESPONSE: Comment noted.

NEW MEXICO ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
(Appendix B, Exhibit 11)

COMMENT #1: Concern is expressed about impacts to the Gramma Grass Cactus.

RESPONSE: As described in Section IV-Q, each alternate alignment was surveyed for this plant species. The results of the survey did indicate that the Mortandad and Sandia Canyon Alternates would impact this species west of the Rio Grande. Mitigation is proposed if one of these alternates is selected, in the form of alignment shifts and/or transplanting to the greenbelt area.

NEW MEXICO HEALTH AND ENVIRONMENT DEPARTMENT

(Appendix B, Exhibit 12)

COMMENT #1: State clearinghouse form indicates that proposed action is supported.

RESPONSE: Comment noted.

COMMENT #2: Noise impacts and mitigation are not adequately addressed in the DEIS.

RESPONSE: The SDEIS has expanded the noise analysis. Both documents did evaluate the noise sensitive sites that would be impacted by all of the alternates under consideration. The noise study was conducted in accordance with FHWA and NMSHTD procedures, including consideration of abatement measures (See Section IV-I).

COMMENT #3: The discussion of water quality impacts should include vehicular pollutants and salt and foreign soils and sands used in winter maintenance.

RESPONSE: The stormwater management system for the proposed project will be designed in accordance with federal and state standards for long and short term pollution control (See Section IV-J.2).

COMMENT #4: Carbon monoxide (CO) was the only air quality parameter addressed in the DEIS.

RESPONSE: CO is the air quality indicator quantitatively modeled in accordance with FHWA procedures.

COMMENT #5: Construction impacts should be described in more detail.

RESPONSE: Section IV-W expands the DEIS discussion of construction activities and their impacts. This discussion must be general at

this time, because, ultimately the contractor will determine how gravel pit operations and other specific construction activities are conducted.

COMMENT #6: The EIS should address impacts associated with increased housing demand.

RESPONSE: This SDEIS addresses impacts of the proposed highway facility.

COMMENT #7: Non-lead bearing primers and paints should be used for bridges.

RESPONSE: NMSHTD Specifications do not allow lead bearing primers and paints.

COMMENT #8: State Water Quality Standards have been amended.

RESPONSE: Comment noted.

COMMENT #9: Several construction impacts on water quality are identified and requirements for minimization are recommended. These impacts include sedimentation, fuel storage, waste material disposal, and spills.

RESPONSE: These items are usually controlled by the New Mexico Standard Specification for Road and Bridge Construction (See Sections IV-J and W).

COMMENT #10: To prevent soil erosion in the construction zone, revegetation of cut-and-fill slopes should be required.

RESPONSE: Where suitable habitat exists, revegetation will be required (See Section IV-T and W).

NEW MEXICO DEPARTMENT OF GAME AND FISH
(Appendix B, Exhibit 13)

COMMENT #1: Biological field surveys should be conducted for the preferred alternate.

RESPONSE: Biological field surveys, as described in Section IV-Q, were conducted for each of the alternates under consideration in the SDEIS.

NEW MEXICO INTERSTATE STREAM COMMISSION
(Appendix B, Exhibit 14)

COMMENT #1: Comment in addition to those made in July 27, 1987 correspondence (See Appendix A, Exhibit 8).

RESPONSE: Comment noted.

NEW MEXICO OFFICE OF CULTURAL AFFAIRS
HISTORIC PRESERVATION DIVISION
STATE HISTORIC PRESERVATION OFFICER
(Appendix B, Exhibit 15)

COMMENT: The SHPO will review the project after an inventory of the routes has been completed.

RESPONSE: As part of the preparation of the SDEIS, a field survey of each alternate was conducted. The results of this cultural resources inventory, which is summarized in Section IV-R, was submitted to the SHPO for review. This review is documented in Appendix C, Exhibit 16 (pending).

D. PUBLIC HEARINGS

Two public hearings were held for the Santa Fe - Los Alamos Corridor Study. The first was held on August 23, 1988, at the Pinon Elementary School gymnasium in White Rock. The second was held on August 25, 1988, at the National Guard Headquarters auditorium in Santa Fe. The purpose of the hearings was to ensure that interested persons were provided a public forum for the presentation of views regarding the social, economic, and environmental effects of the proposed alternatives.

Approximately 110 persons attended the White Rock hearings; except for one individual who was Native American, no minorities were present. Approximately 135 persons attended the Santa Fe hearing; minority involvement was limited to one Native American individual and eight Hispanic individuals.

The two hearings followed the same format, beginning with opening remarks which included an introduction of the speakers, the objective of the hearing, and the procedure for making official statements. Next, a discussion of the history of the Santa Fe - Los Alamos Study was presented, followed by presentations (augmented with slides) explaining the engineering and environmental aspects of the current corridor study. The engineering presentation focused on alternative alignment locations, bridge types, and costs. The environmental presentation focused on visual impacts, the transport of hazardous materials, cultural resources, and social, economic, and biological resources. The presentation portion of the hearings concluded with a brief statement regarding the right-of-way acquisition process, whereby, upon conclusion, the floor was opened for comments. A summary of the substantive comments made at both hearings, as well as responses to those comments, are presented below.

COMMENT: The Mortandad Alternate is undesirable because its connection with Buckman Road would adversely impact Las Tierras.

RESPONSE: The Location Study Team has voted to eliminate the Buckman Road connection; however, because the County of Santa Fe, who has jurisdiction over Buckman Road, has not endorsed the LST's recommendation, this SDEIS analyzes conditions with and without this connection (See Section IV-A and I).

COMMENT: The Mortandad Alternate is undesirable because it is the most expensive, is the longest, is the only alternative that passes near a growing residential area, and would require a land exchange.

RESPONSE: The Mortandad Alternate is neither the most expensive nor is it the longest (See Section II). While it does pass near a residential area, the impacts of this proximity are minimal (See Section IV-A, I, and T). A land exchange is only one option for right-of-way acquisition through Pueblo lands. Purchase of right-of-way is another option.

COMMENT: The Mortandad Alternate has been pre-selected.

RESPONSE: Although the Mortandad Alternate received the largest number of endorsements prior to the release of the DEIS, a preferred alternate has not been recognized (See Section II) and all alternates presented in this SDEIS are under equal consideration including the No-Build Alternative.

COMMENT: A Buckman Road/Mortandad interchange may be beneficial in handling future traffic volumes.

RESPONSE: A connection to the Mortandad Alternate at Buckman Road is evaluated in this SDEIS (See Section II-C, IV-A, and I).

COMMENT: Meetings should be held between NMSHTD representatives and Las Tierras community groups to discuss the Buckman interchange issue.

RESPONSE: Such meetings took place in October, 1988 (See Section VII-F).

COMMENT: The Potrillo Alternate has several adverse impacts.

RESPONSE: The Potrillo Alternate has been eliminated from further analysis (See Section II-C).

COMMENT: The DEIS does not adequately address the assessment of impacts to the Las Tierras community.

RESPONSE: Impacts on Las Tierras are discussed in Sections IV-A, F, I, and S of this SDEIS.

COMMENT: The Mortandad Alternative should be re-routed to utilize a lower and shorter bridge over the Rio Grande.

RESPONSE: A number of other alignments were studied (See Section II-C). Topographic considerations and the desires of the San Ildefonso Pueblo preclude construction of a low bridge in the Mortandad region. The Sandia Canyon Alternate includes a shorter and lower bridge than would be used for the Mortandad Alternative (See Section II-C).

COMMENT: No matter which alternate is chosen, a new road is not justified because:

- 1) environmental impacts are too severe.
- 2) traffic projections are inaccurate.
- 3) travel time reductions are minimal.
- 4) improvements to SR 4 and SR 502 will negate the need for a new road.
- 5) employment at Los Alamos National Lab will decline.
- 6) scenic areas will be destroyed.

RESPONSE: (1) The environmental impacts of the proposed alternatives have been found to be generally minor (See Section IV-H through Q); (2) The traffic forecast for 2015 is based on the best available data and is considered accurate within the allowable margin of error; (3) Although reducing travel time is not the sole or even primary reason for the project, travel times and distances

will indeed be reduced with the build alternates (See Sections I-B and C, and II); (4) Improvements to SR 4 and to SR 502 have been assumed in analyzing the alternatives under consideration. Such improvements, while improving traffic conditions in the short run, cannot provide the capacity anticipated to be needed in the more distant future (See Section I-C): (5) Los Alamos National Laboratory's employment projections show while future rates of growth in employment will be less than historical rates, total employment will remain at high levels; (6) Visual impacts have been thoroughly analyzed (See Section IV- S). Other aspects of project need are discussed in Section I.

COMMENT: Public transportation should be considered.

RESPONSE: Alternate modes of transportation were evaluated and do not meet the purpose and need for this project (See Section II-B.2).

COMMENT: Trading national forest land for tribal land is unacceptable.

RESPONSE: Acquisition of tribal lands, if required, will be in accordance with all state and federal regulations.

COMMENT: The Montoso Peak Alternate will visually and audibly intrude upon Bandelier National Monument.

RESPONSE: Visual and Noise Impacts of the Montoso Peak Alternate are discussed in Sections IV-I and IV-S. In the event the Montoso Peak Alternate is chosen as the preferred, appropriate measures to minimize harm will be established through coordination and agreement with the National Park Service. Section IV-Z summarizes currently proposed mitigation measures.

COMMENT: There is concern about the potential visual, noise, and air pollution impacts at the southwest portion of the Pinon Hills subdivision.

RESPONSE: Since the roadway would be built behind a low ridge southwest of the houses, it would not create a visual intrusion. A computer modelling exercise undertaken for the projected traffic volumes in the Pinon Hills area indicated that minimal noise levels can be expected (See Section IV-I). Air quality impacts would be insignificant (See Section IV-H).

COMMENT: The impact on land values, traffic congestion, and the quality of life in Santa Fe has not been addressed.

RESPONSE: The impact on land uses has been fully addressed (See Section IV-D); it is not within the purview of this SDEIS to predict possible changes in land values. Likewise, traffic impacts which are pertinent to the Santa Fe - Los Alamos route have been addressed (See Section IV-A), the SDEIS is not meant to include an urban area network analysis. Finally, the impacts upon the quality of life, while not explicitly stated, are incorporated into Section IV-F, "Social Impacts".

COMMENT: Provisions should be made for pedestrian, bicycle, and equestrian use of the road, regardless of the chosen alternate.

RESPONSE: Where an urban cross section through White Rock is used, bicycle lanes adjacent to the outside travel lanes will be provided. Use by pedestrian, equestrian, and bicycle traffic on the remainder of the facility will conform to state regulations.

COMMENT: Money for this road should be spent on schools and education instead of a new road through a pristine area.

RESPONSE: Federal funds have been allocated by the U.S. Congress specifically for the Santa Fe - Los Alamos project and are not available for schools.

COMMENT: Impacts on feeder traffic should be addressed.

RESPONSE: Traffic impacts which are pertinent to the Santa Fe - Los Alamos route have been addressed (See Section IV-A); the SDEIS is not meant to include a complete urban area network analysis.

COMMENT: What guarantee is there from the Department of Energy that Pajarito Road will be kept open?

RESPONSE: There is no guarantee; Pajarito Road is subject to closing at any time, therefore, no project alternates are based on its remaining open.

COMMENT: How imminent is the Santa Fe Relief Route?

RESPONSE: A portion of the Relief Route is under construction, the remainder is in the right-of-way acquisition phase (See Section I).

COMMENT: The alignment should be relocated to the west of the Pinon Hills subdivision.

RESPONSE: The alignment has been relocated west of Pinon Hills (See Appendix A, City of Santa Fe Resolution).

COMMENT: The Montoso Peak Alternate will have many wildlife impacts.

RESPONSE: Each alternate has some potential impact on wildlife. A complete biological assessment has been prepared addressing each alternate (See Section IV-P and Q).

COMMENT: The southern alternates are more circuitous than the northern alternates.

RESPONSE: It is true that the Montoso Peak Alternate is more circuitous than the northern alternates; however, all the alternates, including Montoso, are shorter than the existing route.

COMMENT: If the Mortandad Alternate is selected, it should connect to East Jemez Road instead of at White Rock.

RESPONSE: The Sandia Canyon Alternate, which is similar to Mortandad, does connect to East Jemez Road (See Section II-C).

COMMENT: Noise impacts at Mountain Meadows and White Rock should be analyzed.

RESPONSE: Worst-case noise receptor locations have been analyzed for each alternate (See Section IV-I).

COMMENT: The housing costs referenced in the DEIS are misleading.

RESPONSE: The housing data presented were based on the most current information available from the State Economic Development Department and from the Tourism Department for Los Alamos, Santa Fe, and for Espanola. This information is not included in this SDEIS.

COMMENT: The DEIS lacks back-up data for the points that were made.

RESPONSE: The environmental and engineering studies have been undertaken in accordance with all appropriate regulations and procedures. Technical support documents are available at the New Mexico State Highway and Transportation Department offices, in Santa Fe.

COMMENT: One of the stated primary purposes of the project is to avoid populated areas; the Mortandad route clearly does not do this.

RESPONSE: It is true that a portion of the Mortandad Alternate would be near a residential area; direct impact is avoided, however.

COMMENT: There is no mention of how much hazardous material will be involved with the road, or how dangerous it is, or where and how it will be stored. Also, there is no mention of how many shipments of hazardous materials will be made or of alternate methods of transport.

RESPONSE: The issue of the transport of hazardous materials is addressed in Section IV-U.

The comments listed above represent an aggregation of both the oral comments made at the two public hearings, and of the over one hundred written comments received in the period after the hearings. In addition to the comments presented above, several comments were received which express support for the project. These were not presented in this section because they require no response.

E. POST-HEARING PUBLIC INVOLVEMENT ACTIVITIES

As a result of the public hearings held for the corridor study, the Pajarito Acres Homeowners' Association and La Tierra Homeowners' Association each requested that the Highway Department make a presentation to their members to further discuss the proposed Santa Fe - Los Alamos road.

On October 2, 1988, the Highway Department met with approximately 50 members of the Pajarito Acres Homeowners' Association. The meeting was held at the White Rock municipal building in White Rock. At the meeting, representatives of the Department made a brief presentation which summarized the corridor study and described its conclusions. Following the presentation, the floor was opened for comments and questions. Several questions and concerns were raised.

Several days before the meeting, the Pajarito Acres Association canvassed its members for their opinions regarding the proposed project via a questionnaire. In addition to the comments made at the meeting, the association submitted the results of the

questionnaire to the Department. Of the forty-nine responses received, forty favored improving existing routes and opposed the construction of a new route from Santa Fe to Los Alamos.

On October 18, 1988, the Highway Department met with members of La Tierra Homeowners' Association at the Sheraton Santa Fe Inn Ballroom. Registered attendance was 114 persons, of which two were Hispanic. No other minorities were present. At the meeting, the Department gave a brief presentation concerning proposed options for a Buckman Road connection of the Mortandad Alternate and the results of a traffic analysis for the area. Several comments and concerns were raised at the meeting. In addition, a questionnaire was distributed at the meeting and return was requested by October 25, 1988. A total of 105 responses were received, 57 of which were received by the requested return date. Of the total received, 94 percent expressed opposition to the Mortandad Alternate.

The volume and variety of the comments, questions, and concerns expressed both orally and in writing as a result of the two homeowner association meetings were a strong indication that the public hearings held for the proposed project did not satisfactorily resolve the project's issues for some members of the public.

F. PRE-SDEIS EARLY INTERAGENCY COORDINATION

Subsequent to the decision to develop a Supplemental Draft EIS to address new alternates and other issues raised after the public hearing, federal, state, and local agencies were again directly contacted to solicit their concerns. On May 16, 1990, a special meeting of the LST was held in the NMSHTD's District 5 Conference Room for the purpose of initiating informal dialogue with federal, state, and local agencies who will be commenting on the SDEIS in order to clarify each agency's concerns prior to circulation of this SDEIS. The following agencies and groups actively participated in this meeting.

Los Alamos National Laboratories
New Mexico State Highway & Transportation Dept.
U.S. Forest Service
Federal Highway Administration (Region & Division
Offices)
Santa Fe County
City of Santa Fe
Los Alamos County
New Mexico State Land Office
National Park Service
H.W. Lochner, Inc.

As a result of the early interagency coordination conducted as part of the preparation of this SDEIS, several written comments were received. The following numbered comments summarize the substantive comments received and contained in the correspondence in Appendix C.

U.S. DEPARTMENT OF INTERIOR, NATIONAL PARK SERVICE
SOUTHWEST REGION
(Appendix C, Exhibit 1)

COMMENT #1: Noise studies should include receptors at Bandelier National Monument (BNM) and its Tsankawi Unit. Predicted noise levels should be compared to ambient levels.

RESPONSE: As described in Section IV-I, these receptors have been included in the analysis, which compared ambient noise levels to predicted levels.

COMMENT #2: The NPS is opposed to the Sandia Canyon Alternate because of visual and noise impacts. These proximity impacts may constitute an adverse effect on the Ruins, which are listed on the National Register of Historic Places, and may also represent a constructive use of the Tsankawi Unit.

RESPONSE: The noise and visual impacts associated with the Sandia Canyon Alternate are discussed in Section IV-I and IV-S.

COMMENT #3: The Sandia Canyon Alternate would increase public access and the likelihood of vandalism at Tsankawi.

RESPONSE: Tsankawi currently has direct access to SR 4. Any increase in visitors will follow from increased traffic volumes in the Santa Fe - Los Alamos corridor, which are a function of the geographical distribution of employment and residential growth in the region and will not vary greatly with any of the Build Alternates. Vandalism is an enforcement and park management issue.

COMMENT #4: San Ildefonso Pueblo may allow land uses in the Sandia/SR 4 interchange area which would be incompatible with the Tsankawi Unit.

RESPONSE: Land development on the Pueblo is not subject to other local land development regulations. Pueblo land development would likely be similar with either Mortandad or Sandia Canyon Alternates.

COMMENT #5: Planning studies involving parking alternatives for the Tsankawi Unit have been postponed by NPS.

RESPONSE: FHWA and NMSHTD will continue to coordinate this highway project with the NPS parking needs at Tsankawi.

COMMENT #6: The SDEIS should include an evaluation of the Chino Mesa Alternate's impacts on BNM, including the DOE/BNM Joint Management Area, and the Wilderness Area.

RESPONSE: Impacts on the BNM, including the Joint Management Area, and the Wilderness Area are discussed in Sections IV-D, I, S, and T.

COMMENT #7: A Mortandad alignment which would place a ridge between White Rock and the proposed highway should be evaluated. Mortandad should also utilize Pajarito Road in lieu of E. Jemez Road.

RESPONSE: This alternate alignment was evaluated during the Phase A engineering design studies for this project (See Section II). It was dismissed at the request of San Ildefonso Pueblo because it would impact planned development areas within the Pueblo. Pajarito Road is under LANL's jurisdiction and is subject to periodic closure. Consequently, direct connections to it were not developed.

COMMENT #8: Boundaries for BNM should be corrected.

RESPONSE: Corrections have been made.

COMMENT #9: The Chino Mesa Alternate is not compatible with the Santa Fe National Forest Management Plan. BLM and Bandelier National Monument impacts should be considered separately.

RESPONSE: The relationship of all build alternates to the Santa Fe National Forest Management Plan is discussed in Section IV-D.1, to BLM lands in Section IV-D.2, and Bandelier National Monument in Section IV-D.3 and IV-T.

COMMENT #10: Visual impacts to the Bandelier Wilderness Area needs to be addressed.

RESPONSE: See Section IV-S.3.a.

COMMENT #11: A more detailed social impact evaluation is needed than was contained in the Chino Mesa Phase A report.

RESPONSE: Social impacts, including community cohesion, travel patterns and accessibility, community facilities and services, public safety, and minority and ethnic groups are discussed in

Section IV-F.

COMMENT #12: The impact of the project on Class I air quality values of Bandelier Wilderness should be discussed.

RESPONSE: The worst case analysis of air quality impacts (See Section IV-H) demonstrated that the highest traffic-generated one-hour CO levels would be 1.0 ppm at a receptor along SR 4 in White Rock, well within the 35 ppm National Ambient Air Quality Standards. The Wilderness Area is removed far enough from this location that no appreciable increase in CO levels are projected.

COMMENT #13: A greatly expanded noise analysis is needed.

RESPONSE: See Section IV-I.

COMMENT #14: The impact of accident-related spills on water quality should be addressed.

RESPONSE: See Sections IV-J.2 and IV-U.2.

COMMENT #15: Springs located on the west side of lower White Rock Canyon support unique wetlands.

RESPONSE: This area would not be impacted by any of the build alternates.

COMMENT #16: Several specific comments on a pre-draft version of the DEIS are made. Most of them are of an editorial nature.

RESPONSE: These comments were considered in developing the DEIS, which was circulated on September 15, 1988.

U.S. DEPARTMENT OF AGRICULTURE, FOREST SERVICE
ESPANOLA RANGER DISTRICT
(Appendix C, Exhibit 2)

COMMENT #1: Visual and wildlife impacts are of concern. Mortandad and Sandia Canyon Alternates are favored by the Forest Service.

RESPONSE: Refer to Section IV-P, Q.1, and T. Alternate preferences noted.

COMMENT #2: Sandia Canyon Alternate would have the least impact on the "L" Management Area, designated for semi-primitive non-motorized recreation.

RESPONSE: Comment noted.

COMMENT #3: Both the Sandia Canyon and Mortandad Alternates will impact several utilities and isolate an approximately 400-acre portion of the Santa Fe National Forest, including a planned (1996) Picnic Ground.

RESPONSE: Potential utility impacts to the Buckman Water Management Unit, powerlines, and buried cables (fiber optics) are discussed in Sections III-B, and IV-F). See Section IV-D.1 for a discussion of impacts on the National Forest.

COMMENT #4 & 5: The Chino Mesa and Montoso Peak Alternates would split the "L" management area and would have the greatest impact on wild horse management in the Santa Fe National Forest.

RESPONSE: If one of these alternates is selected, FHWA and NMSHTD would continue to coordinate with the Forest Service in minimizing the facility's impacts on the "L" management area and on wild horse habitat (See Sections IV-Q, S, and Z).

COMMENT #6: All alternates would require adjustments in range allotment management plans, but Mortandad and Sandia Canyon

Alternates would have the least impact.

RESPONSE: Comment noted.

COMMENT #7: The gramma grass cactus may be impacted by the Sandia Canyon Alternate.

RESPONSE: Biological surveys accomplished as part of this SDEIS identified locations of colonies of gramma grass cactus for each alternate, as described in Section IV-Q.2.

COMMENT #8: Impacts on Endangered and Threatened fauna should be evaluated for each alternate. Also, the White Rock Canyon area is being considered by the Forest Service for introduction of the Rocky Mountain Bighorn Sheep.

RESPONSE: Wildlife impacts are discussed in Section IV-P and Q.1.

COMMENT #9: It appears the Sandia Canyon Alternate would have the least visual impact. A visual resource analysis should be conducted for each alternate to determine degree of impact.

RESPONSE: The visual impact analysis is described in Section IV-S. In contrast to the Forest Service's assessment of the Sandia Canyon Alternate's visual impacts, the National Park Service feels that it would negatively impact BNM's Tsankawi Unit (See Appendix C, Exhibit 1).

NEW MEXICO COMMISSIONER OF PUBLIC LANDS

(Appendix C, Exhibit 3)

COMMENT #1: Discrepancy on Santa Fe County mapping may affect location of the proposed facility's interchange with the Santa Fe Relief Route.

RESPONSE: This discrepancy has been resolved and final design of the proposed facility will indicate any required boundary adjustments.

COMMENT #2: The development potential of state lands in the project area is being evaluated and will be provided.

RESPONSE: This information was utilized in Sections III-B.2 and IV-D.

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
(Appendix C, Exhibit 4)

COMMENT: No prime, unique, statewide, or locally important farmlands would be impacted with any of the alternates being considered.

RESPONSE: Comment noted.

NEW MEXICO INTERSTATE STREAM COMMISSION
(Appendix C, Exhibit 5)

COMMENT #1: Water Quality data for a location on the Rio Grande is available.

RESPONSE: This information was utilized in preparing Section IV-J.

COMMENT #2: There are no designated groundwater recharge or sole source aquifers in the study area.

RESPONSE: Comment noted.

NEW MEXICO HEALTH AND ENVIRONMENT DEPARTMENT
ENVIRONMENTAL IMPROVEMENT DIVISION
(Appendix C, Exhibit 6)

COMMENT #1: The study area is classified as being in attainment under the State Implementation Plan for ozone, hydrocarbons, and nitrous oxides.

RESPONSE: Comment noted.

COMMENT #2: Applicable standards for carbon monoxide and particulates is provided.

RESPONSE: This information was used in assessing the project's potential impact on air quality. As discussed in Section IV-H, air quality impacts associated with any of the alternates will be negligible.

NEW MEXICO ENERGY, MINERALS, AND NATURAL RESOURCES DEPARTMENT
(Appendix C, Exhibit 7)

COMMENT: All Build Alternates should be surveyed for the gramma grass cactus and Wright's pincushion cactus.

RESPONSE: These surveys have been accomplished and are documented in Section IV-Q.2.

U.S. DEPARTMENT OF INTERIOR, BUREAU OF LAND MANAGEMENT,
NEW MEXICO STATE OFFICE
(Appendix C, Exhibit 8)

COMMENT: Access to BLM grazing lands should be accommodated in the design of this facility. Dead Dog Well and Corral would be

impacted by the Sandia Canyon and Mortandad Alternates.

RESPONSE: Access needs will be accommodated during final design. Although the facility is being developed as a limited-access highway, locked gates will be provided to accommodate agricultural needs. Relocation of the well and corral is addressed in Section IV-C.

LOS ALAMOS NATIONAL LABORATORY
(Appendix C, Exhibit 9)

COMMENT #1: The Chino Mesa Alternate would encounter radioactive shot debris in Ancho Canyon on LANL property.

RESPONSE: Hazardous waste management programs currently being undertaken by LANL will be responsible for clean-up at this location. If this alternate is selected, FHWA and NMSHTD would request LANL to accomplish this clean-up prior to the initiation of construction.

COMMENT #2: An origin-destination survey was distributed to several Los Alamos area employers. Approximately 10,000 LANL employees and 2,500 other Los Alamos area employees received these surveys; of which 5,303 were returned.

RESPONSE: The survey was tabulated and analyzed as part of the preparation of this SDEIS. The survey results confirmed the assumptions used in developing the project traffic reported in the DEIS and this SDEIS.

U.S. DEPARTMENT OF THE INTERIOR, BUREAU OF LAND MANAGEMENT
(Appendix C, Exhibit 10)

COMMENT: The BLM has no known permitted or non-regulated hazardous waste sites along the routes being studied for the Santa Fe - Los

Alamos Highway.

RESPONSE: This information has been utilized in Section IV-U.

U.S. DEPARTMENT OF AGRICULTURE, FOREST SERVICE
(Appendix C, Exhibit 11)

COMMENT: There are no known hazardous waste sites along any of the Santa Fe - Los Alamos alternative routes on the National Forest Land.

RESPONSE: This information has been utilized in Section IV-U.

STATE OF NEW MEXICO
COMMISSIONER OF PUBLIC LANDS
(Appendix C, Exhibit 12)

COMMENT: To the best of our knowledge, there are no hazardous waste sites on the [state] property.

RESPONSE: This information has been utilized in Section IV-U.

STATE OF NEW MEXICO,
HEALTH AND ENVIRONMENT DEPARTMENT
(Appendix C, Exhibit 13)

COMMENT: Based on the information known to the Hazardous Waste Bureau and what was discerned from the map, it was concluded there are no known hazardous waste sites along any of the proposed routes.

RESPONSE: This information has been utilized in Section IV-U.

SAN ILDEFONSO PUEBLO,
TRIBAL REALTY OFFICER
(Appendix C, Exhibit 14)

COMMENT: There are no known hazardous waste sites on the alignment under study.

RESPONSE: This information has been utilized in Section IV-U.

U.S. DEPARTMENT OF INTERIOR, FISH AND WILDLIFE SERVICE
(Appendix C, Exhibit 15)

COMMENT #1: The greatest potential for impacts to fish and wildlife would occur at the White Rock Canyon crossing. The Montoso Peak and Chino Mesa Alternates would have the greatest potential for impacts to roost sites for the endangered bald eagle and habitat for the endangered peregrine falcon.

RESPONSE: Section IV-Q contains a discussion of threatened and endangered species for each build alternate.

COMMENT #2: Along the Mortandad and Sandia Canyon Alternates at the river a cottonwood and Russian olive riparian gallery has developed and could be impacted by construction activities.

RESPONSE: This area is discussed in Section IV-L. Temporary impacts could result from the construction of a temporary bridge near these two alternates.

COMMENT #3: Formal consultation will be required for the Montoso Peak and Chino Mesa Alternates. No formal consultation will be required for the Mortandad and Sandia Canyon Alternates.

RESPONSE: Comment noted.

U.S. DEPARTMENT OF AGRICULTURE, FOREST SERVICE
SANTA FE NATIONAL FOREST

COMMENT: The Spotted Bat, Mexican Spotted Owl, Flammulated Owl, and Goshawk should be addressed.

RESPONSE: These species are not listed as threatened, endangered, or sensitive by the U.S. Fish and Wildlife Service. However, they are addressed in Section IV-Q.

U.S. DEPARTMENT OF INTERIOR, NATIONAL PARK SERVICE
SOUTHWEST REGION
(Appendix C, Exhibit 17)

COMMENT #1: The discussion of project need should be expanded to include more than savings in travel time and distance, should concentrate on the infeasibility of upgrading existing systems and should demonstrate that natural resource impacts are outweighed by public welfare.

RESPONSE: Section I provides a greatly expanded Project Need discussion, including project history, system linkage, capacity analysis, transportation demand, social demands, economic development, modal interrelationships, roadway deficiencies, and safety considerations. The benefits of the proposed project derives from its satisfaction of the identified needs. Section IV describes the environmental impacts associated with the build alternates. The weighing of the public welfare benefits against the environmental impacts is left to the reviewer of this document.

COMMENT #2: The Sandia Canyon Alternate would have a "high" visual impact on the Tsankawi Unit.

RESPONSE: As discussed in Section IV-T.3, the visual impact assessment performed for this project determined that this impact would be "low", because the roadway is partially hidden in the Canyon, and by intervening hills, because the interchange at SR 4

and East Jemez Road is less complex than Mortandad's, and the existing viewshed is already impacted by SR 4, and other man-made structures.

COMMENT #3: The Mortandad Alternate will have a "high" visual impact on Tsankawi.

RESPONSE: As discussed in Section IV-T.3, although the Mortandad Alternate would have more of an impact than the Sandia Canyon Alternate because of its more complex SR 4/East Jemez Road interchange, it is considered a "moderate" impact, due to more outside visual intrusions in the existing viewshed.

COMMENT #4: The Chino Mesa Alternate will have a "high" visual impact on the Falls Trail/Rio Grande and Wilderness Areas.

RESPONSE: The Chino Mesa Alternate would not be visible from the Falls Trail/Rio Grande area. It is also highly unlikely that it would be visible from the Wilderness Area.

COMMENT #5: The Montoso Peak Alternate would have a "high" visual impact on the Falls Trail/Rio Grande and Wilderness Areas.

RESPONSE: As noted in Section IV-T.3, the Montoso Peak Alternate is not visible from the Falls Trail. However, for the few hikers who do leave the trail and hike along Rio Grande to a point, which is not located in the Bandelier National Monument, the bridge would be visible and have a high impact for them. Because the number of viewers is small, the overall impact is considered "moderate". The Montoso Peak Alternate would not be visible throughout the entire Wilderness Area. Where it does occur, it will be an additional visual intrusion (LANL facilities and residential areas are visible from some areas now), which can be considered a "high" impact, due to the viewers sensitivity and the nature of the viewer's activity.

COMMENT #6: All visual impacts are "high", because protection and interpretation of prehistoric aboriginal ruins and preservation of

the natural setting is the purpose of Bandelier National Monument, and because of substantial viewer sensitivity.

RESPONSE: None of the Alternates would directly utilize land from the National Monument. The visual impacts have been assessed for a variety of user activities, (Section IV-T) and for the most part are not considered "high". Over 90 percent of the 322,000 annual visitors do not go beyond the Visitor Center/Frijoles Canyon area, where the alternates are not visible at all.

COMMENT #7: Potential impacts to the National Monument, including the Tsankawi Unit, should be considered "adverse effects" according to 36 CFR 800.9(6)(3).

RESPONSE: Visual, noise, and air quality impacts are discussed in Sections IV-T, I, and H, respectively.

COMMENT #8: Photographs from strategic points should be used in the visual impact assessment.

RESPONSE: Several photographs from strategic vantage points were used in the visual impact assessment, several of which are contained in this document (Exhibits II-6 through II-12).

COMMENT #9: The Mortandad Alternate would increase noise levels at Tsankawi.

RESPONSE: As shown in Table IV-9, noise levels are not projected to increase at Tsankawi with the Mortandad Alternate. The mainline of the proposed facility interchanges with SR 4 two miles south of Tsankawi. The associated SR 4/East Jemez Road interchange will spread the increased traffic, placing several movements further away from Tsankawi's boundary.

COMMENT #10: The Sandia Canyon Alternate would have significant noise impacts on Tsankawi, because the modelled future year value of 55 dBA is 12 dBA higher than the ambient reading.

RESPONSE: NMSHTD defines substantial noise impact as situations where increases of at least 10 dBA result in noise levels of more than 57 dBA.

COMMENT #11: LANL and NPS would like to revise the design of the Sandia Canyon Alternate's SR 4/East Jemez Road interchange.

RESPONSE: During final design, modifications will be coordinated with LANL and NPS.

COMMENT #12: Cost estimates should include the acquisition of a Pueblo lands where applicable.

RESPONSE: Table IV-4 contains a breakdown of the cost estimate for each build alternate. Right-of-way costs for Mortandad and Sandia Canyon Alternates include the current estimate for acquisition of Pueblo lands.

COMMENT #13: A combination of the Sandia Canyon Alternate west of SR 4 with the Mortandad alignment east of SR 4 should be considered.

RESPONSE: This is not a feasible concept, because the traffic volumes and directional movements associated with the two alternates differ in the SR 4/East Jemez Road area, requiring different interchange designs.

COMMENT #14: Access points to the new highway should be restricted in the vicinity of Tsankawi.

RESPONSE: The facility is proposed as a limited access facility. The San Ildefonso Pueblo has requested access to the Sandia Canyon Alternate's mainline comparable to the proposed lodge access provided on the Mortandad Alternate.

COMMENT #15: Cumulative impacts to Bandelier National Monument should be evaluated.

RESPONSE: Specific impacts are addressed in Sections IV-A through IV-R, and IV-S through IV-W. Cumulative impacts are discussed in Sections IV-T, IV-X, and IV-Y.

G. PRE-SDEIS PUBLIC INFORMATIONAL OPEN HOUSES

As part of the public involvement process for the Supplemental Draft EIS, the informational public open houses were held for the purpose of informing the public of the progress made in the study of the proposed Santa Fe - Los Alamos corridor and to provide a forum for the public to ask questions about the project.

The first open house was held on July 10, 1990, at the Pinon Elementary School gymnasium in White Rock. The second was held on July 12, 1990, in Santa Fe, at the Agua Fria Elementary School gymnasium. Approximately 100 persons attended each open house. Information regarding the project was presented through the use of a continuously-running slide presentation, display graphics, handouts, and one-on-one communication between the public and representatives of the New Mexico State Highway and Transportation Department.

SECTION IX

INDEX

IX. INDEX

| <u>SUBJECT</u> | <u>PAGE NO.</u> |
|-----------------------|---|
| Access Control | I-27, II-16, IV-16, IV-22 |
| Agency Coordination | IV-75, V-17, VIII-1 VIII-19, VIII-44 |
| Air Quality | IV-38 |
| Alternatives | II-1 |
| Aquatic Ecology | IV-74 |
| Archeology | III-25, IV-84, IV-134 |
| Bicycle Facilities | IV-23 |
| Bridges | II-27 |
| Build Alternates | II-18 |
| Communities | III-22 |
| Community Facilities | III-23, IV-34, IV-105, V-2 |
| Community Services | III-23, IV-34 |
| Commuting | IV-16, IV-33 |
| Construction | IV-18, IV-117, IV-136 |
| Costs | IV-18 |
| Cultural Resources | III-25, IV-84 IV-105, IV-134 |
| Design Elements | II-18, IV-18 |
| Ecology | IV-72 |
| Economic Development | I-23, III-27 |
| Economy | III-27, IV-36 |
| Employment | III-27 |
| Endangered Species | III-9, IV-75, IV-133 |
| Environment, Economic | III-27 |
| Environment, Natural | III-1 |
| Environment, Social | III-9 |
| Farmlands | IV-32 |
| Floodplains | IV-62, IV-132 |
| Geology | III-1 |

| <u>SUBJECT</u> | <u>PAGE NO.</u> |
|-----------------------------------|---------------------------------------|
| Groundwater | IV-58 |
| Hazardous Waste and Materials | IV-110, IV-136 |
| Improved Roadway Alternate | II-4 |
| Income | III-30 |
| Land Use | III-13, VI-26 |
| Level of Service | I-17, IV-1 |
| No-Build Alternate | II-6 |
| Noise | IV-39 |
| Park Impacts | IV-105, V-2 |
| Pedestrian Facilities | IV-23 |
| Permits | IV-59 |
| Physiography | III-1 |
| Population | III-9 |
| Project History | I-1 |
| Public Involvement | VIII-15, VIII-36 VIII-43, VIII-160 |
| Relocations | IV-25, IV-129 |
| Right-of-way | IV-18 |
| Roadway Deficiencies | I-26 |
| Safety | I-26, IV-35 |
| Secondary Impacts | IV-115 |
| Section 4(f) Evaluation | V-1 |
| Social Considerations | III-9, IV-33, IV-129 |
| Social Demand | I-23 |
| Soils | III-5 |
| Surface Water | IV-58 |
| Terrestrial Ecology | IV-72 |
| Threatened and Endangered Species | III-9, IV-75, IV-133 |
| Traffic Volumes | I-17, IV-1 |
| Transportation Demand | I-22, IV-1 |
| Transportation Facilities | III-24 |
| Transportation Modes | I-25, II-3 |
| Transportation System Linkage | I-12 |
| Transportation Systems Management | II-2 |

| <u>SUBJECT</u> | <u>PAGE NO.</u> |
|------------------------|----------------------|
| Travel Distance | IV-13 |
| Typical Sections | II-47 |
| Unemployment | III-24, IV-23 |
| Utilities | III-24, IV-23 |
| Vegetation | III-6, IV-72 |
| Visual Impacts | IV-90, IV-134 |
| Water Quality | III-9, IV-58, IV-130 |
| Wetlands | IV-60, IV-132 |
| Wild and Scenic Rivers | IV-72 |
| Wildlife | III-8, IV-72, IV-132 |

APPENDICES

APPENDIX A
PRE-DEIS EARLY COORDINATION CORRESPONDENCE

- EXHIBIT 1 - U.S.Department of Interior, National Park Service,
Bandelier National Monument, March 1, 1988.
- EXHIBIT 2 - Los Alamos National Laboratory, September 23, 1987.
- EXHIBIT 3 - U.S. Department of Interior, National Park Service,
Southwest Region, August 19, 1987.
- EXHIBIT 4 - Leubben and Hughes, Tribal Attorneys for Pueblo of
San Ildefonso, March 31, 1988.
- EXHIBIT 5 - U.S. Department of Agriculture, Forest Service, Santa
Fe National Forest, July 21, 1988.
- EXHIBIT 6 - City of Santa Fe, Resolution No. 1987-52, July 8,
1987.
- EXHIBIT 7 - New Mexico Department of Game and Fish, November 23,
1987.
- EXHIBIT 8 - New Mexico Interstate Stream Commission, July 27,
1987.
- EXHIBIT 9 - U.S. Department o the Army, Albuquerque District
Corps of Engineers, February 10, 1986.
- EXHIBIT 10 - Santa Fe County Resolution 1987-88, November, 1987.
- EXHIBIT 11 - City of Santa Fe, Proposed Amendment to Resolution
No. 1987-52, July 8, 1987.

- EXHIBIT 12 - New Mexico Department of Health and Environment,
Environmental Improvement Division, March 11, 1985.
- EXHIBIT 13 - U.S. Department of Agriculture, Soil Conservation
Service, February 5, 1983.
- EXHIBIT 14 - U.S. Department of Interior, Fish and Wildlife
Service, August 17, 1987.
- EXHIBIT 15 - New Mexico Department of Game and Fish, August 18,
1987.
- EXHIBIT 16 - U.S. Department of Agriculture, Forest Service,
Santa Fe National Forest, June 14, 1985.
- EXHIBIT 17 - New Mexico Office of Cultural Affairs, Historic
Preservation Division, State Historic Preservation
Officer, July 16, 1987.



United States Department of the Interior
NATIONAL PARK SERVICE
BANDELIER NATIONAL MONUMENT
LOS ALAMOS, NEW MEXICO 87544-9701

IN REPLY REFER TO:

L7619

March 1, 1988

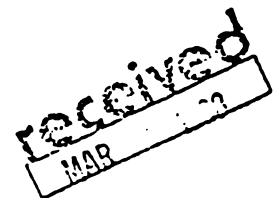
H.W. Lochner, Inc.
3014D Cielo Court
P.O. Box 15205
Santa Fe, New Mexico 87506-5205

Gentlemen:

It is the National Park Service's position that the Montoso road alignment, with an arched bridge, for the proposed of a new road between Los Alamos and Santa Fe is unacceptable. The visual impact is only one of many concerns that this agency has with this alignment.

Sincerely,

John D. Hunter
Superintendent



Appendix A
Exhibit 1

Los Alamos

Los Alamos National Laboratory
Los Alamos, New Mexico 87545

memorandum

TO: Distribution

DATE: September 23, 1987

FROM: Robert W. Turner, ENG-2 *RWT*

MAIL STOP/TELEPHONE: M701/7-7447

SYMBOL: ENG-2-87-137

SUBJECT: PROPOSED ALTERNATE ROUTE TO LOS ALAMOS NATIONAL LAB

In response to my memo to Dr. Wade, NRAO, ENG-2-87-122 regarding the proposed alternate route to Los Alamos National Laboratory, I have received feedback that NRAO does not anticipate any problem with the Montoso Peak route other than the possibility of interference from radios and welders during construction of the road only. This does not present great difficulty since NRAO can work around the problem by rescheduling etc. NRAO does prefer, however, that the more northerly routes be utilized.

RWT/jgs

Distribution:

Edward Sitzberger, AOFF, MS F614
Roy Haarman, ENG-DO, MS K719
Jimmie Parsons, ENG-DO, MS K989
Steffanie Coonley, ENG-2, MS M701
ENG-7 LJ 8159-33, MS M703
ENG-2 VLBA File
ENG-2-File (0067T)

Appendix A
Exhibit 2



United States Department of the Interior

NATIONAL PARK SERVICE

SOUTHWEST REGION

P.O. BOX 728

SANTA FE, NEW MEXICO 87504-0728

TAXE
PO: DE IN
AMERICA

REPLY REFER TO:

L7619(SWR-PE)

AUG 19 1987

Mr. A. S. Ball
Program Development Engineer
Federal Highway Administration
Post Office Box 1088
Santa Fe, New Mexico 87504-1088

Dear Mr. Ball:

This responds to the Notice of Intent to prepare an environmental impact statement for Santa Fe-Los Alamos Corridor, Santa Fe and Los Alamos Counties, New Mexico (ER 87/933). The following comments are provided on a technical assistance basis.

The proposed project will not impact any present, proposed, or potential unit of the National Wild and Scenic Rivers System or the National Trails System. The proposal is, however, in the vicinity of Bandelier National Monument. Project sponsors and their consultants have initiated the consultation process with the park and should continue to do so with Superintendent John D. Hunter, Bandelier National Monument, Los Alamos, New Mexico 87544, telephone 505-672-3861.

The southernmost alignment, Montoso Peak, would be almost adjacent to the main entrance road of Bandelier National Monument and to Frijoles Canyon which is the most popular visitor use area in the park. It is also in close proximity to the Bandelier Wilderness which was created in 1976 and is designated a Class I air quality area. The Montoso Peak route would have significant visual, noise and air pollution impacts upon park values and would interfere with day-to-day operations, including potential increases in park visitation which would exceed capacity. At present, capacity is exceeded almost daily during the summer season.

The central alignment, Potrillo, does not appear to impact Bandelier National Monument, and we have no objection to it from that standpoint.

The northernmost alignment, Mortandad, would be situated between White Rock and the Tsankawi Unit of Bandelier National Monument. A previously proposed segment of this route could significantly impact archeological sites known as Cave Kiva and Animal Pit/Trap. These sites were once a part of the park but were transferred to the Atomic Energy Commission in the 60's. The park's Master Plan recommends the reacquisition of these significant sites and the National Park Service is on record with the Department of Energy concerning this matter. Also, the 800-acre Tsankawi Unit of Bandelier National Monument could be significantly

- 1.
- 2.
- 3.
- 4.

Appendix A
Exhibit 3, p.1

impacted by this alignment. This unit already has roads on two sides; a road on a third side, with the volume of traffic anticipated, would surround the unit with noise, visual and air pollution impacts. However, adoption of appropriate mitigation measures and incorporation of some alignment changes could make this alternative acceptable to the National Park Service, as long as the National Park Service was involved in and approved of such plans.

4.

We are also concerned with possible expansion of State Road 4 where the road abuts Bandelier National Monument and its Tsankawi Unit.

Therefore, the draft statement should thoroughly analyze potential impacts to Bandelier National Monument and the Tsankawi Unit, discuss alternatives, and recommend mitigation plans to reduce or eliminate impacts. Appropriate large scale maps and visuals should be provided.

5.

Planning for the proposed project should include appropriate consideration of historical and archeological resources, as required by the National Environmental Policy Act of 1969 and implemented by the Council on Environmental Quality Regulations, and in accordance with historic preservation laws and regulations. To comply with these requirements, please contact the State Historic Preservation Officer (SHPO) to determine if any cultural resources of local significance and any cultural resources which may be listed on or eligible for the National Register of Historic Places are located within the affected area. In addition, you should obtain the opinion of the SHPO on the adequacy of present knowledge of cultural resources in the areas to be affected, as well as the type and level of resource inventory that may be needed. If the SHPO indicates that a survey is needed, it should be undertaken early in the planning process and results reported in the draft statement. The statement should also include determinations of eligibility for the National Register of Historic Places, pursuant to 36 CFR 1204 (formerly 36 CFR 63) for any resources which might be affected. The SHPO in New Mexico is Mr. Thomas W. Merlan, Historic Preservation Division, Office of Cultural Affairs, Villa Rivera, Room 101, 228 E. Palace Avenue, Santa Fe, New Mexico 87503.

6.

The draft statement should include consideration of potential impacts on recreation resources. The Land and Water Conservation Fund (LWCF) Act of 1965, as amended, established a grant program which provides states with funds to acquire and develop public outdoor recreation lands and waters. The LWCF is administered in each state by the State Liaison Officer (SLO), appointed by the Governor. In New Mexico, the SLO is Mr. Thomas Bahr, Cabinet Secretary, Natural Resources Department, 119 Villagra Building, Room 101, Santa Fe, New Mexico 87503. The SLO should be contacted for information concerning possible impacts on recreation resources on a statewide basis. In addition, local parks department officials should be contacted concerning impacts to specific parks.

7.

It should be noted that the L&WCF Act, Section 6(f), states that no property acquired or developed with assistance from the L&WCF shall be converted to other than public outdoor recreation uses without the approval of the Secretary of the Interior. If such conversion is anticipated, the SLO should be contacted to initiate the process for obtaining the Secretary's approval. Coordination efforts related to conversion should be indicated in the statement. 7.

The SLO is also responsible for preparing and maintaining a Statewide Comprehensive Outdoor Recreation Plan which analyzes existing recreation supply, demand and need, and projects future needs and deficiencies. This plan would be helpful in preparing the recreation analysis for the draft statement.

The State Natural Heritage Program, a systematic statewide natural resource inventory, should be a useful tool in identifying possible impacts to significant natural resources. Mr. William Isaacs, Chief, Resource Management and Development Division, Natural Resources Department, Villagra Building, Santa Fe, New Mexico 87503, could assist in the identification of natural resources in the project area. 8.

We appreciate the opportunity to provide this technical assistance. The National Park Service, through the Southwest Regional Office and Bandelier National Monument, would be pleased to coordinate further with you during your planning process.

Sincerely,

/s/ ELDON G. REYER

Associate Regional Director,
Planning and Cultural Resources,
Southwest Region

cc:

Mr. W. L. Taylor
Environmental Section
New Mexico State Highway and
Transportation Department
Post Office Box 1149
Santa Fe, New Mexico 87504-1149

Mr. Thomas S. Scanlon, Jr.
H. W. Lochner, Inc.
Post Office Box 15205
Santa Fe, New Mexico 87506-5205

Luebben & Hughes, P.C.

Attorneys

Thomas E. Luebben
Richard W. Hughes

P.O. Box 25245
Albuquerque, New Mexico 87125

Scott E. Borg
Lynn Cianci Eby
Elizabeth E. Simpson

S09 Copper, NW • Suite 200
Albuquerque, New Mexico 87102
(505) 842-6123

Affiliated with:
Carol Vigil
214 McKenzie

Santa Fe, New Mexico 87501

MEMORANDUM

To: John Gonzales, Director of Special Projects,
Pueblo of San Ildefonso

From: Luebben and Hughes, Tribal Attorneys

Re: Santa Fe/Los Alamos Alternate Relief Route

Date: March 31, 1988

This memorandum is intended to provide textual material required by H.W. Lochner, Inc. for inclusion in the Santa Fe/Los Alamos Alternate Relief Route Environmental Impact Study regarding the impact of the proposed new Los Alamos highway on San Ildefonso Pueblo land rights and Pueblo religious interests.

Impact of Proposed Routes on the Land Rights and Religious Interests of the Pueblo of San Ildefonso

All of the proposed routes for the Los Alamos Alternate Relief Route cross either lands that are presently within the recognized San Ildefonso Pueblo Indian Reservation, or lands subject to the aboriginal Indian title land rights of the Pueblo. The latter category of lands lie outside of the recognized San Ildefonso Pueblo Reservation and are the subject of litigation in Pueblo of San Ildefonso v. United States, Docket 354 before the Indian Claims Commission and the United States Claims Court. It is the position of the Pueblo that these aboriginal title lands still belong to the Pueblo despite the fact that the United States government claims ownership of these lands and has placed them under the administration of the Bureau of Land Management.

Aboriginal Indian title has long been recognized and protected by American law, and can only be extinguished by express action of the United States Congress. United States v. Santa Fe Pacific RR Co., 314 U.S. 339 (1941). Administrative application of the public land laws does not have the effect of extinguishing aboriginal title. United States v. Dann (Dann II), 706 F.2d 919 (9th Cir. 1983), rev'd on other grounds, 470 U.S. 39 (1985). Consequently, the aboriginal land rights alleged by the

Appendix A
Exhibit 4, p.1

John Gonzales
March 31, 1988
Page Two

Pueblo of San Ildefonso must be taken into account in routing decisions and right-of-way acquisition plans. Both the Potrillo Alternate and the Montoso Peak Alternate cross Pueblo aboriginal Indian title lands. For purposes of right-of-way acquisition, it will be necessary to treat these lands in all respects the same as lands within recognized Indian reservation boundaries.

The free exercise clause of the First Amendment to the United States Constitution and the American Indian Religious Freedom Act, 42 U.S.C. §1996, provide protection to Native American sacred sites and religious activities. The requirement of privacy and solitude for certain Native American religious practices can impose restrictions on possible highway routing. See, Northwest Indian Cemetery Protective Association v. Peterson, 795 F.2d 688 (9th Cir. 1986). Neither the New Mexico State Highway Department nor the Federal Highway Administration are currently aware of the presence of any Native American sacred sites along any of the three proposed route alternatives. The Pueblo of San Ildefonso has indicated that none of the three routes being considered is expected to have any impact on Pueblo religious interests.

Appendix A
Exhibit 4, p.2

Reply To: 1950, 5450

Date: July 21, 1988

R. P. Burns
H. W. Lochner, Inc.
3014 D Cielo Court
Santa Fe, NM 87506

Dear Mr. Burns:

The following statement is quoted from a preliminary draft of the Santa Fe-Los Alamos Corridor Study DEIS:

It should be noted that the [San Ildefonso] Pueblo also has asserted aboriginal rights to lands traversed by the other routes and asserts that "for purposes of right-of-way acquisition, it will be necessary to treat these lands in all respects the same as lands within recognized Indian reservation boundaries." (page 50)

This statement concerns us. There seems to be the implication that there is a remaining question regarding the San Ildefonso Pueblo's title ownership to public (National Forest) lands outside their recognized reservation/Pueblo Grant area. Such is not the case.

The stated position appears to be contrary to the stipulations already agreed to in the United States Claims Court Docket Nos. 354, 355, and 356, involving the Pueblos of San Ildefonso, Santo Domingo, and Santa Clara, respectively. The stipulations acknowledge that title to the identified land in each case was extinguished by actions of the United States. Although the compensation due the Pueblos has yet to be settled, the procedure for such settlement by cash payment rather than conveyance of land has been well established in appropriate, current law.

While the Pueblo claims are yet to be settled, as far as the amount of cash compensation is concerned, we feel that ownership of the land and the right to utilize or dispose of the land should not be at question. Accepting any other position implies that the Pueblos' interest in the land title has not been extinguished and that the United States (and State of New Mexico) do not have the rights to utilize the land for its numerous resources (e.g., timber, forage, minerals), to authorize third-party interests (permits, licenses, easements, etc.), or to otherwise dispose of the land by exchanges or sales that are in the overall public interest.

Appendix A
Exhibit 5, p.1





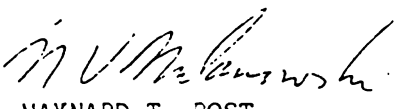
Mr. P. P. Burns

page 2

There is a somewhat similar situation that provides additional support for the Forest Service's position. This situation regards the right and/or propriety of the Bureau of Land Management (BLM) to issue oil and gas leases on National Forest land included in the adjacent Pueblo of Santa Clara claim. The U.S.D.I Office of Solicitor addressed this in a letter of December 20, 1985, from the Associate Solicitor, Energy and Resources, to the Field Solicitor, Santa Fe (New Mexico). Some of the key comments from this letter are: (a) "... tribal title to the ... acres was extinguished ..."; (b) "... As far as Justice Department is concerned, all that remains is the trial to determine the United States' liability for that taking ..."; (c) "... neither the leasing of the land now nor any subsequent lessees' discoveries and operations should affect the trial ..."; (d) "... BLM is free to treat this land just as it would any land, title to which is in the United States and that is available for oil and gas leasing"

Please consider this position in developing the final draft of the DEIS. Thank you for the opportunity to comment.

Sincerely,


MAYNARD T. ROST
Forest Supervisor

cc: Regional Forester
Governor, Pueblo of San Ildefonso

Appendix A
Exhibit 5, p.2



CITY OF SANTA FE

RESOLUTION NO. 1087 ⁵²

INTRODUCED BY:


Phil Griego

A RESOLUTION

REQUESTING A SPECIFIC LOCATION FOR THE INTERSECTION OF THE NORTHWEST SANTA FE RELIEF ROUTE AND THE LOS ALAMOS ALTERNATE ROUTE.

WHEREAS, the City of Santa Fe is actively engaged in the development of the Northwest Santa Fe Relief Route; and

WHEREAS, the community of Los Alamos has expressed a desire for a westernmost connection for the Los Alamos Alternate Route to the Northwest Santa Fe Relief Route; and

WHEREAS, the connection of the proposed Los Alamos Alternate Route is recognized as an integral part of the Northwest Santa Fe Relief Route for the purpose of transporting hazardous materials around the developed areas of the City of Santa Fe; and

WHEREAS, it is the express intent of the governing body of the City of Santa Fe to prohibit the transport of such materials through the City of Santa

Appendix A
Exhibit 6, p.1

1 Fe at such time that both routes are constructed; and

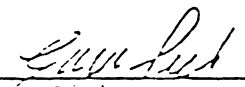
2 WHEREAS, the connection of the Los Alamos Alternate Route to the
3 Northwest Santa Fe Relief Route should be located in an area that will
4 encourage the use of those routes rather than City through streets.

5 NOW, THEREFORE, BE IT RESOLVED that the governing body of the City of
6 Santa Fe desires that the connection of the Los Alamos Alternate Route to
7 the Northwest Santa Fe Relief Route be located at a point no further east than
8 the proposed South Meadows Road Extension and that efforts to keep the study,
9 planning, design and construction of the connection be recognized as a
10 priority by all entities involved in the development of this project.

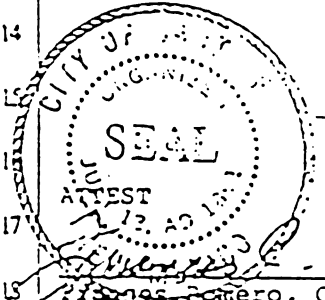
11 PASSED, APPROVED and ADOPTED this 8th day of July, 1967.

12
13
14
15
16
17
18
19
20
21
22
23
24
25

CITY OF SANTA FE:



Sam Pick, Mayor





Rosalva Romero, City Clerk

APPROVED AS TO FORM



James C. McKay, City Attorney

Appendix A
Exhibit 6, p.2

GOVERNOR
GARREY LARSEN

State of New Mexico

STATE GAME COMMISSION



DEPALD MAESTAS, CHAIRMAN
ESPANOLA

RICHARD A. ALLGOOD
SILVER CITY

CHRISTINE DiGREGORIO
GALLUP

THOMAS P. ARVAS, O.D.
ALBUQUERQUE

BOB JONES
DELL CITY, TX

DIRECTOR AND SECRETARY
TO THE COMMISSION
HAROLD F. NELSON

DEPARTMENT OF GAME AND FISH

VILLAGRA BUILDING
SANTA FE
87503

November 23, 1987

Mr. Tom Scanlon
Lochner Engineering Inc.
P. O. Box 15205
Santa Fe, New Mexico 87506-5205

Dear Mr. Scanlon:

This letter is in response to your request for information regarding potential impacts to the fishery resource in the Rio Grande resulting from bridge construction activities in White Rock Canyon. The proposed action involves the construction of a non-suspension bridge, approximately 1,220 m (4,000 ft) long, supported by concrete piers 120 m (400 ft) high. A temporary work bridge and access roads parallel to the Rio Grande are also proposed.

The Rio Grande in the project area is classified as a "marginal coldwater fishery and warmwater fishery" use stream by the New Mexico Water Quality Control Commission. Marginal coldwater fishery means a stream reach, lake or impoundment known to support a coldwater fish population during at least some portion of the year, even though historical data indicates that the maximum temperature in the stream may frequently exceed 20° C (68° F). Warmwater fishery means a stream reach, lake or impoundment where the water temperature and other characteristics are suitable for the support of warmwater fishes, e.g., channel catfish (Ictalurus punctatus), largemouth bass (Micropterus salmoides), white crappie (Pomoxis annularis), etc. Associated with this use are stringent numeric criteria designed to protect the water quality of this valuable resource.

Appendix A
Exhibit 7, p.1

Although the data base is limited, a total of 24 species of fish is known to occur in White Rock Canyon of the Rio Grande. The Mississippi silvery minnow (Hybognathus nuchalis), state endangered (Group 2), is likely to occur in this segment of the Rio Grande (Table 1). Habitat destruction has been largely responsible for the decline of the species in New Mexico. This is by no means a complete listing of the fishes that occur in the project site, nor a listing of only those species that would be adversely impacted by bridge construction activities. Further ichthyofaunal surveys are needed to ascertain the occurrence and distribution of fishes in this area.

3.

We are concerned about impacts on water quality and habitat conditions in downstream areas resulting from the construction of access roads and bridge construction activities. Suspended and settleable solids, uncured concrete, petroleum fuels, lubricants and other toxic substances that could enter the surface water regime may have significant negative impacts on recreational uses of this segment of the Rio Grande, including Cochiti Lake immediately downstream. Such impacts could also negatively impact wildlife, including fish-eating species such as the bald eagle (Haliaeetus leucocephalus).

In view of these concerns, the Department of Game and Fish recommends the following measures to minimize impacts to fishes and its habitat:

1. Removal or destruction of riparian vegetation, especially mature trees and shrubs, should be avoided during construction of access roads to the project site and during project operations.
2. Unavoidable losses of riparian vegetation should be replaced with an equivalent or greater acreage of cottonwood and willow poles or rooted nursery stock.
3. No uncured concrete should be placed below the water level, and runoff from forms should be contained to prevent contamination of surface water. If construction below the water level is required, pre-cast concrete sections should be used.
4. Construction vehicles and motorized equipment should not be fueled, serviced or washed at the construction site.
5. Material stockpiles should not be placed within the riparian zone and in those areas supporting woody vegetation.

4.

6. Access roads should be designed to minimize soil erosion and resultant sedimentation of the Rio Grande. Up-slope drainage ditches designed to direct surface runoff into natural sediment settling basins should be constructed.

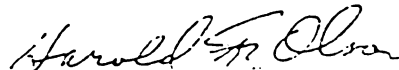
7. Vehicular traffic should be restricted to essential personnel and public access should be prohibited.

8. After project completion, access roads should be obliterated and revegetated with a mixture of grasses, forbs, and shrubs indigenous to the project area.

4.

Thank you for affording the Department of Game and Fish the opportunity to comment on this project. Please contact Andrew Sandoval (827-7997) of this department for further coordination.

Sincerely,



Harold F. Olson
Director

HFO/avs

Att. 1

cc: John Peterson (Ecological Services, USFWS)
William Taylor (Environmental Program Manager, SHTD)
Dan Pursley (NW Area Supervisor, NMGF)
William Baltosser (Biological Services Div. Chief, NMGF)
Dick McCleskey (Fisheries Division Chief, NMGF)
John Hubbard (Endangered Species Section Chief, NMGF)

Table 1. The occurrence and status of species of fish in the Rio Grande in vicinity of White Rock Canyon, New Mexico.

| <u>Species</u> | | |
|----------------------------|-------------------------------|-----|
| NATIVE TAXA | | |
| Cyprinidae | | |
| Rio Grande chub | <u>Gila pandora</u> | S |
| Mississippi silvery minnow | <u>Hybognathus nuchalis</u> * | R |
| flathead chub | <u>Hybopsis gracilis</u> | E |
| red shiner | <u>Notropis tuttensis</u> | S |
| fathead minnow | <u>Pimephales promelas</u> | S |
| longnose dace | <u>Rhinichthys cataractae</u> | S |
| Catostomidae | | |
| river carpsucker | <u>Carpionodes carpio</u> | S |
| Rio Grande sucker | <u>Catostomus plebeius</u> | R |
| Poeciliidae | | |
| mosquitofish | <u>Gambusia affinis</u> | R |
| Centrarchidae | | |
| bluegill | <u>Lepomis macrochirus</u> | S |
| NONNATIVE TAXA | | |
| Salmonidae | | |
| rainbow trout | <u>Salmo gairdneri</u> | Est |
| brown trout | <u>Salmo trutta</u> | Est |
| Esocidae | | |
| northern pike | <u>Esox lucius</u> | L |
| Cyprinidae | | |
| carp | <u>Cyprinus carpio</u> | Est |
| Castostomidae | | |
| white sucker | <u>Catostomus commersoni</u> | Est |
| Ictaluridae | | |

| | | |
|-----------------------|------------------------------|-----|
| black bullhead | <u>Ictalurus melas</u> | Est |
| channel catfish | <u>Ictalurus punctatus</u> | Est |
| Percichthyidae | | |
| white bass | <u>Morone chrysops</u> | R |
| Centrarchidae | | |
| green sunfish | <u>Lepomis cyanelus</u> | Est |
| smallmouth bass | <u>Micropterus dolomieu</u> | L |
| largemouth bass | <u>Micropterus salmoides</u> | Est |
| white crappie | <u>Pomoxis annularis</u> | Est |
| Percidae | | |
| yellow perch | <u>Perca flavescens</u> | Rep |
| walleye | <u>Stizostedion vitreum</u> | L |

Native taxa: E = expanding, R = rare, S = stable.

Nonnative taxa: Est = established, R = rare,
L = localized, Rep = reported.

* State endangered species.

NEW MEXICO INTERSTATE STREAM COMMISSION

N. MEX. DIV.
JUL 28 1987



COMMISSION MEMBERS

ALBERT E. UTTON, Chairman, Albuquerque
S. E. REYNOLDS, Secretary, Santa Fe
J. PHELPS WHITE III, Roswell
GEORGE BRANTLEY, Carlsbad
~~XXXXXXXXXXXXXX~~
GROVE BURNETT, Glorieta
~~XXXXXXXXXXXXXX~~
TRACY SEIDMAN, Wagon Mound
~~XXXXXXXXXXXXXX~~
Sammy Singh, La Mesa
Peter A. Casados, San Juan Pueblo
Richard C. Johnson, Silver City

July 27, 1987

EATAAN MEMORIAL BUILDING
STATE CAPITOL
SANTA FE, NEW MEXICO 87503

Mr. Anthony L. Alonzo
Division Administrator
U. S. Department of Transportation
Federal Highway Administration
P. O. Box 1088
Santa Fe, New Mexico 87504-1088

Dear Mr. Alonzo:

This is in response to the July 8, 1987, notice issued by your office regarding an Environmental Impact Statement for the Los Alamos to Santa Fe route, New Mexico Project LASF 86(1)/NWT(1).

All of the three proposed routes would cross the Rio Grande within the upper reaches of Cochiti Reservoir. It is likely that neither of the three proposed river crossings would be materially affected by operation of the reservoir, but the Mortandad alignment (low bridge), if selected, should be designed taking into account operation of Cochiti Reservoir to its maximum water surface elevation.

1.

The Federal Water Pollution Control Act should, of course, be taken into consideration in the design and construction of any route selected.

2.

Thank you for the opportunity to present this information.

Sincerely,

Philip B. Mutz
Interstate Stream Engineer

PBM:pt

Appendix A
Exhibit 8



DEPARTMENT OF THE ARMY
ALBUQUERQUE DISTRICT CORPS OF ENGINEERS
P. O. BOX 1580
ALBUQUERQUE, NEW MEXICO 87103-1580

February 10, 1986

REPLY TO
ATTENTION OF

Construction-Operations Division
Regulatory Branch

Mr. R. P. Burns
H. W. Lochner, Inc.
P.O. Box 15205
Santa Fe, New Mexico 87506-5205

Dear Mr. Burns:

Reference is made to your letter dated January 29, 1986, regarding the proposed highway from Santa Fe to Los Alamos which would cross the Rio Grande and several minor drainages in Santa Fe and Los Alamos counties, New Mexico.

We have studied the project description, other records, and documents available to us. The proposed project is regulated under the provisions of Section 404 of the Clean Water Act if there will be a discharge of dredged or fill material into waters of the United States. This determination was made because two of the three Rio Grande crossings involve piers or approachways which may require fills in the waterway. Also, all of the proposed routes will involve numerous crossings of minor drainages. If there will not be any temporary or permanent discharges of dredged or fill material into the Rio Grande, then an individual Section 404 permit will not be required.

The crossings of minor drainages are located above the headwaters and can be constructed under authority of the nationwide, permit for work in certain waters provided all conditions of the permit are met. A summary of the provisions of this permit and a brochure describing the Corps regulatory program are enclosed for your information. Please note particularly the acreage restrictions regarding loss or substantial adverse modification of waters of the United States.

If an individual permit is required for the bridge, you should submit a permit application three to six months prior to construction to insure that your schedule is not delayed by permit processing. Copies of the application form and a copy of

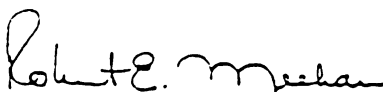
Appendix A
Exhibit 9, p.1

ATTACHMENT 4

two informational brochures are enclosed for your use. Also, please submit with your application a copy of any environmental analysis or Environmental Impact Statement that may have been prepared for the project.

Should you have any questions regarding this determination please feel free to write or call Ms. Jean Manger or Mr. Andrew Rosenau at (505) 766-2776.

Sincerely,



Robert E. Meehan, P.E.
Chief, Construction-Operations Division

5 Enclosures

1. Nationwide permit-Certain Waters
2. Brochure
3. Applicant's Guide
4. Application forms
5. WQ Cert. Appl.

Appendix A
Exhibit 9, p..

SANTA FE COUNTY
BOARD OF COUNTY COMMISSIONERS

RESOLUTION NO. 1987-88

A RESOLUTION AUTHORIZING THE SUBMITTAL OF A JOINT CITY AND COUNTY APPLICATION TO THE BUREAU OF LAND MANAGEMENT FOR LEASE OF BLM LANDS WITHIN THE CONTEXT OF THE FEDERAL RECREATION AND PUBLIC PURPOSES ACT.

WHEREAS, the Bureau of Land Management has designated in the Taos Resource Management Plan certain lands in the Santa Fe area as a disposal zone;

WHEREAS, these Bureau of Land Management lands are available to local government for lease - purchase under the provisions of the Recreation and Public Purposes Act;

WHEREAS, the Los Alamos - Santa Fe Route planned to pass directly through the BLM Lands included in this application; and

WHEREAS, Santa Fe County and the City of Santa Fe have needs for adequate provision of parks, open space and scenic highways, preservation of natural areas, land conservation, and protection of gateway approaches to the Santa Fe Area.

NOW THEREFORE, BE IT RESOLVED BY THE BOARD OF COUNTY COMMISSIONERS, COUNTY OF SANTA FE that the City of Santa Fe and the County of Santa Fe jointly submit an application to the Bureau of Land Management for lease - purchase of certain lands in Santa Fe County. The application is to be conditioned upon funding availability, and agreement with the City as to total expenditures, and an agreement as to the amount that the County would have to spend for both the purchase of land and development of contemplated improvements. The application will include a map showing the location of the properties, a sketch plan for the proposed County and City of Santa Fe Park and Open Space areas and a schedule of improvements for the properties. Lease purchase is proposed for the following three properties as described below:

1. approximately 3,000 acres of land in T17N R8E Sections 15, 22, 23, 26, 27 and 35 between Pinon Hills Subdivision and the Caja del Rio Grant, to be used for recreation and other public purposes;

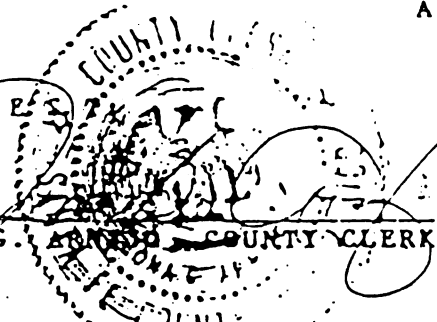
2. approximately 60 acres of land in T17N R8E Section 31 along the Santa Fe River west of the Village of Agua Fria to be used for recreation; and

3. approximately 83 acres of land in T16N R8E Section 21 near the Santa Municipal Airport for airport use and protection from development.

PASSED, APPROVED AND ADOPTED THIS 14 DAY OF November, 1987.

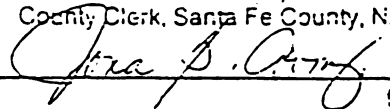
SANTA FE BOARD OF COUNTY COMMISSIONERS


ANTONIO F. ORTEGA, CHAIRMAN

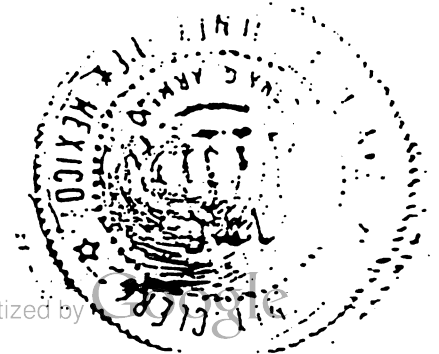
A T T E S T

JONA G. ARMIGO, COUNTY CLERK

APPROVED AS TO FORM:
CAMPOS AND SANCHEZ


COUNTY ATTORNEY

636-595
COUNTY OF SANTA FE)
STATE OF NEW MEXICO)
I hereby certify that this instrument was filed
for record on the 17 day of November, A.D.
19 87 at 1:05 o'clock P.m.
and was duly recorded in book 597,
page 236 of the records of Santa Fe County.
Witness my Hand and Seal of Office
Jona G. Armijo
County Clerk, Santa Fe County, N.M.

COUNTY CLERK

Appendix A
Exhibit 10, p.2



CITY OF SANTA FE
PROPOSED AMENDMENT
TO

ITEM # 9-2-2

PROPOSED RESOLUTION NO. _____ - 1987

Mr. Chairman and Members of the City Council:

I propose the following amendment to Resolution No. _____ - 1987.

1. On page 1, lines 21 and 22, after the word "WHEREAS" delete the following language:

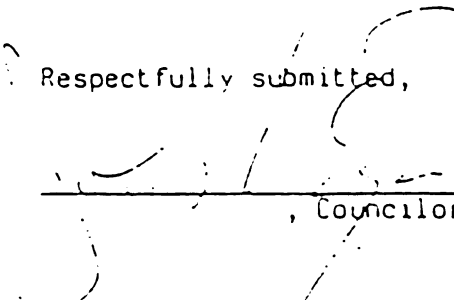
"the Los Alamos - Santa Fe highway is planned to pass directly through the BLM Lands included in this application;" and insert in lieu thereof, the following language:

"environmental and locational studies are underway for a new highway between Santa Fe and Los Alamos which will cross these bureau of land management lands;"

2. On page 2, line 7, after the word "attached." insert the following language:

"This application includes a corridor for the Santa Fe-Los Alamos highway with accesses thereto, including County Road 62. The highway will be located and designed jointly with other proposed public uses."

Respectfully submitted,



, Councilor

ADOPTED: _____

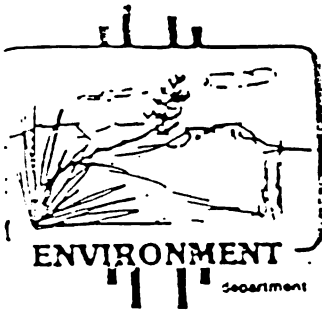
NOT ADOPTED: _____

DATE: _____

Frances C. Romero
City Clerk

Appendix A
Exhibit 11

*Form approved 1/28/81 Regular City Council Meeting



STATE OF NEW MEXICO

ENVIRONMENTAL IMPROVEMENT DIVISION

P.O. Box 968, Santa Fe, New Mexico 87504-0968
(505) 984-0020

TONY ANAYA
GOVERNOR

DENISE D. FOR
DIRECTOR

March 11, 1985

Mr. Tom Scanlon
H.W. Lochner, Inc.
3018 Cielo Court, Suite C
Santa Fe, New Mexico 87501

Dear Mr. Scanlon:

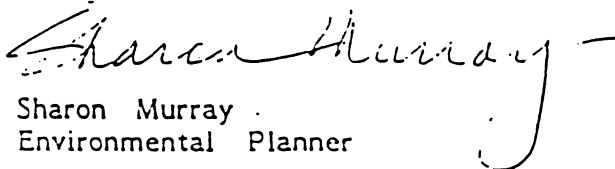
This letter is in response to your request for information pertaining to a proposed highway construction project between Santa Fe and Los Alamos. Without more detailed information about the proposed activity, we are unable to determine which specific environmental regulations may apply in this case.

Generally speaking, highway construction is not subject to air quality regulation, with the possible exception of standards for airborne particulate matter generated by certain types of large scale activity such as sand and gravel processing operations. In addition, EID's Air Quality Bureau usually recommends the use of dust abatement procedures on dirt access roads. If you anticipate any significant air pollution emission resulting from construction activity, you should contact our Air Quality Bureau for specific regulation information. Some air quality impacts may be associated with the introduction of automobile traffic in the new transportation corridor. Again, however, it would be impossible to comment on any potential impacts without more detailed information about the project, projected traffic loads, etc.

Water quality requirements in the case of highway bridge construction are handled through the US Corps of Engineers, who will supply you with complete information regarding state water certification requirements. You may contact the Corps at their Albuquerque office at 766-2776.

I hope this information has been helpful. If you have any further questions, please call me at 984-0020, extension 244.

Sincerely yours,


Sharon Murray
Environmental Planner

Appendix A
Exhibit 12



United States
Department of
Agriculture

Soil
Conservation
Service

1911 Fifth St., Suite 201
Santa Fe, New Mexico 87505

February 5, 1988

H.W. Lochner, Inc.
3014 D Cielo Court
P.O. Box 15205
Santa Fe, New Mexico 87506-5205

ATT: Roy P. Burns, senior Associate

SUBJECT: Santa Fe - Los Alamos Corridor Study

i have reviewed the material received from your office concerning a USDA - SCS determination under the Farmland Protection Policy Act.

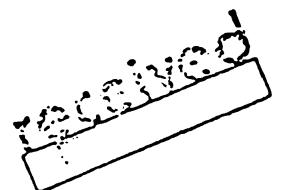
There are no lands within the three proposed alternative routes that meet the criteria of this Act. I am returning the AD - 1006 with a negative findings.

Sincerely,

Edward J. Korzdorfer
District Conservationist

ATT: (2)

Appendix A
Exhibit 13, p.1



FARMLAND CONVERSION IMPACT RATING

| | | | | | |
|--|--|---|--|---|--------|
| PART I (To be completed by Federal Agency) | | Date Of Land Evaluation Request: 2/3/88 | | | |
| Name Of Project: Santa Fe-Los Alamos Corridor Study | | Federal Agency Involved: Federal Highway Administration | | | |
| Proposed Land Use: Highway right-of-way | | County And State: Santa Fe & Los Alamos, N.M. | | | |
| PART II (To be completed by SCS) | | Date Request Received By SCS: 2/4/88 | | | |
| Does the site contain prime, unique, statewide or local important farmland? (If no, the FPPA does not apply - do not complete additional parts of this form). | | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> | | |
| Major Crops: | | Acres Irrigated: | Average Farm Size: | | |
| Farmable Land In Govt. Jurisdiction Acres: % | | Amount Of Farmland As Defined In FPPA Acres: % | | | |
| Name Of Land Evaluation System Used: | | Name Of Local Site Assessment System: | | | |
| | | Date Land Evaluation Returned By SCS: 2/5/88 EJK | | | |
| PART III (To be completed by Federal Agency) | | Alternative Site Rating | | | |
| | | Site A | Site B | Site C | Site D |
| A. Total Acres To Be Converted Directly | | 1616 | 1208 | 1520 | |
| B. Total Acres To Be Converted Indirectly | | | | | |
| C. Total Acres In Site | | 1616 | 1208 | 1520 | |
| PART IV (To be completed by SCS) Land Evaluation Information | | | | | |
| A. Total Acres Prime And Unique Farmland | | | | | |
| B. Total Acres Statewide And Local Important Farmland | | | | | |
| C. Percentage Of Farmland In County Or Local Govt. Unit To Be Converted | | | | | |
| D. Percentage Of Farmland In Govt. Jurisdiction With Same Or Higher Relative Value | | | | | |
| PART V (To be completed by SCS) Land Evaluation Criterion | | | | | |
| Relative Value Of Farmland To Be Converted (Scale of 0 to 100 Points) | | | | | |
| PART VI (To be completed by Federal Agency) | | Maximum Points | | | |
| Site Assessment Criteria (These criteria are explained in 7 CFR 658.5(b)) | | | | | |
| 1. Area in Nonurban Use | | | | | |
| 2. Perimeter In Nonurban Use | | | | | |
| 3. Percent Of Site Being Farmed | | | | | |
| 4. Protection Provided By State And Local Government | | | | | |
| 5. Distance From Urban Builtup Area | | | | | |
| 6. Distance To Urban Support Services | | | | | |
| 7. Size Of Present Farm Unit Compared To Average | | | | | |
| 8. Creation Of Nonfarmable Farmland | | | | | |
| 9. Availability Of Farm Support Services | | | | | |
| 10. On-Farm Investments | | | | | |
| 11. Effects Of Conversion On Farm Support Services | | | | | |
| 12. Compatibility With Existing Agricultural Use | | | | | |
| TOTAL SITE ASSESSMENT POINTS | | 160 | | | |
| PART VII (To be completed by Federal Agency) | | | | | |
| Relative Value Of Farmland (From Part V) | | 100 | | | |
| Total Site Assessment (From Part VI above or a local site assessment) | | 160 | | | |
| TOTAL POINTS (Total of above 2 lines) | | 260 | | | |
| Site Selected: | | Date Of Selection: | | Was A Local Site Assessment Used? Yes <input type="checkbox"/> No <input type="checkbox"/> | |

Reason For Selection:

- A - Montoso
- B - Potrillo
- C - Mortandad

Appendix A
Exhibit 13, p.2

(See Instructions on reverse side)



UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE

AUG 19 1987

Ecological Services Cons. No. 2-22-87-I-108
Suite D, 3530 Pan American Highway NE
Albuquerque, New Mexico 87107

August 17, 1987

Mr. S. A. Ball, Program Development Engineer
Federal Highway Administration
117 U. S. Court House
P. O. Box 1088
Santa Fe, New Mexico 87504-1088

Re: Notice of Intent to Prepare an Environmental Impact Statement for
Santa Fe-Los Alamos Corridor, Santa Fe and Los Alamos Counties,
New Mexico (ER 87/933)

Dear Mr. Ball:

This responds to the referenced Notice of Intent concerning the preparation of an environmental impact statement (EIS) for an alternate route between Santa Fe and Los Alamos. The EIS should address the following issues with respect to impacts on fish and wildlife resources:

The Rio Grande is the only perennial watercourse within the Santa Fe-Los Alamos corridor. Each of the three preliminary highway corridors under consideration would cross the Rio Grande in the vicinity of White Rock Canyon. We are particularly concerned with potential impacts to this area and the fish and wildlife resources it supports. The Rio Grande corridor is used by a variety of migratory bird species, including the endangered bald eagle, peregrine falcon, and whooping crane. The bald eagle roosts in White Rock Canyon and several side canyons above Cochiti Reservoir in the winter. Suitable nesting habitat for peregrine falcons exists in the project area, while whooping cranes are likely to occur in the area only during their Fall and Spring migrations from Grays Lake National Wildlife Refuge (NWR), Idaho, to Bosque del Apache NWR, New Mexico. The EIS should evaluate the potential impacts of the project on these species. If the Federal Highway Administration determines that the project may affect a Federally-listed endangered or threatened species, formal consultation pursuant to Section 7 of the Endangered Species Act is required. Information pertaining to the consultation process is enclosed for your use in project planning. We suggest you contact the New Mexico Department of Game and Fish and the New Mexico Energy and Minerals and Natural Resources Department for information on fish, wildlife and plants of State concern.

Appendix A
Exhibit 14, p.1

We are also concerned with potential impacts on other migratory species, including ducks, geese, and sandhill cranes, which are susceptible to colliding with structures placed across their migration routes. The head of Cochiti Reservoir has become a valuable resting area for waterfowl during their annual fall and spring migrations. A river crossing in this vicinity could diminish its value for wildlife. This portion of the project may require a Department of the Army permit pursuant to Section 404 of the Clean Water Act.

2.

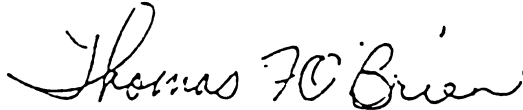
3.

Because of steep slopes and rugged terrain through which the route would pass, erosion and sedimentation in the Rio Grande is also of concern. Any consequent decline in water quality could adversely affect riverine and reservoir fisheries.

4.

We appreciate this opportunity to provide scoping inputs to your EIS. If we can assist you further, do not hesitate to contact Mr. Gerry Roehm at (505) 883-7877, FTS. 474-7877.

Sincerely yours,



Thomas F. O'Brien
Acting Field Supervisor

Enclosure

cc: (w/o encl)

District Engineer, Corps of Engineers, U.S. Army, Albuquerque, New Mexico

Director, New Mexico Department of Game and Fish, Santa Fe, New Mexico

Director, New Mexico Energy and Minerals and Natural Resources Department
Forestry Division, Santa Fe, New Mexico

Regional Director, U.S. Fish and Wildlife Service, Fish and Wildlife
Enhancement, Albuquerque, New Mexico

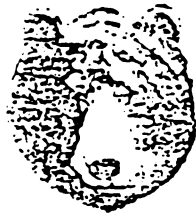
Appendix A.
Exhibit 14, p.2

GOVERNOR
GARREY CARRUTHERS

State of New Mexico

STATE GAME COMMISSION

DIRECTOR AND SECRETARY
TO THE COMMISSION
HAROLD F. OLSON



HERALD MABETAS, Chairman
ESPANOLA
ALBUQUERQUE
ALBUQUERQUE
ALBUQUERQUE
ALBUQUERQUE
ALBUQUERQUE
ALBUQUERQUE
ALBUQUERQUE
ALBUQUERQUE

DEPARTMENT OF GAME AND FISH

NIAGARA BUILDING
SANTA FE
87503

August 13, 1967

Mr. S. A. Ball
Federal Highway Administration
117 U.S. Courthouse
P.O. Box 1088
Santa Fe, New Mexico 87504

Dear Mr. Ball:

This letter is in response to your request for comments by the New Mexico Department of Game and Fish for inclusion in the draft environmental assessment (DEIS), to be prepared for the Los Alamos-Santa Fe Route [Project 86(1)/NWT(1)]. Involvement by the Department of Game and Fish in projects of this magnitude consists of two major phases. The first is to provide basic information as regards endangered species of state concern potentially occurring in the project area and to identify other wildlife species that might be negatively impacted by the proposed action. The second is to evaluate the findings in the DEIS, including in terms of species occurrence, impacts and mitigation.

The first step to assess impacts that this project might have on fish and wildlife and their habitat will be for you to identify those species actually occurring in the project sites. Next should be a description of the project and the potential impacts on fish and wildlife species. Finally, recommendations on steps to mitigate these impacts should be presented.

To thoroughly consider fish and wildlife resources, it is essential that the impacts of all project components be identified and evaluated in the DEIS. These impacts include not only the direct loss of habitat due to project construction, but also indirect and/or cumulative impacts

5.

Appendix A
Exhibit 15, p.1

such as displacement of certain species of wildlife. The DEIS should include an assessment of the biological values of the sites under consideration, discuss potential irreversible and irretrievable losses to fish and wildlife and their habitat, identify the environmental impacts for the project, and propose and discuss mitigation for environmental losses.

5.

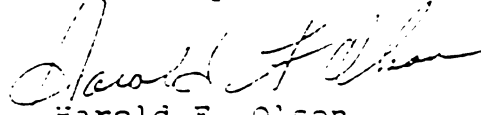
Threatened and endangered species potentially occurring in the project area are shown in the attachments. Other conspicuous wildlife species found in this area include mule deer, elk, black bear, mountain lion, bobcat, fox, coyote, beaver, numerous raptors, and a vast array of birds and small mammals.

The White Rock Canyon of the Rio Grande has been identified as a high priority transplant site for bighorn sheep. Subjecting this remote area to large-scale human activity may render White Rock Canyon unsuitable for wilderness conditioned species such as mountain sheep; items such as this should be addressed in the DEIS.

6.

The Department of Game and Fish will be better able to identify short-term and cumulative impacts to wildlife and its habitat resulting from the proposed Los Alamos-Santa Fe Route once the DEIS has been released for review and comment. Further coordination and consultation should be addressed to Andrew Sandoval of my staff at 827-7997.

Sincerely,



Harold F. Olson
Director

AVS/avs
Att.

- xc: William Taylor (Manager-Environmental Program, NMSHD)
- William Baltosser (Chief-Biological Services Div., NMGF)
- Dan Sutcliffe (Chief-Game Management Division, NMGF)
- Dick McCleskey (Chief-Fisheries Division, NMGF)
- John Hubbard (Chief-Endangered Species Section, NMGF)

Attachment has been revised to the current endangered species Regulation No. 657, dated January 9, 1983.

Appendix A
Exhibit 15, p.2

AMENDING THE LISTING OF ENDANGERED SPECIES AND SUBSPECIES OF NEW MEXICO

C. Listing includes all wild individuals and populations of these species and subspecies except in the case of the following: Gila trout--the listing excludes the population in McKnight Creek, Grant County; Arkansas River shiner--the listing excludes the population in the Pecos River drainage; bigscale logperch--the listing excludes the population in the Canadian River drainage.

I. Pursuant to the authority vested in the State Game Commission by the provisions of Section 17-2-41 New Mexico Statutes Annotated, 1978 Compilation, the following regulation supercedes regulation no. 624 as adopted July 22, 1983 and amended March 20, 1985 and is hereby adopted to become effective January 9, 1988.

Chapter 1. Definitions.

A. "Endangered, group 1," as used herein, shall mean any species or subspecies whose prospects of survival or recruitment in New Mexico are in jeopardy.

B. "Endangered, group 2," as used herein, shall mean any species or subspecies whose prospects of survival or recruitment in New Mexico are likely to be in jeopardy within the foreseeable future.

Chapter 2. Mammals.

A. Endangered, group 1:

- Arizona shrew, *Sorex arizonae*
- least chipmunk, *Eutamias minimus arizonae*
- gray wolf, *Canis lupus*
- bighorn sheep, *Ovis canadensis mexicanus*

B. Endangered, group 2:

- least shrew, *Cryptotis parva*
- spotted bat, *Euderma maculatum*
- southern yellow bat, *Myotis sp.*
- white-sided jackrabbit, *Lepus sylvaticus*
- Colorado chipmunk, *Eutamias quadrivittatus* ^{AUSTRIAL}
- southern pocket gopher, *Thomomys umbrinus*
- montane vole, *Microtus montanus arizonensis*
- meadow jumping mouse, *Zapus hudsonius*
- pine marten, *Martes americana*

Chapter 7. Crustaceans.

A. Endangered, group 1:

- Socorro Isopod, *Thermonpharisma thermophilum*

B. Endangered, group 2:

- Noel's amphipod, *Gammarus desperatus*

Chapter 8. Mollusks.

A. Endangered, group 1:

- Pecos acclinea, *Angelina pecos*
- Socorro spring snail, *Fonticella neomexicana*
- Roswell spring snail, *Fonticella roswellensis*
- Say's pond snail, *Lymnaea sarsata*
- Paperchell mussel, *Abdonia imbecillus*
- Pope's mussel, *Popeina popei*

B. Endangered, group 2:

- Gila spring snail, *Fonticella gila*
- New Mexico hot spring snail, *Fonticella thermalis*
- Chupadera spring snail, *Fonticella chupadera*
- Pecos spring snail, *Fonticella pecosensis*
- Alamogosa spring snail, *Tryonia alamogosa*
- Koster's spring snail, *Tryonia kosteri*
- Linnaeus' ramshorn snail, *Cyranus linnaei*
- Raymond's ramshorn snail, *Cyranus raymondii*
- wide pea-clam, *Musculium transversum*
- circular pea-clam, *Musculium partumelum*
- Sangre de Cristo pea-clam, *Pleidium sanguinicristi*
- Lilleborg's pea-clam, *Pleidium lilleborgii*

- C. Listing include all wild individuals and populations of these species or subspecies, except that the listing of the desert bighorn sheep excludes the population in the Polonchillo Mountains, Hidalgo County, NM and all captive stock.
- Chapter 3. Birds.
- A. Endangered, group 1:
- * peregrine falcon, *Falco peregrinus*, white-tailed ptarmigan, *Lagopus leucurus*
 - least tern, *Sterna antillarum*
 - common ground-dove, *Columbina passerina*
 - elegant trogon, *Trogon elegans*
 - buff-collared nighthawk, *Caprimulgus vociferans*
 - northern beardless-tyrantlet, *Campylorhynchus nayaritensis*
- B. Endangered, group 2:
- river cooter, *Pseudemys concinna*
 - hunch grass lizard, *Sceloporus uceroensis*
 - raghorn lizard, *Sceloporus graciosus*
 - mountain skink, *Eumeces callisephalus*
 - giant spotted whiptail, *Uroplatus*
 - plainbelly water snake, *Nerodia erythrogaster*
 - green rat snake, *Spiliscollis*
 - narrowhead garter snake, *Thamnophis*
 - western ribbon snake, *Thamnophis proximus*
 - rock rattlesnake, *Crotalus lepidus*

Chapter 5. Amphibians.

- A. Endangered, group 1:
- lowland leopard frog, *Rana yavaropendula*
 - western toad, *Bufo boreas*
 - Great Plains narrowmouth toad, *Gastrothryx olivacea*
- B. Endangered, group 2:
- James Mountain salamander, *Plethodon jamesi*
 - Sacramento mountain salamander, *Ambystes hardii*
 - Colorado River toad, *Bufo alvarius*

Chapter 6. Fishes.

- A. Endangered, group 1:
- blue sucker, *Cyclopterus elongatus*
 - Gila chub, *Gila intermedia*
 - Chihuahua chub, *Gila nigrescens*
 - Colorado squawfish, *Psychrolutes lucius*
 - southern redbelly dace, *Plexichthys erythrogaster*
 - phantom shiner, *Moxostoma valenciennesi*
 - Arkansas River shiner, *Notropis girardi*
- B. Endangered, group 2:
- Gila trout, *Salmo gillii*
 - Mexican tetra, *Aethya mexicana*
 - gray redbreast, *Moxostoma valenciennesi*
 - blunthead sucker, *Pantodonis discoloris*
 - roundtail chub, *Gila robusta*
 - bluntnose shiner, *Notropis bluntnose*
 - loach minnow, *Tiaroga cobitis*
 - suckermouth minnow, *Pseudorasbora parva*

- C. Listing include all wild individuals and populations of these species or subspecies, except that the listing of the desert bighorn sheep excludes the population in the Polonchillo Mountains, Hidalgo County, NM and all captive stock.
- Chapter 3. Birds.
- A. Endangered, group 1:
- * peregrine falcon, *Falco peregrinus*, white-tailed ptarmigan, *Lagopus leucurus*
 - least tern, *Sterna antillarum*
 - common ground-dove, *Columbina passerina*
 - elegant trogon, *Trogon elegans*
 - buff-collared nighthawk, *Caprimulgus vociferans*
 - northern beardless-tyrantlet, *Campylorhynchus nayaritensis*
- B. Endangered, group 2:
- brown pelican, *Pelecanus occidentalis*
 - olivaceous Cormorant, *Phalacrocorax olivaceus*
 - Mississippi kite, *Ictinia mississippiensis*
 - * bald eagle, *Haliaeetus leucorhynchus*
 - common black-hawk, *Buteo borealis*
 - wild turkey, *Meleagris gallopavo mexicana*
 - whooping crane, *Grus americana*
 - piping plover, *Charadrius melodus*
 - Costa's hummingbird, *Calypte costae*
 - lucifer hummingbird, *Calothorax lucifer*
 - violet-crowned hummingbird, *Amazilia violiceps*
 - white-eared hummingbird, *Hylachias leucotis*
 - broad-billed hummingbird, *Cynanthus latirostris*
 - Gila woodpecker, *Melanerpes uropygialis*
 - willow flycatcher, *Empidonax traillii*
 - thick-billed kingbird, *Tyrannus crassirostris*
 - Belt's vireo, *Vireo bellii*
 - gray vireo, *Vireo vicinior*
 - varied bunting, *Passerina versicolor*
 - Abercrombie's sparrow, *Pipilo aberti*
 - yellow-eyed junco, *Junco phaeonotus*

Chapter 4. Reptiles.

- A. Endangered, group 1:
- Gila monster, *Holodermis gerrhonotus*
 - gray-checked whiptail, *Cnemidophorus taylori*
 - Mexican garter snake, *Thamnophis sirtalis*
 - ridgenose rattlesnake, *Crotalus rattle*



Thomas S. Scanlon, Jr.

2

--Archeological inventories and clearances: all work done on the National Forest Lands involved needs to be done under a permit for that purpose.

] 4.
] 5.
] 6.

--All rights-of-way would need to be fenced.

--Access to National Forest Lands would need to be controlled.

Thank you for the opportunity to comment on the proposal. This letter is our preliminary input and should not be considered as all inclusive or as final input from us.

Sincerely,

M. V. Milanowski
MAYNARD T. ROST
Forest Supervisor

cc: Espanola
Tesuque
R.O. Engineering
Neeley

Appendix A
Exhibit 16, p.2





United States
Department of
Agriculture

Forest
Service

Santa Fe NF

P.O. Box 1689
Santa Fe, NM 87504

Reply To: 7710

Date: June 14, 1985

Thomas S. Scanlon, Jr.
H. W. Lochner, Inc.
P. O. Box 15205 - Suite C,
Santa Fe, New Mexico 87505

Dear Mr. Scanlon:

This is in response to the information and conversations you have had with Forest Engineer David Mealey on the Santa Fe - Los Alamos Alternate Route Corridor Study.

A limited review of the project has identified several concerns and interests relative to the Caja area of the Santa Fe National Forest. We need to study these things in further detail but suggest them to you as items for inclusion in your study report.

Route 1 would divide the National Forest lands into two parcels. Besides the disruption to management, this causes disruption of cattle between feed and water developments on two separate allotments. This route also goes through the northern portion of the Caja Wild Horse Territory detaching about 1000 acres from this territory that just recently suffered the loss of 3500 acres when a portion of the territory was transferred to the Cochiti Indian Reservation. A major road through this area would also allow easy access for the public and increase the incidence of wildlife harassment, off road vehicle use and the associated soil compaction and forage destruction. Vandalism of water and range improvements could be expected to increase.

2.

Routes 2, 3, 4, and 5 have some of the same concerns, but not to the same magnitude as route 1. There are already developments in the Buckman area that would fit the new roads purposes better.

All routes need to have the following things addressed:

— Threatened and Endangered Species:

- Whooping crane
- Bald eagle
- Peregrine falcon
- Pedocactus papyracanthus (grama grass cactus)

3.



Appendix A.
Exhibit 16, p.1



STATE OF NEW MEXICO
OFFICE OF CULTURAL AFFAIRS
HISTORIC PRESERVATION DIVISION

JUL 20 1987

DARREY CARRUTHERS
GOVERNOR

VILLA RIVERA, ROOM 101
228 EAST PALACE AVENUE
SANTA FE, NEW MEXICO 87503
(505) 627-8320

CLARA APODACA
CULTURAL AFFAIRS OFFICER

THOMAS W. MERLAN
DIRECTOR

July 16, 1987

Mr. S. A. Ball
Program Development Engineer
New Mexico Division, Region VI
Federal Highway Administration
Post Office Box 1088
Santa Fe, New Mexico 37504-1088

Re: Proposed Alternate Route from Santa Fe to Los Alamos

Dear Mr. Ball:

At your request, I have reviewed the alternate alignments being considered for a proposed route between Santa Fe and Los Alamos, New Mexico, in order to determine cultural resource issues which will require consideration in the draft Environmental Impact Statement and in Section 106 consultations for this undertaking.

I have enclosed a listing of properties entered in the State Register of Cultural Properties and National Register of Historic Places which are located in the general area of the proposed alternative routes. From the scale of the map provided with your request, it is impossible to determine if any of these properties will be affected by construction activities. Additional information on inventoried, but as yet unregistered, archaeological and historical sites in this area may be requested from the Archaeological Records Management System.

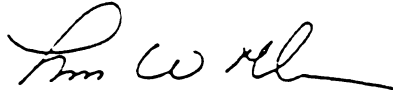
To my knowledge, few archaeological surveys have been performed in the areas which would be affected by the proposed alternatives, and I am not aware of any survey which has covered any of the proposed alternatives in its entirety. However, information sufficient to develop some understanding of the relative impacts on cultural resources for the three routes being considered may be available for planning purposes. Depending on the results of a preliminary assessment of existing survey data, it may be necessary to supplement existing information with sample surveys of the alternative routes. It will, of course, be necessary to conduct an inventory survey of the selected route, and to develop a treatment plan for historic properties affected by construction activities. Information on existing survey coverage may also be requested from the ARMS database.

Appendix A
Exhibit 17, p.1

Mr. S. A. Bell
July 16, 1937
Page 2

Thank you for the opportunity to consult with you in the early planning phase of this project. I will look forward to continuing this consultation as plans for the new highway are developed.

Sincerely,



Thomas W. Merlan
State Historic Preservation Officer

TWM:DER:bc/Log 10832

cc: W. L. Taylor
Marsha Jackson

Appendix A
Exhibit 17, p.2

Site Name: Bancelier National Monument

Site Number: 56 LA Number: HBI Number:

Los Alamos Vic Bandoval Legal:

Twelve miles south of Los Alamos.

Date: 06/10/69 Recor.Nat: NR Date: 10/15/66
Emerg: Elig: Not Elig: Removed:
District: 60 MultiRes: ThematicCo:

Owner/Contact:

Southwest Region/NPS
Post Office Box 708
Santa Fe NM 87501

Land Stat: Fed NPS .. Bancelier

Site Name: Cieneguilla Pueblo (LA 16)

Site Number: 199 LA Number: 16 HBI Number:

County Road Legal: Cieneguilla Grant
La Cienega Vic Santa Fe

E bank of Santa Fe River in Cieneguilla Grant.

R Date: 09/20/70 Recor.Nat: NR Date:
Emerg: Elig: Not Elig: Removed:
District: MultiRes: ThematicCo:

Owner/Contact:

Land Stat: Priv

Appendix A
Exhibit 17, p.3

Site Number: 957 LA Number: HBI Number:
White Rock Vic Santa Fe Legal:

SR Date: 03/12/82 Recom.Nat: 03/12/82 NR Date: 12/08/82
Emerg: Elig: Not Elig: Removed:
District: MultiRes: ThematicGp:

Owner/Contact:

San Ildefonso Pueblo

San Ildefonso NM 87501

Land Stat: Priv

Site Name: Pajarito Springs Site

Site Number: 858 LA Number: HBI Number:
White Rock Vic Los Alamos Legal:

SR Date: 03/12/82 Recom.Nat: 03/12/82 NR Date: 12/06/82
Emerg: Elig: Not Elig: Removed:
District: MultiRes: ThematicGp:

Owner/Contact:

Los Alamos County
2300 Trinity Drive
Los Alamos

NM 87544

Land Stat: Local County

Los Alamos

Appendix A
Exhibit 17, p.4

APPENDIX B
AGENCY COMMENTS ON DEIS

- EXHIBIT 1 - U.S. Department of Transportation, Office of the Secretary of Transportation, September 26, 1988.
- EXHIBIT 2 - U.S. Department of Agriculture, Forest Service, Santa Fe National Forest, October 3, 1988.
- EXHIBIT 3 - U.S. Department of Agriculture, Forest Service, Southwestern Region, September 12 1988.
- EXHIBIT 4 - U.S. Department of the Army, Corps of Engineers, September 29, 1988.
- EXHIBIT 5 - U.S. Department of Energy, Los Alamos Area Office, September 6, 1988.
- EXHIBIT 6 - Los Alamos National Laboratory, October 11, 1988.
- EXHIBIT 7 - Los Alamos National Laboratory, September 30, 1988.
- EXHIBIT 8 - U.S. Department of Interior, Office of Environmental Project Review, November 17, 1988.
- EXHIBIT 9 - U.S. Environmental Protection Agency, Region VI, September 28, 1988.
- EXHIBIT 10 - New Mexico State Clearinghouse Final Review Certification, September 22, 1988.
- EXHIBIT 11 - New Mexico Energy, Minerals and Natural Resources Department, September 23, 1988.

- EXHIBIT 12 - New Mexico Health and Environment Department, August 3, 1988.
- EXHIBIT 13 - New Mexico Department of Game and Fish, September 14, 1988.
- EXHIBIT 14 - New Mexico Interstate Stream Commission, September 8, 1988.
- EXHIBIT 15 - New Mexico Office of Cultural Affairs, Historic Preservation Division, State Historic Preservation Officer, August 26, 1988.



U.S. Department of
Transportation
Office of the Secretary
of Transportation

Memorandum

Subject: Draft Environmental Impact Statement
Santa Fe-Los Alamos Corridor
FEWA-NM-88-01-D

Date: SEP 26 1988

From: Donald R. Trilling
Acting Director, Office of
Transportation Regulatory Affairs

Reply to
Action of

To: Eugene W. Cleckley, Chief
Environmental Operations Division, BEV-11

We have reviewed the draft environmental impact statement for the proposed alternate highway from Santa Fe to Los Alamos.

The proposed highway would be a four-lane, divided highway with limited access. Construction alternates addressed in this EIS are between the Santa Fe Relief Route and New Mexico State Road 4. For comparison of alternatives, EIS termini are Los Alamos and the Santa Fe Relief Route/I-25 interchange. The EIS notes projects to improve State Road 4 which are planned or under development, but is unclear about proposed improvements to highways west of the intersection of new construction alternates with State Road 4. The final EIS should clarify the status of proposed improvements between the proposed new highway and Los Alamos, and address impacts of such improvements or refer to any environmental documentation which has been completed.

Each of the alternatives involves substantial impacts. The draft EIS provides a good overview of the impacts. If a build alternative is selected, the final EIS should address the impacts of the selected alternative and mitigation measures in further detail. For example, the Potrillo alternate would involve excess material; spoil disposal should be addressed. The Potrillo alternate would also involve section 4(f) lands. All three alternates may impact endangered species and involve significant visual impacts. Archeological sites affected by the selected alternate also need to be further studied, as stated in the draft.

We appreciate the opportunity to review this EIS.

Appendix B
Exhibit 1



United States
Department of
Agriculture

Forest
Service

Santa Fe NF

P.O. Box 1689
Santa Fe, NM
87504

Caring for the Land and Serving People

Reply To: 1950

Date: October 3, 1988

W. L. Taylor
Environmental Program Manager
New Mexico State Highway and
Transportation Department
P.O. Box 1149 - Room 104
Santa Fe, NM 87504-1149

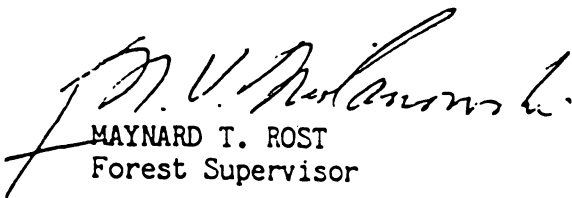
Dear Mr. Taylor:

Thank you for the opportunity to comment on the DEIS for the Santa Fe - Los Alamos Corridor Study. Enclosed are the specific comments we have regarding the DEIS.

The Santa Fe National Forest prefers the Mortandad alignment alternative. Of the action alternatives, it will least impact National Forest lands and their resources. The resources of most concern are visual and wildlife. The Montoso and Potrillo alignments will severely impact the visual resources, especially near the Rio Grande. By bisecting the wild horse range, these two alternatives could jeopardize the viability of the small herds in the Caja del Rio Grande.

Please consider our comments and concerns in developing the Final EIS and in recommending the decision.

Sincerely,


MAYNARD T. ROST
Forest Supervisor

Enclosure

cc w/ enclosure: Regional Forester

Appendix B
Exhibit 2, p.1





SANTA FE NATIONAL FOREST
 SPECIFIC COMMENTS ON THE
 DEIS FOR THE SANTA FE - LOS ALAMOS CORRIDOR

Table 1 - Summary Matrix
 Visual Impact. No Build Alternate.
 Insert "No Visual Impact"

2.

Chapter III. AFFECTED ENVIRONMENT

H. Vegetation and Soils (page 27)

Comment: This is a weak discussion of the types of vegetative communities found within this project area. Further under the soils section it would be more desirable to utilize the latest soil mapping done on Forest Service lands to describe the types of soil encountered. This would provide more valid information than from an older inventory or SCS.

3.

Paragraph 1. The arroyo bottoms are usually void of vegetation. As you move away from them and onto adjacent terraces, you see the vegetation described.

Paragraph 2. "... the deep canyons sloping toward the Rio Grande have considerable vegetation on the NORTH exposure and little on the SOUTH exposure." OK

Chapter IV. ENVIRONMENTAL CONSEQUENCES

(page 37) Would like to see a section on environmental consequences as related to soils. This section can speak to the direct effect to the soil resource (the Affected Environment section expresses a concern of the soils suitability on road fill, etc.), and can also speak to erosion concerns for each of the action alternatives. Speak to amount of soil disturbance, cut-and-fill slopes, etc. per alternative.

4.

A. Land Use

3. Compatibility with Land Use Plans

a. Santa Fe National Forest

Paragraph 3 (page 45). There are degrees of disruption of the "L" area, however, there are qualitative differences in the alternatives as well. The Mortandad alignment crosses a narrow neck at the extreme northern end of the "L" area, modifying its usability very little. The Montoso alignment splits the "L" area virtually in half, potentially affecting the experience available on the large area. Portrillo alignment is the worst, however, traversing several miles of the area, negatively affecting nearly 3,000 acres of semi-primitive, non-motorized recreational experience.

5.

Appendix B
 Exhibit 2, p.2



The Montoso and Potrillo alignments would fragment both the habitat and population of wild horses. These alignments would require significant and potentially long term mitigation to reduce the risk of losing population viability. The Mortandad alignment does not cross habitat presently utilized or expected to be important in managing the wild horse population. Impacts would be indirect and of relatively minor risk compared to the direct and indirect impacts and risks related to the other two alignments.

5.

The concrete box culverts are mitigation measures which may or may not meet wild horse management needs. They may represent only one tool with limited application in mitigation needed for the wild horse population.

- J. Natural Resources
 - 2. Threatened and Endangered Species
 - a. Flora

The Mortandad alignment presents the least risk to grama grass cactus, Toumeyia nanvaccantha (Engelm.) Britt, & Rose. This is a candidate species for federal protection as published in the Federal Register, December 15, 1980. Category 2 does not mean that listing as threatened or endangered is not warranted. There was insufficient data to make a determination at that time. The Mortandad alignment presents the least risk to this Federal Category 2 species.

6.

- b. Fauna

On page 97, it is stated that bald eagle impacts need to be minimized by route selection and possibly through scheduling of activities. This was not addressed in the Mitigation Measures section other than reference to the Biological Opinion. Which route will least impact bald eagles? Statements on page 97 raise the question. This document is asking for input to alternative selection and yet the bald eagle information is not provided by alternative.

The assessment of whooping cranes needs to address collisions with structures. Primary factors to consider are the height of structures such as bridges and the structural design. Once again the statement is made that effects may be minimized through route selection. No information is provided to evaluate the risk associated with each alignment alternative.

7.

The Mortandad alignment is clearly stated as having the least impact on peregrine falcon. Analysis will probably show this same alignment to be of lowest risk to bald eagle and whooping crane. The bridge heights above ground level, of the other alignments, are greater than the Mortandad bridge height and therefore carry a higher risk of collision. The collision risk for whooping crane would be greater than the risk to bald eagles. Selection of a bridge design and alignment which keeps the bridge structure lowest to ground level will probably present the least risk. Bridge designs such as the concrete box girder or the concrete arch probably present the lowest collision risk due to the relatively large amount of air spaces between obstructing bridge components.

On page 98 the bighorn sheep is shown as being a state endangered group 1 species. The White Rock area has received habitat evaluation for Ovis

8.





canadensis paradensis or Rocky Mountain bighorn sheep. The bighorn sheep habitat would be least affected by the Montandad alignment. This alignment crosses the extreme north end of the habitat and would have minor risks of habitat fragmentation and human harassment. The Montoso alignment splits the evaluated area into two parcels with two-thirds laying to the north of the highway and one-third to the south. The Potrillo alignment would split the evaluated area into approximately one-third of the evaluated area being north of the highway and two-thirds south of the highway.

8.

The Montoso and Potrillo alignments could cause significant loss of habitat quality from fragmentation and human harassment.

3. Biological

(page 99). The paragraph utilizes more recent information than the letter referenced in Appendix XVI of section X. The two southern alignments splitting the wild horse habitat is correct. The Montandad alignment does not directly affect the wild horse habitat.

The statement that "adverse impacts will be mitigated largely by the concrete box culvert stock passes that will permit the horses (as well as cattle) to move freely from one side of the road to the other" is not a correct statement. Wild horses may or may not pass "freely" utilizing these passes. If the animals do not elect to utilize them then more costly approaches to obtaining genetic exchange may be periodically necessary.

9.

The degree of impact has been coordinated but the concerns have not been resolved if either of the two southern alignments are selected.

K. Historical and Cultural Resources

(page 99). Based on a literature search and apparently some recognizance, the DEIS projects the following numbers of sites:

Montoso: 19 - 24 sites

Potrillo: 14 - 16 sites

Mortandad: 15 sites

10.

An actual, on the ground survey was conducted along 1.5 miles of the Mortandad corridor through the San Ildefonso Reservation. This survey alone located 8 cultural resource sites. If this 1.5 mile survey is even remotely representative of site densities along the corridors, then the projected numbers of sites are in error. For example, if each 1.5 miles of the Montandad corridor has 8 sites, then the total for the entire corridor would be 173 sites, not the projected 15 sites.

N. Visual

3. Significance of the Main Visual Issues

Appendix B
Exhibit 2, p.4



Paragraph 3 (page 111). Pre-split rock cuts are often not acceptable (visually) nor are "benches". Opportunities for "broken-face blasting" with staggered benches and the creation of planting pockets should be explored throughout, even in areas of rugged terrain. In areas where the fill slopes may be highly visible from the road, or from a distance, retaining structures and/or revegetation should be used to minimize visual impacts.

11.

Cuts, fills, and retaining structures should be evaluated and designed to repeat naturally occurring form, line, color, and texture and therefore emulate the characteristics of the surrounding landscape.

Chapter V. MITIGATION MEASURES

C. Wildlife

(page 118). "The adverse impacts on wild horses, which could result from the Montoso and Potrillo alignments, will be mitigated by the provision of concrete box culvert stock passes." This may provide some mitigation. It should not be construed as full mitigation. It is likely that wild horses will not "freely" utilize these passes and other actions will be periodically necessary to maintain viable populations.

In Chapter IV the document states that the Potrillo and Montoso alignments pose a serious concern to peregrine falcon, but that Mortandad does not. Mitigation of impacts may not be possible with the Potrillo and Montoso alignments.

12.

D. Grazing

(page 118). Box culverts only represent mitigation for passing livestock from one side of the highway to the other. Pasture fencing changes, water developments, and other mitigation measures may be necessary to more fully mitigate impacts on livestock grazing.

Other

There is a need to identify specific mitigation measures as related to watershed management. I.e., what will be done within ephemeral drainages, what will be done to reduce erosion, minimize earth disturbance, stabilize cut and fill slopes, vegetation establishment on disturbed sites, etc.

Appendix B
Exhibit 2, p.5





United States
Department of
Agriculture

Forest
Service

Southwestern
Region

517 Gold Avenue S.
Albuquerque, NM 87102-0084
(505) 842-3300

Reply To: 1950/7700

Date: SEP 12 1988

RECEIVED SEP 15 1988
PUBLIC INVOLVEMENT UNIT
N.M.S.H.T.D.

W. L. Taylor
Environmental Program Manager
New Mexico State Highway and Transportation Department
P.O. Box 1149--Room 104
Santa Fe, NM 87504-1149

Dear Mr. Taylor:

The following comments pertain to the Draft Environmental Impact Statement (DEIS) for the Santa Fe-Los Alamos Corridor Study.

The DEIS needs to include a biological evaluation of Threatened, Endangered and Sensitive Species for the portions of the Alternate Routes which traverse National Forest lands. The biological evaluation should include the following:

1. An identification of all listed, proposed, and sensitive species known or expected to be in the project area or that the project potentially affects. Contact the Fish and Wildlife Service (FWS) or the National Marine Fisheries Service (NMFS) as part of the informal consultation process for a list of endangered, threatened, or proposed species that may be present in the project area.
2. An identification and description of all occupied and unoccupied habitat recognized as essential for listed or proposed species recovery, or to meet Forest Service objectives for sensitive species that are identified.
3. An analysis of the effects of the proposed action on species or their occupied habitat or on any unoccupied habitat required for recovery.
4. A discussion of cumulative effects resulting from the planned project in relationship to existing conditions and other related projects.
5. A determination of no effect, beneficial effect, or "may" effect on the species and the process and rationale for the determination, documented in the environmental assessment or the environmental impact statement.
6. Recommendations for removing, avoiding, or compensating for any adverse effects.
7. A reference of any informal consultation with the Fish and Wildlife Service as well as a list of contacts, contributors, sources of data, and literature references used in developing the biological evaluation.

Appendix B
Exhibit 3, p.1





W. L. Taylor

Caring for the Land, Serving People

2

Any mitigation requirements should be included in the Final Environmental Impact Statement.

2.

Thank you for the opportunity to comment.

Sincerely,

for SOTERO MUNIZ
Regional Forester

cc:
Forest Supervisor, Santa Fe National Forest
Bill Zeedyk, R.C. WL&F

Appendix B
Exhibit 3, p.2





DEPARTMENT OF THE ARMY
ALBUQUERQUE DISTRICT CORPS OF ENGINEERS
P. O. BOX 1580
ALBUQUERQUE, NEW MEXICO 87103-1580

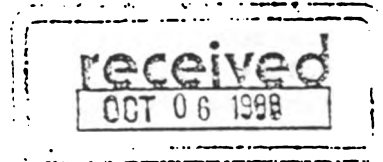
RECEIVED

OCT 6 1988

REPLY TO
ATTENTION OF

September 29, 1988

Construction-Operations Division
Regulatory Branch



Mr. S. A. Ball, District Engineer
New Mexico Division, Region 6
USDT, Federal Highway Administration
P.O. Box 1088
Santa Fe, New Mexico 87504-1088

Dear Mr. Ball:

Reference is made to your letters dated August 1 and August 30, 1988, providing for our review two copies of the Draft Environmental Impact Statement (DEIS) for the Santa Fe - Los Alamos Alternate Highway. Our comments are provided below:

Statements in the DEIS Table I, "Water Quality and Wetlands" section and paragraph "L. Construction Impacts," page 104, indicate that a temporary work bridge crossing the Rio Grande would be required for the Potrillo and Mortandad alignments. The temporary bridges would be in place approximately three years. Paragraph "G. Stream Modification or Impoundment Impacts," page 92, adequately discusses Clean Water Act Section 404 permit requirements for crossings of minor intermittent drainages and the three alternative bridges over the Rio Grande. However, paragraph "G." should additionally discuss impacts and permit requirements associated with the temporary work bridges. If the construction of the temporary bridge would involve the discharge of more than 200 cubic yards of temporary or permanent fill material below the plane of ordinary high water, or would not satisfy the conditions of the nationwide permit for minor road crossings, summary enclosed, an individual Section 404 permit will be required.

Section 404 of the Clean Water Act regulates the discharge of dredged or fill material into waters of the United States, including wetlands. This jurisdiction extends to the ordinary high water mark of the Rio Grande or any identifiable waterbody and does not always include the entire floodplain of the waterbody. Certain aspects of road crossing work in the Rio Grande floodplain may involve discharges of dredged or fill

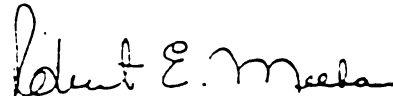
Appendix B
Exhibit 4, p.1

material outside of the ordinary high water mark which are not regulated under Section 404. We, therefore, recommend that the statement in paragraph "I. Flood Plains," page 94, be modified to include discharges below the ordinary high water mark of the Rio Grande as regulated under Section 404.

2.

If you have any questions, please feel free to contact Ms. Jean Manger or Mr. Andrew Rosenau at (505) 766-2776.

Sincerely,



Robert E. Meehan, P.E.

Chief, Construction-Operations Division

Enclosure

Appendix B
Exhibit 4, p.2



Department of Energy
 Albuquerque Operations
 Los Alamos Area Office
 Los Alamos, New Mexico 87544

N. MEX. DIV.

SEP 17 1988

SEP 06 1988

Mr. Anthony L. Alonzo
 Division Administrator
 Federal Highway Administration
 New Mexico Division
 P. O. Box 1088
 117 U. S. Court House
 Santa Fe, NM 87504

Dear Mr. Alonzo:

Enclosed please find comments on the Preliminary Draft Environmental Impact Statement (DEIS). Questions regarding the comments should be addressed to Lee F. Le-Doux of my staff at 667-4661.

Sincerely,

Eloy M. Nunez, Chief
 Project & Facility Management Branch

9037A

Enclosure

| | | | | |
|----------------|--------|-----------------------|-----|----------------|
| ADA | ALL | ALL | ALL | ALL |
| DA | CIST-A | ALL DIST-B | ADM | BR |
| ADA | A-1 | B-1 | FS | PR |
| S | A-2 | B-2 | FC | RW |
| SEA | A-3 | B-3 | | Comments _____ |
| | S | S | | _____ |
| | | | | _____ |

COMMENTS
Preliminary Draft Environmental Impact Statement
Santa Fe - Los Alamos Corridor Study
U. S. Department of Energy

1. Many statements are made that the construction of a new highway will improve safety conditions. However, no safety analysis is found in the document. If safety is a major issue, an analysis of the safety concerns should be included and must take into account the type of containers used to transport hazardous materials, specifically transuranic waste. 1.
2. Throughout the document many terms are used interchangeably, i.e., hazardous waste, hazardous materials, transuranic waste, nuclear materials, etc. This is confusing and misleading. Be consistent with these terms and provide a glossary of terms so as to eliminate misinterpretation. 2.
3. In Summary section, the transportation of Los Alamos National Laboratory (Laboratory) hazardous waste and storage facilities are referred to in Description paragraph. The type of hazardous waste (chemical, radioactive, and/or mixed) is not defined. Chemical hazardous waste (EPA regulatory definition) does not go to storage facilities; it is transported out of state for treatment and/or disposal. A stronger point could be made by referring to hazardous materials since hazardous materials are, in most cases, much more hazardous to human health and the environment than chemical hazardous waste. 3.
4. The impact on public health of transporting transuranic waste is never addressed. I am assuming transportation of transuranic waste is a major concern. What is the public's potential exposure to radionuclides? Compare each alternative. 4.
5. Purpose and Need for Action section does not clearly justify the action. See comment 1. The discussion on the use of the Santa Fe airport is questionable. On what basis is the statement made that the Los Alamos Airport is not cost-efficient? 5.
6. References should be cited throughout document. E.g., on page 15, reference is made to safety standards without a citation. 6.
7. In Affected Environment section a statement is made, "relatively clean air and water. What does this mean? 7.
8. The Environmental Consequence section should address potential environmental contamination and public exposure issues for each alternative under both normal and accident conditions. The emphasis of this section seems to be on institutional/socioeconomic issues, not environmental issues as one would expect. 8.

Appendix B
Exhibit 5, p.2

9. In the IANL Viability section many terms are used for IANL. Be consistent and do not use "lab". The use of the term "technology transfer" is questionable. 9.
10. On page 89, Hazardous Waste Transportation, is this supposed to be transuranic waste transportation? Again terms are unclear. In paragraph 3, what is meant by this statement, "White Rock could be avoided at the discretion of DOE"? 10.
11. Is a wetland/floodplain notification needed? 11.
12. On page 128, paragraph K. states, "project will result in a reduction in the present risks associated with transportation of hazardous material". This statement is not justified by the analysis shown in this document. If risk calculations were done, they should be part of the document. 12.
13. p. 11, lines 12-13. The statement that the environmental consequences of the proposed action are "not significant" is a legal finding pursuant to the requirements of NEPA, which should not, and can not, be made within the environmental document, whether an EIS or an Environmental Assessment (EA). Instead, the finding of significant (or no significant) impact is made by an agency decision-maker on the basis of information presented in said environmental documentation. 13.
14. p. 11, par. 2. While the first sentence in the paragraph indicates that severe harmful effects are not anticipated, the third sentence, same paragraph, reveals that efforts planned to "minimize effects" will indeed be "challenging." This appears to be a contradiction which requires clarification. 14.
15. Plate X. The Property Ownership map is crucial to the review of the document and is generally of too poor quality and resolution for the reader to accurately determine precise locations, ownerships, and attendant impacts as they are described. Delineation of Department of Energy (DOE) lands, for example, is difficult for the reader to ascertain. "Patented" lands in the key was likely intended to read "patented" lands. 15.
16. p. 94, Section Flood Plains. Floodplain is one word. The statement that there is "little wetland or floodplain area" in the White Rock Canyon should be qualified and/or quantified. The flood area "north of Buckman" is not identified in location or extent in any graphic to determine significance. The timing, seasonal nature, or frequency of flooding within the hundred year floodplain would seem to hold no relevance with respect to determination regarding the applicability of Executive Order (E.O.) 11988, E.O. 11990, Section 404 of the Clean Water Act. The fact that no Federal Insurance Rate Map exists for DOE land 16.

Appendix B
Exhibit 5, p.3

abutting the Rio Grande on the west does not preclude the necessity for floodplain consideration and compliance with E.O. 11988, and the Water Resource Council (WRC) Guidelines for implementing that Order should be consulted.

Finally, the statements in paragraph 2, same section, appear to imply that compliance with E.O. 11988 is achieved because there will be no increase in flooding as a result of the project. This appears to be a misinterpretation of floodplains legislation, which is oriented toward the protection of the natural values of floodplains and the minimizing of federal activities and structures within the floodplain.

The section does not treat compliance with E.O. 11990, although the existence of wetland within the canyon is alluded to in the second sentence.

16.

- 17. p. 103, pars. 3 and 4. Although the previous section on floodplains (p. 94) indicates that "project work in the floodplain area will be accomplished in accordance with the conditions of the Nationwide Permit for Minor Road Crossing," the placement of up to one million cubic yards of fill in candidate canyons (e.g., Water and Potrillo) will not likely be recognized under the nationwide permit.

17.

- 18. p. 120, Table 22. Plan sheet depicts aerial photos of three (3) various alignments for consideration. All the photo alignments need to be overlaid on the Los Alamos Site Development Plan with an appropriate matching scale. Each individual alignment corridor must be evaluated and assessed against existing and future land use, the Los Alamos National Laboratory (LANL) Institutional Plan, future missions, and ongoing environmental and future environmental considerations involving site development to determine compatibility and constraints.

18.

9042A

Appendix B
Exhibit 5, p.4

Los Alamos

Los Alamos National Laboratory
Los Alamos, New Mexico 87545

DATE: October 11, 1988
REPLY REFER TO: DDJ/88-132
MAIL STOP: A101
TELEPHONE: 667-4168

PUBLIC INVOLVEMENT UNIT
N.M.S.I.L.T.D.
RECEIVED OCT 14 1988

Public Involvement Coordinator
New Mexico State Highway
& Transportation Department
P. O. Box 1149
Santa Fe, New Mexico 87504-1149

Dear Sir:

I attended the August 25, 1988, public hearing that was held in Santa Fe to discuss the new Santa Fe-Los Alamos road. I had the opportunity to express the Los Alamos National Laboratory's support for the proposed road, and want to reaffirm that support via this letter. I was pleased to note that many others attending the hearing also supported the new road.

1.

It was also apparent from the meeting that the greatest concerns focused on the selection of a particular route, or other details such as the location of the off ramps, etc. Since the meeting, I have interacted with several Laboratory employees who have expressed concerns about one route or another. In particular, I talked with Sid Singer, president of the Salva Tierra Homeowners Association, who also happens to work at the Laboratory. While not opposing the concept of a new road, their group is strongly opposed to paving and enlarging the Buckman Road and its interconnect to the Mortandad alternative.

2.

In discussing this with employees, we are consistently taking the position that the Laboratory does not favor any particular route alternative over another. We feel that any of the routes can serve the needs of the Laboratory and will support the State in its choice.

3.

I appreciate the opportunity to provide this input.

Sincerely,



James F. Jackson
Deputy Director

JFJ/mh

Cy: S. S. Recker, DIR, MS A100
A. J. Tiedman, ADS, MS A120
S. Singer, DRA/DLT, MS A110
E. Sitzberger, ERA/LAO, MS M899
CRM-4, MS A150

Appendix-B
Exhibit 6

Los Alamos

Los Alamos National Laboratory
Los Alamos New Mexico 87545

DATE September 30, 1988
REPLY REFER TO ADS-88-522
MAIL STOP A120
TELEPHONE 7-3535

RECEIVED OCT 15 1988
PUBLIC INVOLVEMENT UNIT
N.M.C.M.T.D.

W. L. Taylor
Environmental Program Manager
New Mexico State Highway and Transportation Department
P.O. Box 1149
Santa Fe, New Mexico 87504-1149

Dear Mr. Taylor:

Thank you for the opportunity to review the Draft Environmental Impact Statement for the Santa Fe-Los Alamos Corridor Study.

The Los Alamos National Laboratory concurs in most of the basic conclusions reached in the study. While we would prefer greater quantification of ecological impacts, the environmental consequences of the proposed highway (with the exception of the effect of the bridge on the character of White Rock Canyon) do not appear significant.

Sincerely,

Jane E. Sharp
For Allen J. Tiedman
Associate Director
for Support

AJT:CO:

Cy: E. Sitzberger, ERA--IAD, MS M899
T. Gunderson, HSE-DO, MS K491
C. Olinger, HSE-8, MS K490

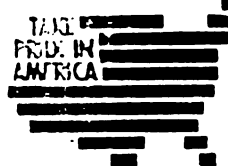
RESPONSE: NOTED

Appendix B
Exhibit 7



United States Department of the Interior

OFFICE OF ENVIRONMENTAL PROJECT REVIEW
WASHINGTON, D.C. 20240



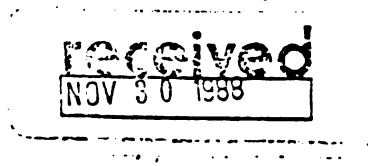
ER 88/763

NOV 17 1988

N. MEX. DIV.

NOV 21 1988

Mr. Antony L. Alonzo
Division Administrator
Federal Highway Administration
P. O. Box 1088
Santa Fe, New Mexico 87504-1038



Dear Mr. Alonzo:

This responds to your request for the Department of the Interior's comments on the draft environmental statement for the Santa Fe-Los Alamos Corridor, Santa Fe and Los Alamos Counties, New Mexico.

SECTION 4(f) COMMENTS

Mortandad Alternative (IID)

This alternative (the preferred alternative) would increase traffic through the East Jemez-SR 4 intersection, and would require an elaborate interchange adjacent to the Tsankawi Unit of the Bandelier National Monument (BNM).

Visual and noise intrusions from a three-tiered interchange, and increased traffic in this rural and still wild area, may constitute a constructive use of the historically significant Tsankawi Ruins. Further investigation of the degree of impairment of the function of this unit of the BNM should be undertaken with the National Park Service (NPS) and the State Historic Preservation Officer (SHPO) and reported in your final statement.

1.

In order to reduce or eliminate the possibility of a constructive use, we recommend that the Mortandad Alternative be redesigned to route the majority of traffic to Pajarito Road. The intersection design could then be scaled down to be more compatible with the present nature of this area.

2.

Montoso Alternative (IIB)

The Montoso Alternative would be almost adjacent to the entrance station of the BNM. The 3,000-foot-long bridge crossing White Rock Canyon, in the area immediately north of Frijoles Canyon, would visually impact most users of Frijoles Canyon (Plate IV), and would introduce new noise intrusions into the park. The Frijoles Canyon area is the most popular visitor use area in the BNM.

3.

Appendix B
Exhibit 3, p.1

Project-related impacts to the Bandelier Wilderness are also of great concern. The Bandelier Wilderness incorporates 23,267 acres of Class I air quality area. Visual and noise intrusions introduced by the proposal could significantly degrade the wilderness character. The criteria for wilderness designation include natural conditions, with "an outstanding opportunity for solitude."

4.

Although the draft statement concludes there will be minimal impact to air quality, NPS visibility research indicates that relatively clean scenic vistas are the most vulnerable to any new increments of pollution.

5.

The Montoso Alternative would very likely increase visitation to the BNM, as recognized in the statement. However, visitation to Frijoles Canyon is at, or exceeds, maximum levels during the summer. Enhanced access and increased visitation levels would significantly impact all park operations, management, resources, values and the quality of the visitor experience.

6.

The Montoso Alternative could also expose park visitors and employees to hazardous materials, in the event of an accident on the new highway.

7.

For these reasons, it is our opinion that construction of the Montoso Alternative would substantially impair the function of the BNM. This would constitute a constructive use of the BNM, and would subject the Montoso Alternative to the requirements of Section 4(f). Further coordination on this matter should be undertaken with the NPS and reported in your final statement.

8.

At this time, we would object to Section 4(f) approval of the Montoso Alternative on the grounds that there are feasible and prudent alternatives that would have lesser impacts to Section 4(f) resources.

Potrillo Alternative (IIC)

The Potrillo Alternative would require the use of 9.6 to 18.6 acres of land from two Los Alamos County parks. The parkland along the Rio Grande River was acquired from the General Service Administration (GSA) as surplus property, and is subject to the terms and conditions of the deed of transfer and to GSA regulations. Consultation regarding these restrictions should be undertaken with the county of Los Alamos, the NPS, and the GSA.

9.

We note that it may be possible to reduce or eliminate the taking of land from the Pajarito Acres Subdivision Park by minor changes in alignment and/or geometrics of the proposed roadway (e.g., a narrower right-of-way with New Jersey barriers), or by use of the rejected Potrillo Tunnel alternatives. This should be addressed in final statement.

Measures to minimize harm for these park involvements should include parkland replacement, appropriate landscaping, and other measures that may be requested by the officials with jurisdiction over these lands.

9.

ENVIRONMENTAL STATEMENT COMMENTS

Enclosed please find our specific comments on the draft environmental statement for the Santa Fe-Los Alamos Corridor.

10.

For the reasons mentioned therein, we recommend that required cultural resource surveys be completed, and that discovered sites be evaluated, prior to alternative selection. Please note that Section 4(f) would apply to any significant site that warranted preservation in place, and that any determination that in situ preservation was not warranted should receive the concurrence of the SHPO and the Advisory Council on Historic Preservation.

11.

Also note that the U. S. Fish and Wildlife Service (FWS) advises that formal consultation under Section 7 of the Endangered Species Act will be required if either the Montoso or Potrillo Alternative is selected.

12.

The FWS further advises that, in its opinion, the Montandad Alternative would have the least impact to fish and wildlife resources.

FISH AND WILDLIFE COORDINATION ACT COMMENTS

A Section 404 permit from the Corps of Engineers for proposed bridge and temporary bridge construction may be necessary. Accordingly, the following comments do not preclude separate evaluation and comment by the FWS based on any new information that may be available at the time of permit application.

If permits are required, the FWS advises that it would most likely recommend that the permits require: (1) stabilizing fill areas with suitable vegetation, (2) excluding the excavation or filling of specific areas because of their habitat value, (3) testing of fill material for toxic pollutants, (4) inclusion of erosion control features such as the use of staked hay bales in cut-and-fill areas, (5) immediate reseeding using burlap bags or protective coverings while seed is taking root, (6) turbidity control features such as the use of cofferdams and/or silt screens around bridge areas, and (7) acquisition and management of suitable replacement habitat.

13.

SUMMARY COMMENTS

Based on information presently available, the Department of the Interior would most likely object to Section 4(f) approval of the Montoso and Potrillo Alternatives. We would be willing to reconsider this position with regard to the Potrillo Alternative depending on specific measures to minimize or avoid harm that may

14.

be developed in consultation with the officials having jurisdiction over the affected parklands.

The Department of the Interior may concur with Section 4(f) approval of the Mortandad Alternative, providing design revisions and other measures to minimize harm are sufficient to significantly reduce or eliminate constructive use of the Tsankawi Unit of the BNM.

14.

We look forward to reviewing any Section 4(f) evaluations that may be circulated for this project.

For matters pertaining to cultural, park, and recreational resources, and for all National Park System issues, please contact the Regional Director, Southwest Region, National Park Service, P. O. Box 728, Santa Fe, New Mexico 87504-0728 (FTS 476-6388 or 505/988-6388). For matters pertaining to fish and wildlife resources, endangered species, and coordination under the Fish and Wildlife Coordination Act, please contact the Field Supervisor, Fish and Wildlife Service, Suite D, 3530 Pan American Highway NE, Albuquerque, New Mexico 87107 (FTS 474-7877 or 505/883-7877).

We appreciate the opportunity to provide these comments.

Sincerely yours,


Bruce Blanchard
Director

Enclosure

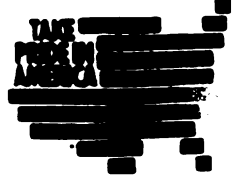
cc: Mr. W. L. Taylor
Environmental Program Manager
New Mexico State Highway and Transportation
Department
P. O. Box 1149
Santa Fe, New Mexico 87504-1149

Appendix B
Exhibit 8, p.4



United States Department of the Interior

OFFICE OF ENVIRONMENTAL PROJECT REVIEW
WASHINGTON, D.C. 20240



DEPARTMENT OF THE INTERIOR

Comments on the

Draft Environmental Statement for

Santa Fe-Los Alamos Corridor

Santa Fe and Los Alamos Counties

New Mexico

ENCLOSURE (5 pages) from letter dated November 17, 1988

Appendix B
Exhibit 8, p.5

ENVIRONMENTAL STATEMENT COMMENTS

I. The following comments are related to Table 1, Summary Matrix:

A. Traffic Flow: The table does not show changes to traffic flow relative to East Jemez Road past Tsankawi Ruins under the Mortandad Alternative.

This section of the table should show which existing routes would be used between SR 4 and Los Alamos. As shown for the Montoso and Potrillo Alternatives, traffic would be routed through both Pajarito and East Jemez Roads (pages 8-10).

B. Right-of-way: This section of the table should show the potential conflicts with Bandelier National Monument under Montoso and Mortandad Alternatives.

C. Recreational Areas: Show that improved access to Bandelier National Monument will increase visitation, adding to existing overcrowding. The Montoso Alternative potentially impacts designated wilderness values. The Mortandad Alternative would impact the Tsankawi Unit.

D. There is no summary for noise impacts.

E. Visual Impact: The Mortandad Alternative impacts the Tsankawi Unit because of the East Jemez Road - SR 4 intersection improvements.

F. Endangered Species: The plants listed are not Federally threatened or endangered species. The matrix should specify if they are state-listed species.

G. Historical/Cultural Resources: Impacts to cultural resources would be greater than shown in the summary. On page 25, eight sites and seven artifact occurrences were discovered in only 1.5 miles of the corridor, indicating a high density of sites.

This section of the table is somewhat confusing. It says that the Potrillo Alternative numerous cultural sites would be unavoidably impacted. However, the other alternatives contain an equal or greater number of sites, intimating the same problem.

II. Our comments for other sections of the document include:

A. Maps: Plates I, II and X show incorrect boundaries for Bandelier National Monument and do not show the wilderness area at all. Jan Schmidt of our Southwest Regional Office will provide you with correct boundaries on a USGS quad sheet.

B. Page 3: Improved access to Bandelier National Monument is incorrectly interpreted in the DEIS as a benefit of the project; however, improved access will aggravate the existing overcrowding problems during the summer and have long-term, adverse impacts on significant wilderness values.

C. Page 6, No Build: Improvements that apparently are required for the East Jemez Road - SR 4 intersection should be discussed. The drawing on Sheet 3-1 should be enlarged to illustrate the scale of improvements, proposed changes, and their relationship to the ruins. The alternative(s) in which the improvements are necessary should be identified.

D. Page 8, Montoso Alternative: This section states that the road would follow Pajarito Road to Los Alamos. If East Jemez Road is not used, then substantial improvements to the intersection seem unnecessary. During the cooperating agency meetings it was indicated three building alternatives would require the same improvements to the East Jemez Road - SR 4 intersection. The FEIS should also state that some traffic would continue to use East Jemez Road since there are Technical areas along the roadway that are commuter destinations.

E. Page 9, Potrillo Alternative: Under this alternative, the road would follow Pajarito Road to Los Alamos. Again, the FEIS should clarify whether East Jemez Road would also be used, and the potential improvements needed at the East Jemez Road - SR 4 intersection.

County public park and land needed for the Potrillo Alternative is cited as 18.6 acres. However, on page 39, it is cited as 9.6 acres. The discrepancy needs to be corrected.

F. Page 10, Mortandad Alternative: Under this alternative, the road splits east to Jemez Road and west to Pajarito Road. We think that the proposed routing should be adjusted so the majority of traffic is directed to Pajarito Road, realizing that some traffic would continue to utilize East Jemez Road. The extent of proposed improvements to the East Jemez Road - SR 4 intersection could then be scaled back, reducing impacts to Tsankawi Ruins.

Improvements to the East Jemez Road - SR 4 intersection should be discussed. The concerns of the National Park Service about significant visual and noise impacts to Tsankawi Ruins should be addressed.

G. Page 11, Proposed Interchange: The document refers to land "owned by BLM." This should be changed to "administered by BLM."

H. Page 23, Historic/Cultural: The FEIS should identify the alignments analyzed in the 1985 and 1986 studies. It appears that a significant numbers of cultural sites can be expected to be encountered along all of the proposed routes.

I. Page 26, Geology: As currently written, the proposal does not appear to impact local mineral resources (sand and gravel, pumice, gypsum and gold); however, area sources of sand and gravel may be needed for project construction. This information should be analyzed included in the FEIS.

10.

J. Page 39, Land Requirements: The amount of park land required under the Potrillo Alternative needs to be consistent throughout the document.

We think that more information about the two park areas impacted by the Potrillo Alternative is necessary. Total park acreages should be given, and maps are needed that show the entire park areas and their facilities relative to the highway corridor. This would help in assessing impacts such as facility displacement and exact alignment.

14.

This section should also discuss the implications of General Services Administration involvement in the creation of the park along the Rio Grande.

The Potrillo Alternative tunnel proposal could be constructed to avoid the requirements of Section 4(f), as previously mentioned. The statement could include a discussion of this aspect of the alternative.

K. Page 53, Tourism: Indicate that easier access to Bandelier National Monument will aggravate already crowded conditions at the park. Visitor use is at, or exceeds, maximum levels during the summer season. This is adverse for the park and the various resources it encompasses.

L. Page 78, Bandelier National Monument: Park congestion occurs throughout the summer and project-related increases could result in seriously degraded park resources and visitor experiences. Additional discussion is needed about the wilderness area.

6.

The widening of SR 4 is required by the Mortandad Alternative. We had been informed previously that all three alternatives would require such improvements.

M. Page 86, Air Quality: The impacts to the Class I designation of the Bandelier Wilderness need to be discussed.

5.

N. Pages 88-91, Noise: Ambient daytime noise has not been measured along SR 4 near Bandelier National Monument headquarters and at the Tsankawi Unit. It is impossible to predict, noise levels without the appropriate information.

4.

Appendix B
Exhibit 8, p.8

O. Page 96, Fauna: The U.S. Fish and Wildlife Service is currently reviewing a draft Biological Assessment concerning the impacts of the proposal on the peregrine falcon, bald eagle and whooping crane.

The No-Build Alternative would not have an adverse impact on threatened and endangered species or other fish and wildlife resources. If the No-Build Alternative is selected, no further consultation will be required.

The Montoso and Potrillo Alternatives may have significant and unavoidable adverse impacts on endangered species. Therefore, pursuant to Section 7 of the Endangered Species Act, formal consultation between the Federal Highway Administration and the U.S. Fish and Wildlife Service will be required if either the Montoso or Potrillo Alternative is selected.

The Mortandad Alternative may have adverse impacts on endangered species. However, the preliminary Biological Assessment suggests that conservation measures could be incorporated into the design of the Mortandad Alternative to avoid any impact. If the Mortandad Alternative is selected and incorporates conservation measures sufficient to avoid any adverse impact on listed species, no further consultation will be required. However, if the proposed action may adversely impact an endangered species, formal consultation will be required.

The final statement may incorporate appropriate conservation measures into the project design. However, we request that the full text of the Biological Assessment not be published in the EIS due to the sensitive nature of endangered species information.

Of the construction alternatives, the Mortandad Alternative appears to have the least adverse impact on fish and wildlife resources in general because it utilizes existing rights-of-way to the greatest extent. It also would have the shortest reconstruction of SR 4. This alternative also avoids more sensitive wildlife habitats to the south.

All of the bridge alternatives discussed for the Mortandad Alternative require that concrete piers be built in White Rock Canyon. However, the concrete arch bridge would require the fewest piers and would affect the smallest area of the canyon. Therefore, the concrete arch bridge is more favorable to fish and wildlife concerns than the steel truss and concrete box girder design. Nevertheless, a temporary access road and river crossing would be required for any of the Mortandad bridge alternatives. The final statement should be specific about the routing of the access road and the location and design of the temporary river crossing.

Highway cuts and fills and the right-of-way fencing may impact the dispersal of large mammals. Large concrete box culverts or corrugated metal arches should be placed in bridges to allow for passage under the highway. Fencing should be designed to funnel animals toward the passages. In addition, the construction work plan should incorporate all of the mitigation measures recommended by the New Mexico Department of Game and Fish in their let to Lochner Engineering, Inc., dated November 23, 1987.

12.

P. Page 99, Historical and Cultural Resources: Since none of the alternatives have yet been inventoried, it is difficult to compare alternatives. It also seems premature to state that "there are no historic or archeological sites which may be affected by any of the alignments that will warrant preservation in place."

We think that there will be numerous significant sites west of the Rio Grande; alignment changes may not be able to avoid impacts to or destruction of many of these sites. The existence of Bandelier National Monument and its Tsankawi Unit, together with the fact that nationally significant cultural site boundaries do not always correspond to monument boundaries make us think that cultural sites may be extensively affected. These impacts would be considered adverse, as previously indicated.

11.

Q. Page 104, Construction Impacts: The draft statement implies that Federal lands will be used to provide construction materials and construction staging areas for the proposed highway. If permits from the Bureau of Land Management are required notification should be made well in advance of the time the highway contract is advertised. These items should be addressed in the construction planning phase of the project.

13.

R. Page 106, Transport of Hazardous Materials: It should be noted that under the Montoso Alternative, Bandelier National Monument may be impacted by accidents in which hazardous materials are spilled. Under the Mortandad Alternative, the Tsankawi Unit could be exposed. Contingencies for dealing with potential spills need to be fully addressed.

15.

S. Page 110, Significance of the Main Visual Issues: We think that this section needs to be expanded to analyze visual impacts to Bandelier National Monument, especially the wilderness area, as well as and the Tsankawi Unit. At the time comments in Appendix IV were written, the proposed changes to the East Jones Road - SR 4 intersection were not clear and the extent of impact was underestimated. It was anticipated only that SR 4 would be widened, and that a multi-level interchange was needed.

1.

The DEIS states that "the view of a bridge from the White Rock overlook and park should be add to the attraction of the area." This should read "may add", since not all viewers regard bridges as an attraction.] 10.

T. Page 114, Section 4(f): Expand this section to discuss the potential for section 4(f) involvements under both the Montoso and Mortandad Alternatives.] 8.

U. Sheet No. 3-1: We recommend that an enlarged photo of the proposed improvements to the East Jemez Road - SR 4 intersection be included here so that its relationship to the Tsankawi Unit of Bandelier National Monument can be more readily determined.] 10.

Appendix B
Exhibit 8, p.11



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION VI
1445 ROSS AVENUE, SUITE 1200
DALLAS, TEXAS 75202

N. MEX. DIV.

SEP 28 1988

OCT 03 1988

Mr. S. A. Ball
District Engineer
Federal Highway Administration
P.O. Box 1088
Santa Fe, New Mexico 87504-1088

Dear Mr. Ball:

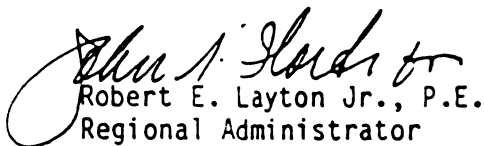
In accordance with responsibilities under Section 309 of the Clean Air Act and the National Environmental Policy Act (NEPA) the Region VI office of the Environmental Protection Agency (EPA) has reviewed your Draft Environmental Impact Statement (EIS) for the proposed Santa Fe-Los Alamos Alternate Highway. The proposal consists of a four lane, divided highway with limited access on a new right-of-way location between the Cities of Santa Fe and Los Alamos in North-Central New Mexico. Three alternative routes were evaluated. The Mortandad alignment is the tentatively selected preferred alternative.

We classify your Draft EIS as a Lack of Objection (LO). We have no objection to the Mortandad alignment with incorporation of the mitigation measures which are described on page 117 of the Draft EIS. Our classification will be published in the Federal Register according to our responsibility to inform the public of our views on proposed Federal actions, under Section 309 of the Clean Air Act.

1.

We appreciate the opportunity to review your Draft EIS. Please send our office one (1) copy of the Final EIS at the same time it is sent to the Office of Federal Activities, U.S. Environmental Protection Agency, Washington, D.C.

Sincerely yours,


Robert E. Layton Jr., P.E.
Regional Administrator

Appendix B
Exhibit 2

received
OCT 3 4 1988

NOTED

NEW MEXICO

STATE CLEARINGHOUSE FINAL REVIEW CERTIFICATION

DATE: September 22, 1988

TITLE: Santa Fe-Los Alamos Corridor Study

APPLICANT: NM State Highway & Transportation & US Department of Transportation

STATE APPLICANT IDENTIFIER (SAI) NUMBER: NM 88 08 03 590

FEDERAL CATALOG NO: _____

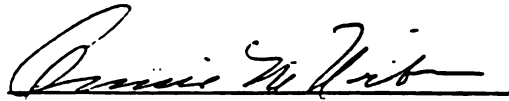
FEDERAL AGENCY: _____

- FINAL REVIEW
- PROPOSED ACTION IS SUPPORTED.
- PROPOSED ACTION IS NOT IN CONFLICT WITH STATE, AREAWIDE OR LOCAL PLANS.
- COMMENTS ARE ATTACHED FOR SUBMISSION WITH THIS PROPOSED ACTION..

TO THE APPLICANT:

YOU MAY NOW SUBMIT YOUR APPLICATION PACKAGE, THIS FORM, AND ALL REVIEW COMMENTS TO THE FEDERAL OR STATE AGENCY(CIES) FROM WHOM ACTION IS REQUESTED.

PLEASE NOTIFY THE STATE CLEARINGHOUSE (SINGLE POINT OF CONTACT) OF ANY CHANGES IN THIS PROJECT. REFER TO THE SAI NUMBER ON ALL CORRESPONDENCE PERTAINING TO THIS PROJECT.


STATE-POINT-OF-CONTACT

9/22/88
DATE

SCR-2

Appendix B
Exhibit 10



State of New Mexico
 ENERGY, MINERALS and NATURAL RESOURCES DEPARTMENT
 Santa Fe, New Mexico 87503

RECEIVED

SEP 27 1988

SECRETARY'S OFFICE
 N.M. STATE HIGHWAY AND
 TRANSPORTATION DEPARTMENT

RECEIVED SEP 28 1988
 PUBLIC INVOLVEMENT UNIT
 N.M.S.H.T.D.

ARREY CARRUTHERS
 GOVERNOR

September 23, 1988

TOM BAHR
 CABINET SECRETARY
 ANITA LOCKWOOD
 DEPUTY SECRETARY

Mr. Dewey Lonsberry, Secretary
 New Mexico State Highway and Transportation Department
 Post Office Box 1149
 Santa Fe, New Mexico 87504-1149

Dear Mr. Lonsberry:

This letter is in response to your Draft Environmental Impact Statement for the Santa Fe-Los Alamos Corridor Study. Our review of the document revealed no significant technical deficiencies in the DEIS. The Mortandad Route was identified as being the most advantageous from an environmental perspective. In consideration of the potential impact to threatened or endangered plants, we concur.

None of the routes are likely to impact critical habitat but any could impact Grama Grass Cactus habitat. The fact that the Mortandad route follows Buckman Road to a significant degree reduces the likelihood of disturbing habitat. Also, large portions of that alignment were surveyed and cleared on an earlier project.

Our experience with Grama Grass Cactus indicates the populations are extremely localized, generally covering an area less than 100 feet in diameter. Depending on site factors, slight adjustments to the right-of-way alignment could result in avoidance. If not, we have had reasonable success in transplanting isolated populations.

We have scant information on the potential habitat to the west of the Rio Grande. A recent discovery indicates that significant populations of Grama Grass Cactus may occur in the White Rock-Los Alamos area. Without better information it is difficult to identify which alignment would be preferred. Special care should be taken when selecting an alignment in that area.

We hope this information is beneficial to you.

Sincerely,

TOM BAHR
 Secretary

Appendix B
 Exhibit 11

D. Coordination will be accomplished when construction is planned.

VILLAGRA BUILDING - 408 Galisteo

Office of the Secretary
 827-7836

Forestry Division
 P.O. Box 2167 827-5830

Park and Recreation Division
 P.O. Box 1147 827-3465

MARQUEZ BUILDING - 525 Camino de los Marquez

Office of the Deputy Secretary
 827-5950

Administrative Services
 827-5925

Energy Conservation & Management
 827-5900

Mining and Minerals
 827-5970

LAND OFFICE BUILDING - 310 Old Santa Fe Trail

Oil Conservation Division
 P.O. Box 2088 827-5800

CAMPUS STATION - Socorro, New Mexico 88601

State Mine Inspector
 c/o New Mexico Tech. 835-3480

STATE CLEARINGHOUSE (SCS) PROCESS

SCR-1

(Upon completion return this form to the State Clearinghouse)

DATE 8/3/88

- Application
- Draft Environment Impact Statement
- State Plan

TO: GEDI CREAS

FROM: ANNIE URBAN

The attached proposed action is submitted to you for review and comment. Please return this completed form by ASAP

1. Title Santa Fe - Los Alamos Corridor Study
2. Applicant New Mexico State Highway + Transport. Depart. + U.S. Dept. of Transportation
3. State Application Identifier (SAI) No. NM 88-08-03-590
4. To the best of your knowledge, does the proposed action conflict with any applicable statute, policy, order, or regulation?
 Yes If "Yes" please cite conflict on the reverse side.
 No
5. Describe any concerns, suggestions or means of improving or strengthening the proposed action. Please note comments on reverse side.
6. Does the proposed action duplicate any activities which are geared towards the same target group?
 Yes If "Yes" please identify on the reverse side.
 No
7. Identify the masterplan or the comprehensive plan that this proposed action relates to _____
 Is the proposed plan compatible with the plan?
 Yes
 No If "No" please cite conflicts on the reverse side.
8. Identify the block grant, if any, which the proposed action relates to.

RECOMMENDED ACTION

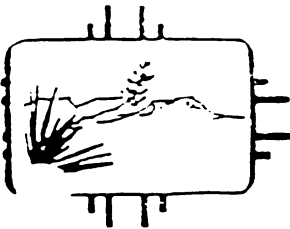
- Proposed action is supported
- Proposed action is supported. But see attachments
~~with recommendations on reverse side~~
- Proposed action is not supported. Note comments on reverse side.

[Signature] 9/20/88
Reviewer/Date

Appendix B
Exhibit 12, P.1

ETD
Agency

cc: () Applicant: This acknowledges receipt of your proposed action.



MEXICO
HEALTH AND ENVIRONMENT
DEPARTMENT

Post Office Box 968
Santa Fe, New Mexico 87504-0968

GARREY CARRUTHERS
Governor

LARRY GORDON
Secretary

CARLA L. MUTH
Deputy Secretary

MEMORANDUM

TO: Mick Brown, District II Manager

FROM: Ralph Manchego, Santa Fe Field Office R

DATE: August 23, 1988

SUBJECT: Draft Environmental Impact Statement - Santa Fe/Los Alamos Corridor Study

A. Noise

The Environmental Impact Statement does not address adverse effects, vehicular noise will have on wild life, fauna, biological and future school building, hospital, convalescent homes and other high density institutions and this environmental impact statement does not offer mitigating solutions or alternatives to impacted areas. 2.

Also, the environmental impact statement does not make reference to noise deflection barriers on highly impacted areas.

B. Water Quality

The environmental impact statement makes reference to: on page 92 paragraph one "Further, there will not be any noticeable long term degradation of water quality associated with bridge runoff". No reference was made to unusual runoff of pollutants from bridge runoff such as: 3.

1. Vehicular Pollutants

- a. asbestos
- b. oils and oil by-products

2. Salt, foreign soils and sands used by the Highway Department personnel during inclement winter weather.

No mention was made to mitigating action for long or short term pollution control for the above mentioned contaminants. This applies to the Rio Grande crossing as well as to the numerous water ways along the project.

pc: Courte Voorhees, HPM, Santa Fe Field Office
File Appendix B
Exhibit 12, p.2

EID DISTRICT II
1911 5TH STREET, SUITE 205
(505) 473-3473

August 19, 1988

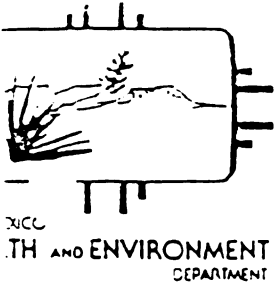
MEMORANDUM

TO: MICHAEL F. BROWN, DISTRICT II MANAGER
FROM: DELBERT BELL, DISTRICT II ENGINEER *DB*
SUBJECT: COMMENTS ON DRAFT ENVIRONMENTAL IMPACT STATEMENT ON THE
SANTA FE-LOS ALAMOS CURRIDOR STUDY

-
- 1) Little actual data on environmental topics were presented. For example, carbon monoxide was the only air quality parameter addressed. 4.
 - 2) Little was discussed about the air, water quality, dust and noise during construction activities especially from gravel pit operations and the bridge foundations. 5.
 - 3) The DEIS suggests that increase housing needs will result in and around Santa Fe and depending upon the final proposal adopted near the San Ildefonso Pueblo. Little was provided on the effects of the housing on the utilities (sewer, water, phone, electric and gas) in the affected areas. 6.

mm

Appendix B
Exhibit 12, p.3



Post Office Box 968
Santa Fe, New Mexico 87504-0968
ENVIRONMENTAL IMPROVEMENT DIVISION

Michael J. Burkhardt
Director

GARREY CARRUTHERS
Governor

LARRY GORDON
Secretary

CARLA L. MUTH
Deputy Secretary

MEMORANDUM

TO: Gedi Cibas
Program Support Bureau

FROM: C. Kelley Crossman *CKC*
Hazardous Waste Section

DATE: August 11, 1988

SUBJECT: Santa Fe-Los Alamos Corridor Study
EID File Number 404 ER

The hazardous waste regulations do not have any direct conflict or requirements for this type of project. There is, however, an indirect connection which should be acknowledged. Page 113 discusses painting of the bridge structures. Current experience with the State Highway Division is that structures painted with lead-based primers and/or paints generate hazardous wastes if sandblasted in the course of recurring maintenance. I recommend that EID request this potential problem be avoided by use of non-lead bearing primers and paints.

7.

CKC/pv

Appendix B
Exhibit 12, p.4

MEMORANDUM

TO: Gedi Cibas, PSB
FROM: Jim Piatt, SWOB
DATE: 10 August 1988

RE: Santa Fe - Los Alamos Corridor Study
EID File 404 - ER

I have completed my review of the proposed project and have the following comments:

1. State Water Quality Standards have been amended from those referenced in the document. A copy of the latest amendments are attached for inclusion with the Division's response to the authors.
2. General Standards including sections 1-102. A. Stream Bottom Deposits, B. Floating Solids, Oil and Grease, E. Plant Nutrients, F. Hazardous Substances, G. Radioactivity, H. Pathogens, and J. Turbidity also apply and must be adhered to.
3. The mainstem of the Rio Grande may well be impacted by sediment and construction materials (concrete, paving materials, etc.) during construction of the bridge, streamside road(s), and construction areas. Dismissing these impacts ("The proposed Rio Grande bridge would not affect designated water use to any degree" p. 29) as inconsequential is not acceptable. Specific mitigation techniques should be proposed for all likely impacts.
There is inadequate attention paid to the impacts on water quality in Cochiti Reservoir; construction and maintenance of any of the bridges as well as the proposed road would impact the upper reaches of this lake.
5. Measurements of water quality above and below the streamside construction areas should be taken at Contractor expense by a trained, independent technician, and reported to the Division for determination of compliance with State standards.
6. All streamside fuel storage areas should be within a berm capable of retaining spilled materials. Likewise, all dry concrete and paving materials should also be contained and covered to prevent their becoming airborne.
7. In that dredge-and-fill permits will not be sought for this project, no instream intrusion of equipment or materials (concrete, rip-rap, steel etc.) will be allowed.
8. No disposal of waste materials will be allowed in any watercourse, perennial or ephemeral. All wastage must be disposed of in the City of County landfills.
9. Any spill must be reported as required by State regulation.
10. Potential impacts on ground water are not addressed.

The proposed mitigating techniques listed in Harold Olson's Letter of 23 November 1987, listed as Appendix VIII, should be specifically concurred with.

On another matter, there are several mentions of long-term effects on vegetation within the construction zone. To prevent massive soil erosion along the entire length of the project, we should require that all cut-and-fill slopes be shallow enough to revegetate with a US Forest Service approved grass/herb/shrub mixture. Application should follow normal Forest Service techniques to insure stand establishment.

Appendix B
Exhibit 12, p.5

GOVERNOR

State of New Mexico

STATE GAME COMMISSION

GERALD MAESTAS CHAIRMAN
ESPAÑOLA

RICHARD A. ALLGOOD
SILVER CITY

CHRISTINE DIGREGORIO
GALLUP

THOMAS P. ARVAS, O.D.
ALBUQUERQUE

BOB JONES
DELL CITY, TX



DIRECTOR AND SECRETARY
TO THE COMMISSION
BILL MONTANA

DEPARTMENT OF GAME AND FISH

PUBLIC INVOLVEMENT UNIT
N.M.S.H.T.D.

VILLAGRA BUILDING
SANTA FE
87503

RECEIVED SEP 15 1988

September 14, 1988

Mr. W. L. Taylor
Environmental Program Manager
New Mexico Highway and Transportation
Department
P. O. Box 1149 - Room 104
Santa Fe, New Mexico 87504-1149

Dear Bill:

The New Mexico Department of Game and Fish has reviewed the draft environmental impact statement (DEIS) prepared for Santa Fe-Los Alamos Corridor Study-Phase C [Project LASF-86 (1)/NMTD (1)]. The department initially responded to this project in correspondence dated August 18, 1987 (DEIS Appendix XV). Additional concerns were detailed in correspondence dated November 23, 1987 (DEIS Appendix VIII).

According to the DEIS, the Mortandad alternative would be the most environmentally sound and practical alternative in terms of having the fewest adverse impacts on fish and wildlife and their habitat. Unfortunately, we are unable to assess the potential impacts of any of the alternatives since a preferred route has not been identified.

It is our understanding that once a preferred alignment is chosen and a preferred bridge design is selected, biological field surveys will be conducted. These surveys should be designed to identify those species, both aquatic and terrestrial, actually occurring in the project area, the potential impacts on these species, and steps to mitigate the impacts. An outline for conducting such inventories is enclosed as a guide to assist you in obtaining this type of information.

Appendix B
Exhibit 13, p.1

Mr. W. L. Taylor

-2-

September 14, 1988

Thank you for affording the Department of Game and Fish the opportunity to review and comment on this project. If you have any questions, please contact Andrew Sandoval (827-7997) of this department.

Sincerely,



Bill Montoya
Director

BM/avs
Enc.

xc: John Peterson (Ecological Services, USFWS)
Maynard Rost (Supervisor, Santa Fe National Forest)
Richard McCleskey (Assistant Director, NMDGF)
Jim Vaught (Chief-Field Operations Division, NMDGF)
Tom Moody (Chief-Fisheries Division, NMDGF)
Dan Sutcliffe (Chief-Game Management Division, NMDGF)
Dan Pursley (NW Area Supervisor, NMDGF)

Appendix B
Exhibit 13, p.2

NEW MEXICO INTERSTATE STREAM COMMISSION



COMMISSION MEMBERS

ALBERT E. BUTTON, Chairman, Albuquerque
D. L. REYNOLDS, Secretary, Santa Fe
J. PHELPS WHITE III, Roswell
GEORGE BRANTLEY, Carlsbad
TRACY SEIDMAN, Wagon Mound
RICHARD C. JOHNSON, Silver City
SAMMIE SINGH, La Mesa
PETER A. CASADOS, El Guique
JACK D. COOK, Farmington

BATAAN MEMORIAL BUILDING
STATE CAPITOL
SANTA FE, NEW MEXICO 87503

September 8, 1988

RECEIVED SEP 11 1988
PUBLIC INVOLVEMENT UNIT
N.M.S.H.T.D.

Mr. W. L. Taylor
Environmental Program Manager
General Office
Post Office Box 1149
Santa Fe, New Mexico 87504-1149

Dear Mr. Taylor:

This is in response to your August 1, 1988, transmittal of the Draft Environmental Impact Statement for the Santa Fe-Los Alamos Corridor Study, New Mexico Project LASF-86(1)/NWT(1).

The report has been reviewed and we offer no comments other than the previous comments of my July 27, 1987, letter to Mr. Anthony L. Alonzo, copy of which is included in the report.]

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

Sincerely,

A handwritten signature in dark ink, appearing to read "Philip B. Mitz".

Philip B. Mitz
Interstate Stream Engineer

PBM:EAT:rav

NOTED

Appendix B
Exhibit 14



RAY CARRUTHERS
GOVERNOR

STATE OF NEW MEXICO
OFFICE OF CULTURAL AFFAIRS
HISTORIC PRESERVATION DIVISION

VILLA RIVERA, ROOM 101
228 EAST PALACE AVENUE
SANTA FE, NEW MEXICO 87503
(505) 627-6320

THOMAS W. MERLAN
DIRECTOR

RECEIVED AUG 30 1988

HELMUTH J. NAUMER
CULTURAL AFFAIRS OFFICER

August 26, 1988

W. L. Taylor
Environmental Program Manager
New Mexico State Highway
and Transportation Department
Environmental Section - Room 115
Post Office Box 1149
Santa Fe, New Mexico 87504-1149

Re: Draft Environmental Impact Statement Santa Fe-Los Alamos Corridor
Study.

Dear Mr. Taylor:

This office has reviewed the above-cited document for a proposed alternate route from Los Alamos to Santa Fe.

Under the terms of 36 CFR 800 we will review the impact of such a proposed route on archaeological and architectural resources when we have a complete inventory of properties in the route area that are listed in the National Register of Historic Places or are potentially eligible for listing in the National Register.

If you have any questions about these comments, please let us know.

Sincerely,

Thomas W. Merlan
State Historic Preservation Officer

TWM/MAA

Log #15768

Appendix B
Exhibit 15

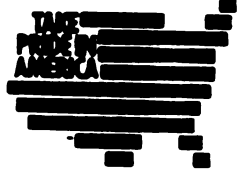
APPENDIX C
PRE-SDEIS EARLY COORDINATION CORRESPONDENCE

- EXHIBIT 1 - U.S. Department of Interior, National Park Service,
Southwest Region, May 25, 1990
- EXHIBIT 2 - U.S. Department of Agriculture, Forest Service,
Española Ranger District, May 16, 1990
- EXHIBIT 3 - New Mexico Commissioner of Public Lands, May 15, 1990
- EXHIBIT 4 - U.S. Department of Agriculture, Soil Conservation
Service, April 24, 1990
- EXHIBIT 5 - New Mexico Interstate Stream Commission, March 20,
1990
- EXHIBIT 6 - New Mexico Health and Environment Department,
Environmental Improvement Division, March 15, 1990
- EXHIBIT 7 - New Mexico Energy and Natural Resources Department,
February 27, 1990
- EXHIBIT 8 - U.S. Department of Interior, Bureau of Land
Management, New Mexico State Office, May 23, 1990
- EXHIBIT 9 - Los Alamos National Laboratory, May 8, 1990
- EXHIBIT 10 - U.S. Department of Interior, Bureau of Land
Management, New Mexico State Office, March 7, 1990
- EXHIBIT 11 - U.S. Department of Agriculture, Forest Service,
Santa Fe National Forest, March 2, 1990

- EXHIBIT 12 - New Mexico Commissioner of Public Lands, February 9, 1990
- EXHIBIT 13 - New Mexico Health and Environment Department, February 7, 1990
- EXHIBIT 14 - San Ildefonso Pueblo, Tribal Realty Officer, April 12, 1990
- EXHIBIT 15 - U.S. Department of Interior, Fish and Wildlife Service, July 5, 1990
- EXHIBIT 16 - U.S. Department of Agriculture, Forest Service, Santa Fe National Forest, July 18, 1990
- EXHIBIT 17 - U.S. Department of Interior, National Park Service, Southwest Region, June 20, 1990



United States Department of the Interior



NATIONAL PARK SERVICE
SOUTHWEST REGION
P.O. BOX 728
SANTA FE, NEW MEXICO 87504-0728

IN REPLY REFER TO:

L7619(SWR-REC)

MAY 25 1990
Mr. Roy P. Burns
H. W. Lochner, Inc.
P. O. Box 15205
Santa Fe, New Mexico 87506-5205

Dear Mr. Burns:

This responds to your request for our review of project information and for a summary of our concerns regarding the alternatives, especially the Sandia Canyon and Chino Mesa Alignments, for the Santa Fe to Los Alamos Corridor, Santa Fe and Los Alamos Counties, New Mexico (ER-88/763). The following comments are provided on a technical assistance basis as part of the scoping process for the draft supplemental environmental impact statement. The draft statement is scheduled for public release this fall.

ALL ALTERNATIVES

Concerns related to the various alternatives have not changed from those we expressed in previous letters. We, therefore, have enclosed a complete set of those letters and have highlighted sections dealing with the Montoso, Chino Mesa, Mortandad and Sandia Canyon alternatives.

We recommend that the draft statement include a thorough noise analysis, so that impacts to sensitive receptors, such as Bandelier National Monument and the Tsankawi Unit, can be identified. Ambient noise levels should be compared with predicted noise levels, with and without project, to determine the significance of impacts and the level of mitigation required.

1.

SANDIA CANYON ALIGNMENT

The comments presented in our letter dated December 20, 1988 (copy enclosed) remain valid. Although we understand that a multi-level interchange at East Jemez Road and SH-4 will probably not be needed for this alternative, we remain concerned with potentially significant impacts to the Tsankawi Unit of Bandelier National Monument.

2.

A new highway adjacent to Tsankawi would virtually surround Tsankawi Mesa with transportation corridors. Visual and noise intrusions would be introduced on the south side of Tsankawi where such impacts do not now occur.

Appendix C
Exhibit 1, p.1

A new highway in Sandia Canyon would enhance access opportunities to Tsankawi, increasing the likelihood of vandalism, looting and damage to cultural and natural resources. Vandalism is already a problem at Tsankawi. Because of vandalism and resource damage, the Tsankawi Unit was temporarily closed to the public. On May 26, 1990, additional staff will be available; and the unit will be re-opened to the public. However, we want to avoid creating new opportunities for vandalism and resource damage.

3.

San Ildefonso Pueblo would likely take advantage of the opportunity for economic development provided by an interchange at SH 4 and Sandia Canyon. If this potential development is not sensitive to or compatible with park plans and programs, additional impacts to Tsankawi could occur as a result of highway construction.

4.

We had indicated previously that Development Concept Planning for the Tsankawi Unit of Bandelier National Monument would be initiated sometime after October 1, 1988. It was intended that this plan incorporate parking alternatives for the Tsankawi Unit. This planning initiative has been delayed.

5.

CHINO MESA ALIGNMENT

Previous comments provided by the Superintendent of Bandelier National Monument (copy enclosed) remain valid since data requested in the letter is currently being collected and developed for this alternative. The draft supplemental environmental impact statement should include these analyses.

It should be noted that the Chino Mesa Alignment could impact a cultural resource area which is the subject of an "Interagency (Cooperative) Agreement Between the U.S. Department of Energy and the National Park Service of the U.S. Department of Interior." This joint management area should be discussed in the document and the boundaries shown in relationship to the highway corridor. A copy of the agreement area map is enclosed.

6.

We appreciate this opportunity to consolidate our comments on issues related to the various alternatives involved in this proposal.

Sincerely,

Charles B. Voll
 Associate Regional Director,
 Resources Management,
 Southwest Region

Enclosures

Appendix C
 Exhibit 1, p.2

cc:
Superintendent, Bandelier, w/c inc. & enc.

Mr. Anthony L. Alonzo
Division Administrator
Federal Highway Administration
Post Office Box 1088
Santa Fe, New Mexico 87504-1088

Enclosures included the following:

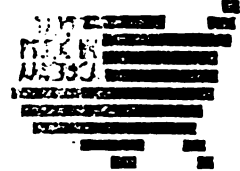
1. Letter of December 20, 1988 (see p.4 of this Exhibit)
2. Letter of July 24, 1989 (see p. 11 of this Exhibit)
3. Map of Joint Management Area (see p. 13 of this Exhibit)
4. Letter of August 19, 1987 (see Appendix A, Exhibit 3)
5. Letter of March 15, 1988 (see p. 14 of this Exhibit)
6. Letter of July 7, 1988 (see p. 16 of this Exhibit)

Appendix C
Exhibit 1, p.3



United States Department of the Interior

NATIONAL PARK SERVICE
SOUTHWEST REGION
P.O. BOX 238
SANTA FE, NEW MEXICO 87504-0728



REPLY REFER TO:

L7619(SWR-PPE)

DEC 20 1988

RECEIVED DIV.

DEC 21 1988

Mr. Anthony Alonzo
Division Administrator
Federal Highway Administration
P. O. Box 1088
Santa Fe, New Mexico 87504-1088

Dear Mr. Alonzo:

This responds to your request for our reconsideration of Sandia Canyon as an alternate route for the Santa Fe - Los Alamos Corridor, Santa Fe and Los Alamos Counties, New Mexico (ER-88/763). The following information is provided on a technical assistance basis.

On November 22, 1988, National Park Service (NPS) representatives accompanied representatives of the State Highway Department, Lochner and Associates, various cooperating agencies and your office in a field inspection of Sandia Canyon. The intent was to make a general determination of its suitability as an alternate highway corridor. The NPS had, in the past, objected to this route, as did San Ildefonso Pueblo, and it was eliminated from further study. After reassessing the situation, we must again strongly oppose consideration of Sandia Canyon as a highway corridor alternative.

Construction of a four-lane highway through Sandia Canyon would introduce a new source of impacts to Tsankawi Ruins. Tsankawi is a nationally significant resource and is on the National Register of Historic Places. Potential impacts would be considered an "adverse effect" according to 36 CFR 800.9(b)(3), "Introduction of visual, audible or atmospheric elements that are out of character with the property or alter its setting." Further, impacts associated with construction of the Sandia Canyon Alternative would, in our view, constitute a constructive use of monument lands pursuant to Section 4(f). The significant visual and noise intrusions on Tsankawi and changes in visitor use/access and air quality could substantially impair the resources for which the monument was initially established. The physical resources (e.g., the site itself and the significant cultural resources therein) and the visitor experience (e.g., the context, the views, the relative quiet) are to be protected in perpetuity.

2.

Appendix C
Exhibit 1, p.4

The Sandia Canyon Alternative would result in greater impacts to Tsankawi Ruins than upgrading Highway 4 and developing a three-level interchange at East Jemez Road/Highway 4 because:

- 1. It would introduce new impacts such as visual, noise and air quality on the south side of Tsankawi where no such impacts presently occur. This would virtually surround Tsankawi Ruins with highways;
- 2. The proposed four-lane highway would be very visible along the entire south side of the mesa, where Highway 4 is now only partially visible;
- 3. The construction of a new highway would increase highway frontage and enhance access to Tsankawi, increasing the likelihood of vandalism, looting and damage to cultural and natural resources;
- 4. The San Ildefonso would likely develop along the new highway, cumulatively increasing the visual and noise impacts on Tsankawi;
- 5. Visitors to Tsankawi would no longer be able to "get away" from the sights and sounds of modern civilization in the eastern and southeastern areas of Tsankawi Mesa.

2:
3.
4.
2.

Since the main reason for considering Sandia Canyon is opposition to the Mortandad Alternative from northern White Rock residents, we recommend an alternate corridor in that area which would place a ridge between the Mortandad Alternative and White Rock (see enclosure), thereby alleviating their concerns. This will not interfere with development by San Ildefonso Pueblo. We suggest that this revised alignment be fully considered before further action takes place on the Sandia Canyon alternative. Further, we again stress that the Mortandad Alternative should utilize Pajarito Road rather than East Jemez Road so that the development required at the East Jemez Road/Highway 4 intersection could be scaled down. A three-level interchange/grade separation at Tsankawi is not compatible with the nature of the resource. The draft Environmental Impact Statement listed Pajarito Road as the connector for both Montoso and Potrillo Alternatives; we see no reason why it cannot be used for the Mortandad Alternative.

7.

As noted in the Department of the Interior letter dated November 17, 1988, we have enclosed a map showing Bandelier National Monument's present boundary and delineating the wilderness area. The maps in the draft Environmental Impact Statement should be corrected.

8.

We have also enclosed copies of the Master Plan and Statement for Management for Bandelier National Monument and its Tsankawi Unit, as requested at the December 15, 1988 meeting at the Santa Fe City Manager's office. These contain enabling legislation and management objectives for the monument. The Statement

for Management is currently being updated and is in the process of being finalized. A copy will be sent to you as soon as it is available.

In summary, the NPS recommends the "No Build" Alternative as having the least effect on Bandelier National Monument and its Tsankawi Unit. If the "No Build" is not feasible, we recommend that the Mortandad Alternative, adopting the enclosed variation to accommodate White Rock residents and utilizing Pajarito Road as the main route to Los Alamos/Technical Areas, be the preferred alternative.

7

Sincerely,



Regional Director,
Southwest Region

Enclosures

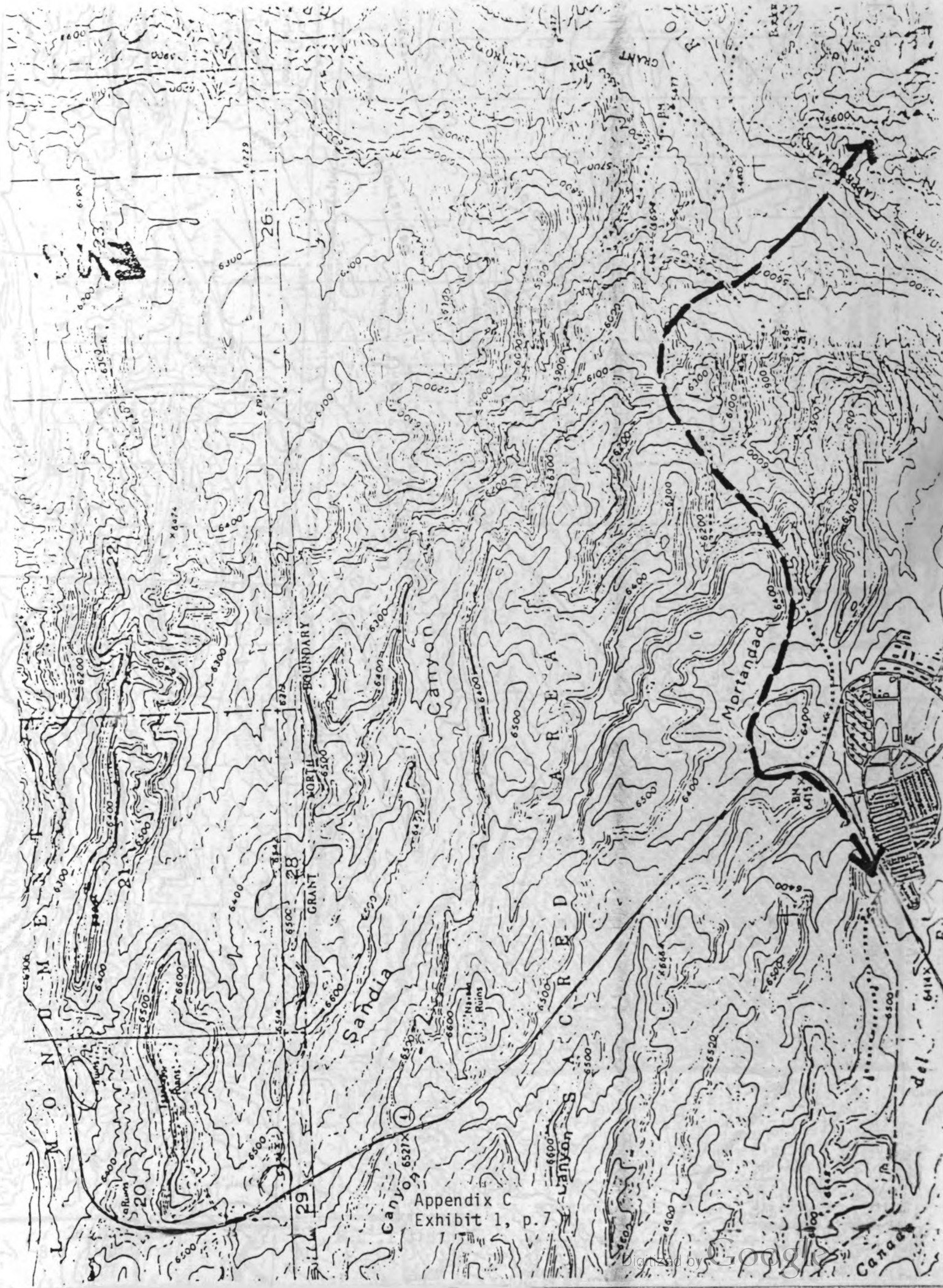
cc:

Mr. Duane Gray
New Mexico State Highway and
Transportation Department
P. O. Box 1149
Santa Fe, New Mexico 87504-1149 w/c encs. 1 & 2

Mr. Thomas Scanlon
H. W. Lochner, Inc.
P. O. Box 15205
Santa Fe, New Mexico 87506-5205 w/c encs. 1 & 2

Superintendent, Bandelier, w/o enc.

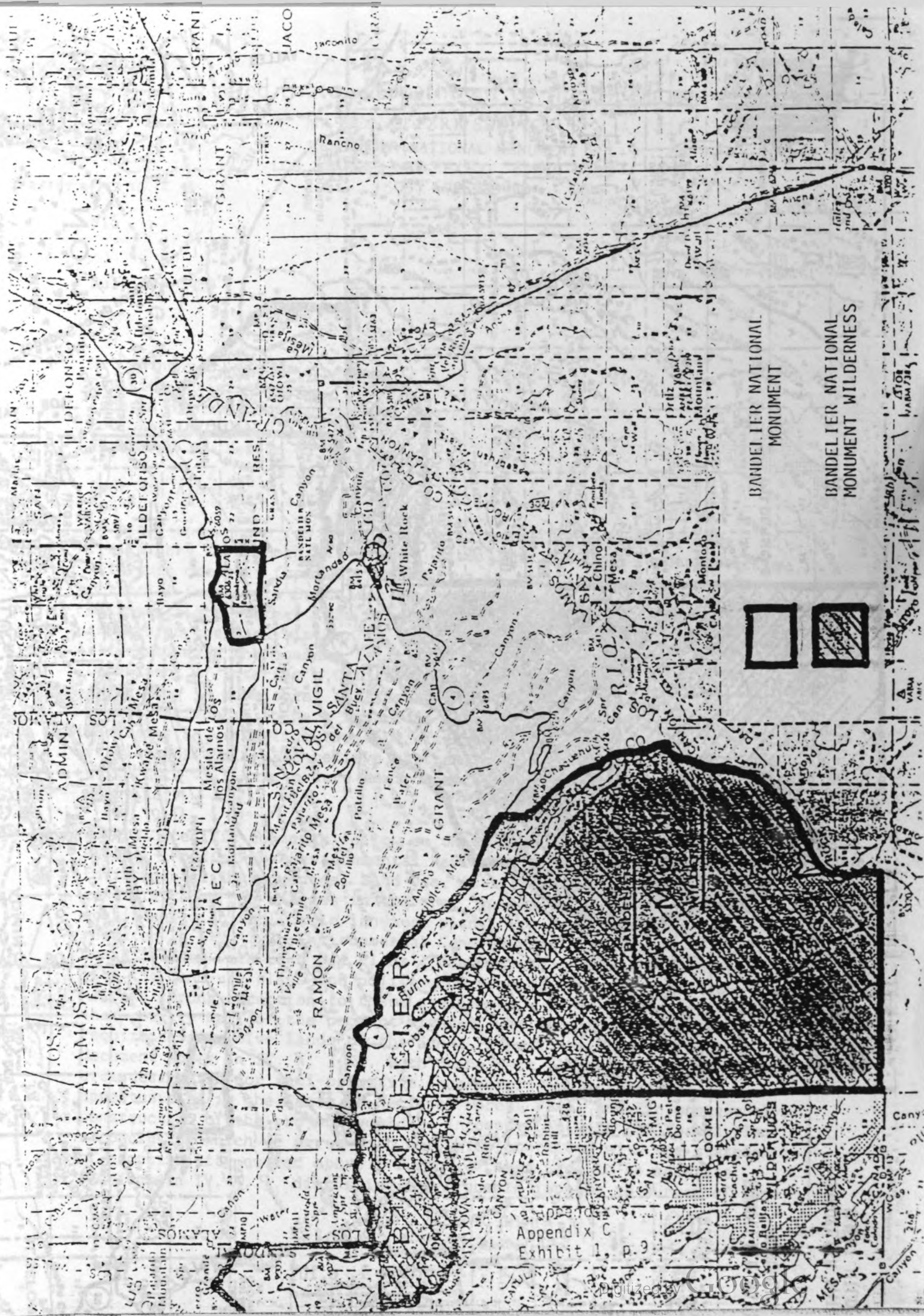
Appendix C
Exhibit 1, pp. 6



Appendix C
Exhibit 1, p.7



Appendix C
Exhibit 1, p.8

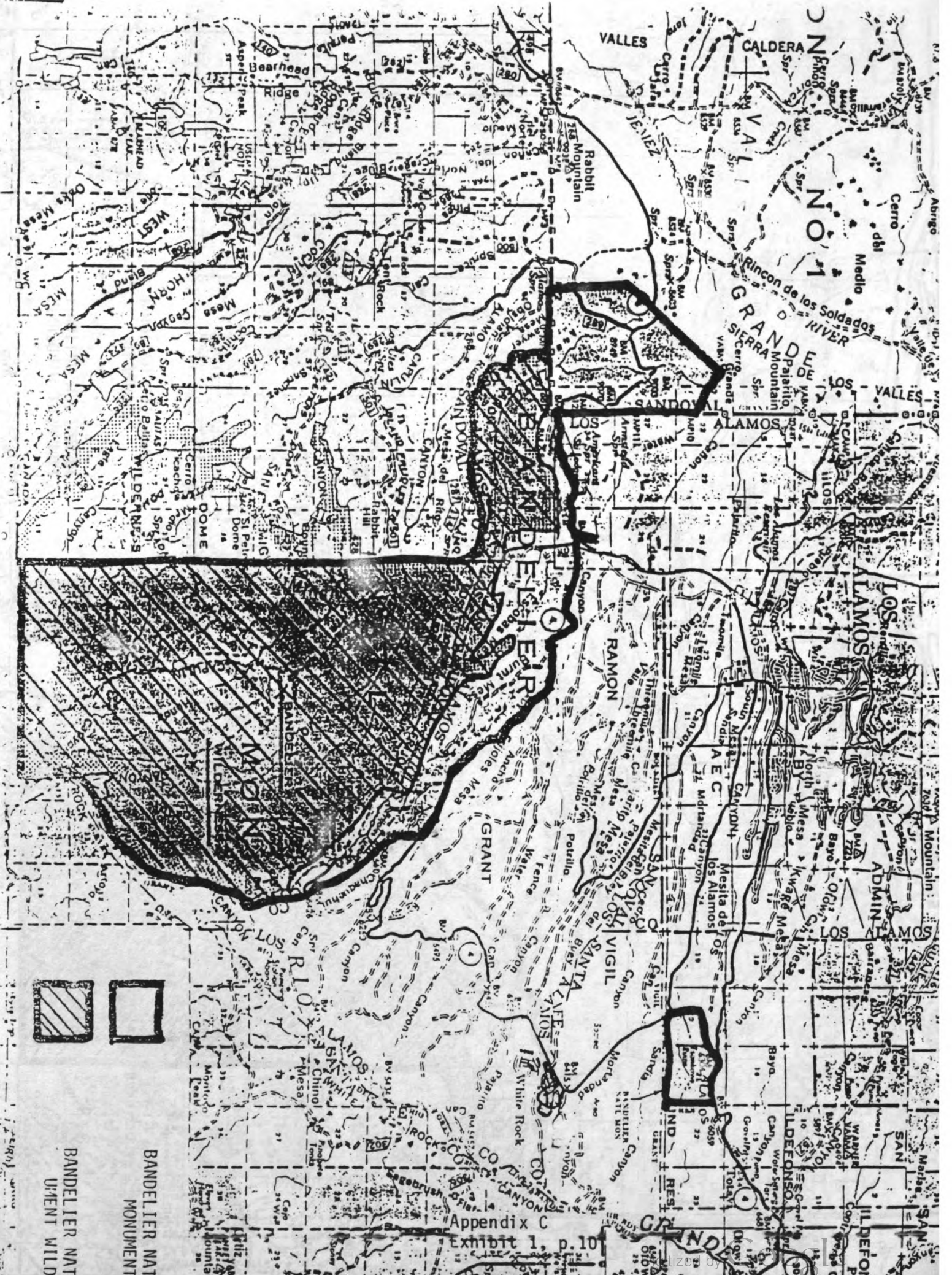


BANDELIER NATIONAL MONUMENT

BANDELIER NATIONAL MONUMENT WILDERNESS



Appendix C
Exhibit 1, p. 9



BANDELLER MNTI
MONUMENT
U'ENT WILDE

Appendix C
Exhibit 1, p. 10

Digitized by



United States Department of the Interior

NATIONAL PARK SERVICE
BANDELIER NATIONAL MONUMENT
LOS ALAMOS, NEW MEXICO 87544-9701
(505) 672-9359



IN REPLY REFER TO:

N16

N. MEX. DIV.

JUL 28 1989

July 24, 1989

Mr. Anthony L. Alonzo
Division Administrator
Federal Highway Administration
P.O. Box 1088
Santa Fe, New Mexico 87504-1038

Dear Mr. Alonzo:

My staff and I have reviewed the "Chino Mesa Alignment Study and Preliminary Environmental Review", dated June 1989. A fundamental flaw with this document from our perspective is that it essentially ignores potential impacts to Bandelier National Monument. While the Chino Mesa alignments are farther from Bandelier than the proposed Montoso route, impacts to the park similar to those described for the Montoso alternative in the comment letter you received last fall from the Department of Interior's Office of Environmental Review could be expected. In particular impacts to the Bandelier Wilderness, and the pervasive impacts to park resources and operations with attendant increases in visitation, must be discussed in the forthcoming supplemental DEIS. We believe that any of the proposed routes south of White Rock will have severe environmental and social impacts upon Bandelier.

6.

Several specific comments follow on the "Chino Mesa Corridor Analysis Report - Preliminary Environmental Review". In section IV. A. Environmental Consequences, Land Use, it is stated that project-generated land-use changes in the area "generally would be minor and are consistent with applicable land-use plans". A similar statement is repeated in IV. A. 3. Environmental Consequences, Land Use, Compatibility with Land Use Plans ("The project is generally compatible with the land-use plans and policies of each of these jurisdictions"). We take strong exception to these statements. Table I clearly shows that roughly half of the project right-of-way length and acreage requirements involve lands of the Santa Fe National Forest. As your document notes in IV. A. 3. a. both Chino Mesa alignments would cross an area designated for semi-primitive, non-motorized recreational opportunities in the Santa Fe National Forest Plan, and "(c)onsequently, construction of the project would be incompatible with the forest plan", a conclusion which we agree with but which conflicts with the statements of compatibility quoted above. Further, there need to be separate sections in IV. A. 3. discussing the probable impacts to Bureau of Land

9.

Management Lands and Bandelier National Monument and its designated wilderness. Similarly, visual impacts to the Bandelier Wilderness need to be discussed in IV. N. 2. and 3. We consider the portions of the Caja del Rio that comprise the viewshed for the Bandelier Wilderness to be absolutely essential to the integrity of the wilderness.

9.
10.

We find the analysis of social consequences (IV. C.) to be extremely superficial. We cannot accept the blanket statement that "the social consequences of this project are largely positive" without a more detailed analysis. Potential negative social impacts of this project upon the affected communities (e.g., increased crime rates, lowered property values), and an assessment of the potentially major impacts to Bandelier which would attend the highly probable large increases in visitation associated with this project, require more discussion beyond that found in the draft EIS. The social and environmental consequences that completion of any of these alternatives would bring throughout the southern half of the Jemez Mountains through altered patterns of transportation also merit discussion.

11.

Section IV. D. Air Quality, must discuss the potential impacts upon the Class I values of the Bandelier Wilderness.

12.

Section IV. E. Noise, claims that no recreational sites would be impacted by project noise, based upon a forecast that project area noise levels would only reach about 60 decibels. We would like to see a greatly expanded analysis and presentation of supporting data and rationale here, as this document seems to understate the potential for loud traffic noise echoing down White Rock Canyon. Current recreational uses of the project area emphasize quiet activities that seek to escape the noise/traffic of daily life.

13.

Section IV. F. Water Quality, should address the potential for an accident-related spill of toxic and/or radioactive materials into the Rio Grande.

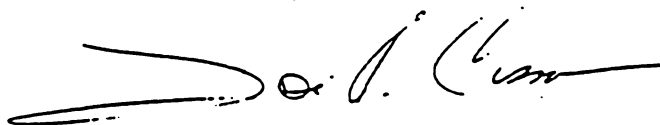
14.

Section IV. H. Wetlands, it should be noted that there are a series of springs that support unique flora and vegetation in the general project area on the lower portions of the canyon walls on the west side of White Rock Canyon.

15.

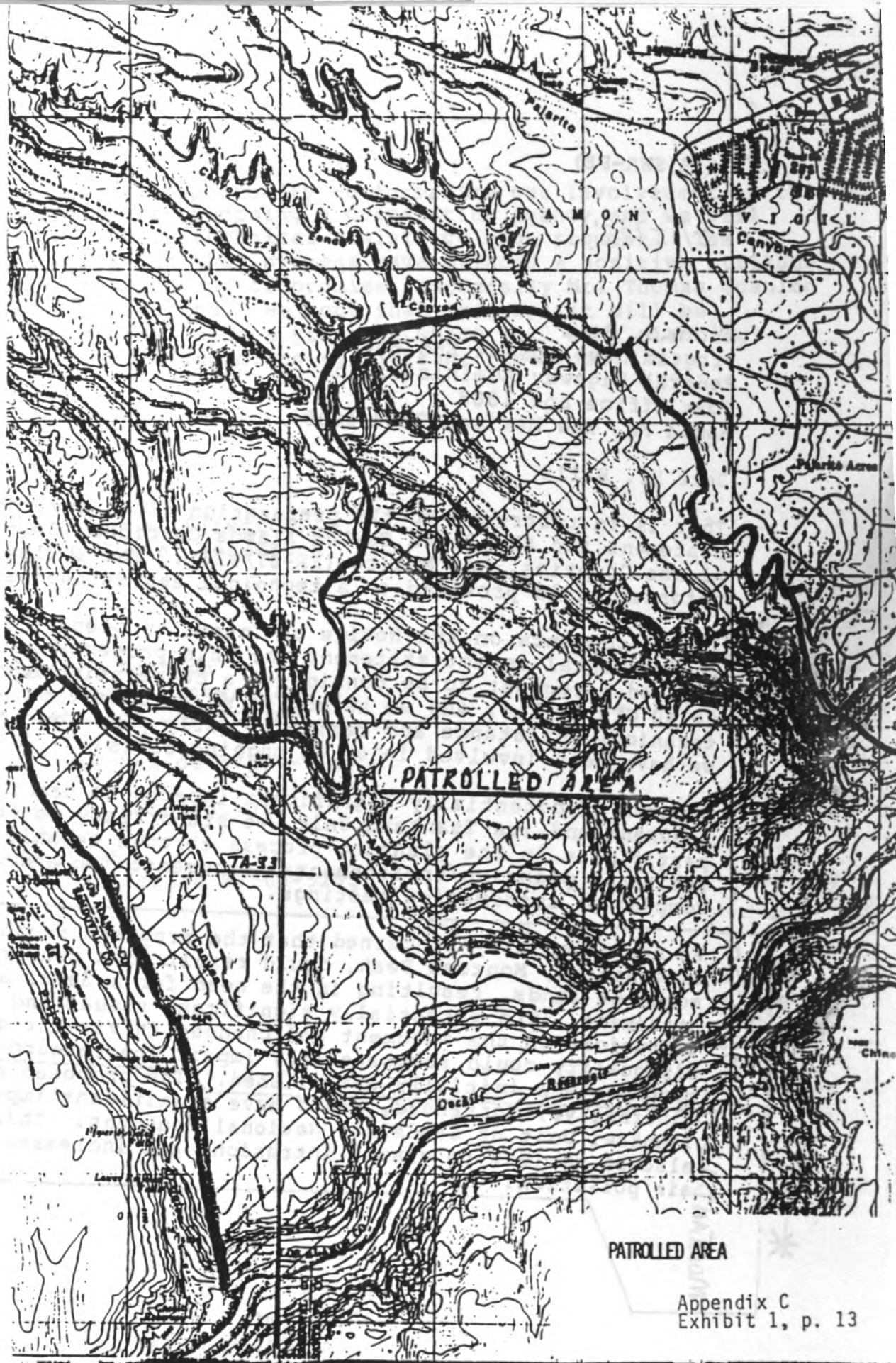
Thank you for the opportunity to comment upon this document. Please keep us informed in a timely fashion as your review process proceeds.

Sincerely



José A. Cisneros
Superintendent

cc: Regional Director, Southwest Region



Appendix C
Exhibit 1, p. 13

Excerpted from the "Interagency Cooperative Agreement between the U. S. Department of Energy and the National Park Service of the U. S. Department of the Interior

"Joint Management Area"

L7619(SWR-PE)

3/15/28

Mr. A.S. Ball
Program Development Engineer
Federal Highway Administration
Post Office Box 1088
Santa Fe, New Mexico 87504-1088

Dear Mr. Ball:

This is in reference to the preparation of an environmental impact statement for the Santa Fe-Los Alamos Corridor, Santa Fe and Los Alamos Counties, New Mexico (ER-87/933). The following information is provided on a technical assistance basis.

In our comments on the Notice of Intent to prepare an environmental impact statement for this project, we inadvertently omitted a request to be considered a cooperating agency pursuant to 40 CFR 1501.6, and we hereby do so at this time. This entails technical assistance and review of early planning efforts, which we have been involved in on an ongoing basis.

Because of potentially significant impacts to Bandelier National Monument and its Tsankawi Unit, we stand ready to continue to participate in the planning process through technical assistance, review of planning/environmental documentation and attendance at scoping or information meetings.

*
MONTOSO

We are especially concerned that the proposed southern alternative, Montoso Peak, could result in a constructive use of monument lands, resulting in the need for a Section 4(f) statement. The potentially significant visual and noise intrusions on the monument and changes in visitor use/access and air quality could substantially impair the resources for which the monument was initially established.

*
MORTANDAD

The proposed northernmost alternative, Mortendad, could have significant impacts on the Tsankawi Unit of Bandelier National Monument. This unit would also be subject to visual intrusions and increases in noise and air pollution.

We appreciate the opportunity to formalize our involvement in this planning process by becoming a cooperating agency, and we will continue to provide technical assistance upon request. The parties involved in this process have evinced a positive attitude towards cooperation and compromise, especially Mr. Thomas Scanlon with H.W. Lochner, Inc. We hope that this spirit will be maintained in developing a proposal which will meet planning objectives without impacting significant resources.

Sincerely,

Associate Regional Director,
Planning & Cultural Resources,
Southwest Region

CC:

Mr. W.L. Taylor
Environmental Section
New Mexico State Highway and
Transportation Department
P.O. Box 1149
Santa Fe, New Mexico 87504-1149

Mr. Thomas S. Scanlon, Jr.
H.W. Lochner, Inc.
P.O. Box 15205
Santa Fe, New Mexico 87506-5205

L7619(SWR-PE)

JUL 7 1988

Mr. Thomas Scanlon
H. W. Lochner, Incorporated
P. O. Box 15205
Santa Fe, New Mexico 87506-5205

Dear Mr. Scanlon:

This concerns the June 23, 1988, Santa Fe-Los Alamos Highway Project Location Team meeting. This letter will serve as a record of the comments presented at the meeting, since we could not leave a marked-up copy of the review document. The following comments are provided on a technical assistance basis.

GENERAL COMMENTS

*
MORTENDAD
The National Park Service (NPS) is concerned over potential impacts to Tsankawi Ruins from construction of the proposed East Jemez Road - S.H. 4 interchange. The interchange, with elevated sections, could have substantial visual impacts to the ruins. In order to divert traffic away from this intersection and thereby eliminate the need for such major improvements, we recommended that the Mortendad Alternative utilize Pajarito Road as its connector to Los Alamos. We were informed that the Mortendad Alternative already utilizes Pajarito Road and that improvements to the East Jemez Road - S.H. 4 intersection were needed, regardless. We were also told that such improvements would be required for all alternatives. However, the document states (page 88) that there would be a decrease in traffic on S.H. 4 east of Pajarito Road for the Montoso and Potrillo Alternatives and an increase for the Mortendad Alternative. Apparently, still more traffic could be routed to Pajarito Road for the Mortendad Alternative. Project planners will take this under advisement and will try to modify the intersection. National Park Service staff will have additional opportunities to recommend changes during the upcoming design phase. A depressed roadway in a canyon is not feasible.

We had hoped that we could recommend the Potrillo Alternative by expediting review of a Section 4(f) statement concerning a taking of parkland along the river. However, this Los Alamos County parkland was acquired from the General Services Administration (GSA) as surplus property, and use of any of the land would necessitate a more complex legal situation than Section 4(f). The 18.6 acres needed for the highway could be severed from the remaining acreage; but ownership would revert to GSA, and it would be GSA's decision as to the "highest and best use" of the 18.6 acres. The GSA's decision would not necessarily favor highway purposes.

Appendix C
Exhibit 1, p. 16

We also pointed out that in several sections of the document (on pages 3, 65, 69, 84, and 91), it is inferred that only beneficial impacts to tourism would result from improved access to Bandelier National Monument. We stated that predominantly negative impacts to the monument would occur due to increased congestion in Frijoles Canyon and increased impact to, and stress upon, park resources. The statement should reflect these negative impacts.

3.

We requested that Bandelier National Monument be added to the distribution list for future cooperating agency reviews done on a preliminary basis. When the draft environmental statement was distributed, we incorrectly assumed that the monument had also received a copy for review. The 2-week review period and the need to share the document with other staff in the Regional Office prevented us from sending the document out-of-office. On this date, we are sending the document, along with a copy of these comments, to the monument for an expedited review.

SPECIFIC COMMENTS

Table 1, Summary Matrix, Section C, Recreational Areas, might reflect that improved access may result in negative impacts to Bandelier National Monument. Also, Table 1, Section D, Visual Impact, should include negative visual impacts to Tsankawi Ruins under the Mortendad Alternative.

On page 10, the document indicates that 18.6 acres of county parkland would be crossed. On page 51, it states that 9 acres would be required. This acreage discrepancy should be resolved. This discussion might also indicate the additional complication of the parkland being surplus property, deeded to the County of Los Alamos by GSA for park and recreation purposes.

The discussion on page 10 concerning county parkland needed for right-of-way should include the 0.6 acres needed from the Pajarito Acres park.

16.

On page 92, the document states that the East Jemez Road - S.H. 4 intersection would only be redesigned for the Mortendad Alternative. This should be changed to reflect that all alternatives would require the redesign of this intersection, as stated at the meeting. This section should also state that plans for this intersection are not final and are subject to modification in order to reduce impacts to Tsankawi Ruins.

The discussion on page 92 should also reflect that plans for the relocated parking facility for Tsankawi Ruins are also subject to change, as stated in our June 23, 1988, letter to Mr. Roy Patrick Burns. We suggest that the last two sentences in this section read: "In exchange, access will be provided to a parking site in the vicinity, one alternative being a site on the north side of East Jemez Road (to be acquired by the NPS from the Department of Energy)

approximately 1,600 feet from S.H. 4. If this parking alternative were chosen, a 10-foot by 8-foot concrete box culvert under S.H. 4 would provide access from the parking area to Tsankawi Ruins."

The discussion of noise impacts (page 100) should be expanded, as agreed to at the meeting. We recommend that ambient noise levels be measured for locations near Bandelier National Monument and its Tsankawi Unit. Predictions "with project" can then be made to determine changes and to define the need for noise abatement proposals.

*

MORTENDAD

The visual effects section on page 119 should be amended to indicate that the redesigned East Jemez Road - S.H. 4 intersection would have a significant impact on Tsankawi Ruins and visitors thereto. Mitigation measures include: utilizing Pajarito Road with the Mortendad Alternative as much as possible to route traffic away from the intersection and reduce the magnitude of improvements needed; and redesign/refinement of the proposed intersection to reduce the scale of development.

16

The recreation section on page 125 should reflect that two Los Alamos County parks will be impacted by the Potrillo Alternative. Also, the statement that the parkland along the river would be used "jointly for recreation and right-of-way" should be corrected to reflect our earlier comments concerning this surplus property (see GENERAL COMMENTS). It would be GSA's decision as to the "highest and best use" for the affected lands.

The memorandum in Appendix VII is incomplete. There appears to be a page missing.

We appreciate the opportunity to provide this technical assistance.

Sincerely,

WILSON G. RYER

Associate Regional Director,
Planning and Cultural Resources,
Southwest Region

cc:
Superintendent, Bandelier National Monument, w/c of inc. under separate cover

Appendix C
Exhibit 1, p. 18

United States
Department of
Agriculture

Forest
Service

Española
Ranger District

P.O. Box R
Española, NM
87532

Caring for the Land and Serving People

Reply To: 1950

Date: May 16, 1990

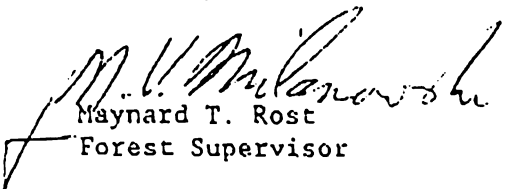
Roy P. Burns
H. W. Lochner, Inc.
3014 Cielo Court, Suite D
P.O. Box 15205
Santa Fe, NM 87506-5205

Thank you for the opportunity to comment on the new alignments under consideration in the SDEIS for the proposed Santa Fe - Los Alamos Corridor study. Enclosed are specific comments we have regarding the alignments under study.

As we stated in our letter dated October 3, 1988 in which we made comments to the DEIS, the resources of most concern are visual and wildlife. The Sandia Canyon and Mortandad alignments seem to be the most viable alternates under consideration. We look forward to reviewing the SDEIS.] 1.

Please consider these comments and previous comments made to DEIS in developing the SDEIS.

Sincerely,


Maynard T. Rost
Forest Supervisor

Enclosure

CC: w/ enclosure: Regional Forester

SANTA FE NATIONAL FOREST
Comments Regarding Proposed
SDRIS Alignments
(5-11-90)

A. Land Use - Compatibility with Land Use Plans - Santa Fe National Forest

1. The alignment of the Sandia Canyon route appears to run along the boundary between an "L" management area (Semi-Primitive Non-Motorized Recreation) and a "G" (Wildlife-Range-Firewood) management area. The Forest Plan calls for a moderate to high probability of experiencing isolation while within "L" areas. Of the four current alternatives it appears that the Sandia Canyon alternative would create the least amount of disturbance within the "L" area. 2.

The Sandia route is at the extreme north end of the Caja Management Unit. This alignment would tend to isolate the lands administered by the Santa Fe National Forest north of the highway, an area of land of approximately 420 acres. Special Uses currently occurring in this area include the Buckman Water Management Unit. The Water Management Unit consists of four water wells, access roads, associated power and water pipelines. One of the four wells will be located just outside of the proposed right-of-way near the crossing at the Rio Grande. Other Special Uses include a Department of Energy Powerline, and Fiber Optics underground cable. It appears that this alignment would improve access to these developments. In addition the Forest Plan has identified an area near the Rio Grande crossing of this alignment for development of a Forest Service Picnic Ground (planned for 1996). The other permitted use within the 420 acres is livestock grazing. 3.

2. Mortandad alignment - The comments made in our letter dated October 3, 1988 remain the same. This alignment enters the "L" area near it's the northern boundary. A portion of the "L" area would be isolated north of the alignment, and no longer have the properties necessary to be considered a part of the "L" area. This alternative like the Sandia Canyon Alignment, would tend to isolate the lands administered by the Forest Service north of the alignment.

3. Chino Mesa alignment - This alignment would split the "L" area in half, potentially affecting the experience available in a large area. 4.

4. The Montoso Alignment - The affect would be similar to the Chino Mesa Alignment.

The alternative which appears to be most compatible with the Forest Plan would be the Sandia Canyon Alignment. 1.

B. Wild Horse Management

The Montoso and Chino Mesa alignment would fragment both the habitat and population of wild horses. Of these two alignments, it is felt that the Chino Mesa alignment would result in the lesser affect. These alignments would require significant and potentially long term mitigation to reduce the risk of losing population viability. 5.

The Mortandad and Sandia Canyon alignment do not cross habitat presently utilized or expected to be important in managing the wild horse population. Impacts would be indirect and of relatively minor risk compared to the direct and indirect impacts and risks related to the other two alignments.

5.

C. Range Management

All alternatives would require adjustments in the allotment management plans. As noted in the October 3, 1988 letter pasture fencing changes, water developments, and other mitigation measures may be necessary to more fully mitigate impacts on livestock grazing. The Mortandad and Sandia Canyon alignment would have the least impact.

6.

D. Threatened and Endangered Species

1. Flora

a. Sandia Canyon Alignment - A recent survey in the area identified gramma grass cactus, Toumeya Papyracantha north of the alignment near the area where the alignment crosses the Rio Grande.

7.

2. Fauna

a. As outlined in the October 3, 1988 letter impacts on Bald Eagles, whooping cranes, and peregrine falcons need to be considered in selection of an alignment. The analysis would probably show that the Mortandad and Sandia Canyon alignments would have the least affect. Collision risk should be considered in the analysis. Also, as stated in the October 3, 1988 letter the White Rock area has received habitat evaluation for Ovis canadensis canadensis, Rocky Mountain bighorn sheep. The bighorn sheep habitat would be least affected by the Mortandad and Sandia Canyon alignments. The other alternatives split the evaluation area into two parcels. The Montoso and Chino Mesa alignments could cause significant loss of habitat quality from fragmentation and human harassment.

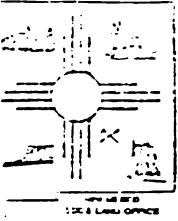
8.

E. Visual Impacts

It is felt that the Montoso and Chino Mesa alignments will have severe impacts on the visual resources, especially near the Rio Grande. It appears the Sandia Canyon alignment would have the least visual impact. A visual resource analysis should be conducted for each alternative to determine degree of impact for each alignment. Mitigation measures to reduce visual impacts outlined in our October 3, 1988 letter should be incorporated in the SDEIS.

9.

State of New Mexico
Commissioner of Public Lands



May 15, 1990

V. R. Humphries
COMMISSIONER

Advisory Board

George Clark
Chairman

Kristin Conniiff
Vice Chairman

Merlin Cordova

Joa Kelly

Robert Portillos

ancy Lynch Vigil

Rex Wilson

Roy P. Burns
H.W. Lochner, Inc.
3014 Cielo Court Suite D
P.O. Box 15205
Santa Fe, New Mexico 87506-5205

RE: Supplemental Draft Environmental Impact Statement
Proposed Santa Fe - Los Alamos Highway

Dear Pat:

In response to your letter dated April 16, 1990 requesting our input regarding the Sandia Canyon and Chino Mesa alignments, we discovered a discrepancy on the County extraterritorial zoning map which may affect the exact location of the LARR - SF By-Pass interchange. 1.

The map has been amended by County staff to show the correct Santa Fe By-Pass alignment crossing State trust land. Since the Santa Fe By-Pass right-of-way is fixed, it would appear that the schematic of the interchange will require some adjustment in determining an exact location.

We are presently evaluating the development potential of the trust land in this area and will be happy to share our findings/analysis with the Location Study Team when we complete our studies. 2.

Thank you for requesting our input on this matter. Please call me at 827-5866 if you need further information regarding our comments.

Sincerely,

Janet L. Cunningham-Stephens
Commercial Development Planner

xc: Rick Lopez, Assistant Commissioner
Zilla Porter Padilla, Manager, Commercial Leasing
Kim D. Murphy, Assistant Director, Commercial Resources
Marcus Garcia, Land Use Specialist
Tom Wilson, Director, Santa Fe County Planning
David Brauer, NMSHTD, Project Development Engineer



United States
Department of
Agriculture

Soil
Conservation
Service

1911 Fifth St., Suite 201
Santa Fe, New Mexico 87505

April 24, 1990

Roy P. Burns
Senior Associate
H.W. Lochner, Inc.
3014 Cielo Court, Suite D.
P.O. Box 15205
Santa Fe, New Mexico 87506-5205

Re: Santa Fe - Los Alamos Corridor Study
AD 1006 - USDA FARMLAND CONVERSION IMPACT RATING

Attention: Roy P Burns

I have returned two original copies of the subject form.
Based on my evaluation there are no prime, unique, statewide,
or local important farmlands within the described proposed
project.

Sincerely,

Edward J. Korzdorfer
District Conservationist

ATT: (2)



FARMLAND CONVERSION IMPACT RATING

| | | | | | |
|--|---|--|--|---|-------------------|
| PART I (To be completed by Federal Agency) | | Date Of Land Evaluation Request | | | |
| Name Of Project Santa Fe - Los Alamos Corridor Study | | Federal Agency Involved Federal Highway Admin. | | | |
| Proposed Land Use Highway Right-of-way | | County And State Santa Fe and Los Alamos, NM | | | |
| PART II (To be completed by SCS) | | Date Request Received By SCS April 18, 1990 | | | |
| Does the site contain prime, unique, statewide or local important farmland? (If no, the FPPA does not apply - do not complete additional parts of this form.) | | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> | Acres Irrigated | Average Farm Size |
| Major Crops | Farmland In Govt. Jurisdiction Acres % | Amount Of Farmland As Defined In FPPA Acres % | | | |
| Name Of Land Evaluation System Used | Name Of Local Site Assessment System | Date Land Evaluation Returned By SCS April 24, 1990 SJA | | | |
| PART III (To be completed by Federal Agency) | | Alternative Site Rating | | | |
| | | Site A | Site B | Site C | Site D |
| A. Total Acres To Be Converted Directly | | 1604 | 1359 | 1650 | 726 |
| B. Total Acres To Be Converted Indirectly | | | | | |
| C. Total Acres In Site | | 1604 | 1359 | 1650 | 1726 |
| PART IV (To be completed by SCS) Land Evaluation Information | | | | | |
| A. Total Acres Prime And Unique Farmland | | | | | |
| B. Total Acres Statewide And Local Important Farmland | | | | | |
| C. Percentage Of Farmland In County Or Local Govt. Unit To Be Converted | | | | | |
| D. Percentage Of Farmland In Govt. Jurisdiction With Same Or Higher Relative Value | | | | | |
| PART V (To be completed by SCS) Land Evaluation Criterion | | | | | |
| Relative Value Of Farmland To Be Converted (Scale Of 0 to 100 Points) | | | | | |
| PART VI (To be completed by Federal Agency) | | Maximum Points | | | |
| Site Assessment Criteria (These criteria are explained in 7 CFR 658.5(b)) | | | | | |
| 1. Area In Nonurban Use | | | | | |
| 2. Perimeter In Nonurban Use | | | | | |
| 3. Percent Of Site Being Farmed | | | | | |
| 4. Protection Provided By State And Local Government | | | | | |
| 5. Distance From Urban Builtup Area | | | | | |
| 6. Distance To Urban Support Services | | | | | |
| 7. Size Of Present Farm Unit Compared To Average | | | | | |
| 8. Creation Of Nonfarmable Farmland | | | | | |
| 9. Availability Of Farm Support Services | | | | | |
| 10. On-Farm Investments | | | | | |
| 11. Effects Of Conversion On Farm Support Services | | | | | |
| 12. Compatibility With Existing Agricultural Use | | | | | |
| TOTAL SITE ASSESSMENT POINTS | | 160 | | | |
| PART VII (To be completed by Federal Agency) | | | | | |
| Relative Value Of Farmland (From Part V) | | 100 | | | |
| Total Site Assessment (From Part VI above or a local site assessment) | | 160 | | | |
| TOTAL POINTS (Total of above 2 lines) | | 260 | | | |
| Site Selected: | | Date Of Selection | | Was A Local Site Assessment Used? Yes <input type="checkbox"/> No <input type="checkbox"/> | |
| Reason For Selection: | | | | | |

- A. Montoso Alignment - ABCDEF
- B. Chino Mesa alignment ABDEF --
- C. Mortandad Alignment GHEF
- D. Sandia Canyon Alignment - IHEF

NEW MEXICO INTERSTATE STREAM COMMISSION

MAR 21 1990



COMMISSION MEMBERS

BERT E. UTTON, Chairman, Albuquerque
J. PHELPS WHITE III, Vice-Chairman, Roswell
S. E. REYNOLDS, Secretary, Santa Fe
GEORGE BRANTLEY, Carlsbad
TRACY SEIDMAN, Wagon Mound
RICHARD C. JOHNSON, Silver City
SAMMIE SINGH, La Mesa
PETER A. CASADOS, El Guique
JACK D. COOK, Farmington

BATAAN MEMORIAL BUILDING
STATE CAPITOL
SANTA FE, NEW MEXICO 87503
(505) 627-6160

March 20, 1990

Roy P. Burns, P.E.
Senior Associate
H.W. Lochner, Inc.
3014 D. Cielo Court
Post Office Box 15205
Santa Fe, New Mexico 87506-5205

Dear Mr. Burns:

This is in response to your February 1, 1990, letter requesting surface and ground water quality information for preparation of a draft Supplemental Environmental Impact Statement for the Santa Fe - Los Alamos Corridor Study.

The information you requested is as follows:

1. Surface water - state classification of ambient condition of water bodies in the Study area

The proposed alignments cross the Santa Fe River and the Rio Grande. The stream monitoring station, Rio Grande at Otowi Bridge, is recognized as an ambient monitoring station. The primary objective is to account for the quantity and quality of surface water; to measure any regional variations in water quality, to detect water quality trends with time, and to obtain baseline data if changes in water quality should occur in the future. The river at this station is sampled twelve times per year, for eleven quality of water parameters.

There is a surface water station located on the Santa Fe River but it is not classified as an ambient monitoring station. Water quality samples are collected and analyzed by the U.S. Geological Survey. The water quality information from these two stations can be found in the annual Water Resources Data reports published by the U.S. Geological Survey.

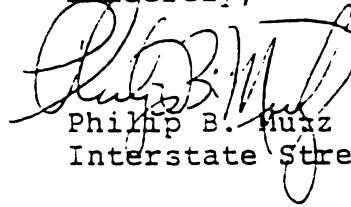
For the classification of ambient conditions in the study area please contact Mr. Jim Piatt, Program Manager, Environmental Improvement Division.

Roy P. Burns, P.E.
March 20, 1990
Page 2

2. Ground Water - documentation of any designated ground water recharge areas and any principal or sole source aquifers in the study area

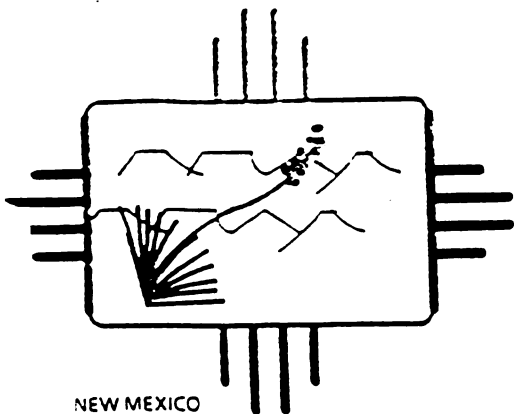
There are no designated ground water recharge or sole source aquifers in the study area.

Sincerely,



Philip B. Muir
Interstate Stream Engineer

EAT:rav



NEW MEXICO

HEALTH AND ENVIRONMENT

DEPARTMENT

Air Quality Bureau
Harold Runnels Bldg., RM 52100
1190 St. Francis Drive
Santa Fe, New Mexico 87503

GARREY CARPENTERS
Governor

DENNIS BOYD
Secretary

MICHAEL J. BURKHART
Deputy Secretary

ENVIRONMENTAL IMPROVEMENT DIVISION
Richard Mitzerfeit
Director

March 15, 1990

Roy P. Burns, P.E.
Senior Associate
H. W. Lochner, Inc.
3014D Cielo Court
P. O. Box 15205
Santa Fe, NM 87506-5205

Dear Mr. Burns:

Cecilia Williams, Bureau Chief of the Air Quality Bureau, asked me to respond to your request for information needed for your draft Supplemental Environmental Impact Statement for the proposed Santa Fe-Los Alamos Highway.

Currently, the area is classified as being in attainment under the State Implementation Plan and with regard to the pollutants: ozone, hydrocarbons and nitrous oxides.

The applicable standards are those for carbon monoxide and PM₁₀ (particulate matter). Please find enclosed copies of Air Quality Control Regulation 201 - Ambient Air Quality Standards and the Bureau's 1983/1984 Annual Report. These should supply you with additional information.

1.
2.

If you have any further requests, you may contact me at 827-2859 or the address below.

Sincerely,

Albion Carlson

Albion Carlson
Environmental Scientist
Control Strategy and QA Section
Air Quality Bureau

AC/ch

Enclosures:

MAR 6 1990

State of New Mexico
ENERGY, MINERALS and NATURAL RESOURCES DEPARTMENT
Santa Fe, New Mexico 87E05



GARREY CARRUTHERS
GOVERNOR

ANITA LOCKWOOD
CABINET SECRETARY
ROBERT M. EVETTS,
DEPUTY SECRETARY

February 27, 1990

Tom Scanlon, Environmentalist
H.W. Lochner, Inc.
3014 D Cielo Court, P.O. Box 15205
Santa Fe, New Mexico 87506-5205

Dear Mr. Lochner,

This letter is in response to your request for information on the proposed alignments of the Santa Fe-Los Alamos Highway. We have no known locations in our records of rare plant species along the highway alignments. However, the alternative routes pass through potential habitat for two plant species listed as endangered by the state of New Mexico. Grama grass cactus (Pediocactus papyracanthus) and Wright's pincushion cactus (Mammillaria wrightii) may occur in grasslands in the pinyon-juniper zone at elevations of about 5500-7000 ft. We recommend that surveys be done along the routes and that any occurrences of these or any other rare plant species be avoided. If you have any further questions, please contact Anne Cully or Robert Sivinski, endangered species botanists, of my staff.

Sincerely,

Anne Cully
James D. Norwick
for New Mexico State Forester

Appendix C
Exhibit 7

VILLAGRA BUILDING - 408 Gallisteo
Forestry and Resources Conservation Division
P.O. Box 1948 827-5830
Park and Recreation Division
P.O. Box 1147 827-7465

2040 South Pacheco
Office of the Secretary
827-5950
Administrative Services
827-5925
Energy Conservation & Management
827-5900
Mining and Minerals
827-5970

LAND OFFICE BUILDING - 310 Old Santa Fe Trail
Oil Conservation Division
P.O. Box 2088 827-5800

MAY 23 1990

IN REPLY REFER TO:

UNITED STATES DEPARTMENT OF THE INTERIOR

BUREAU OF LAND MANAGEMENT
NEW MEXICO STATE OFFICE
Post Office and Federal Building
P.O. Box 1449
Santa Fe, New Mexico, 87504-1449

H.W. Lochner, Inc.
3014 D Cielo Court
P.O. Box 15205
Santa Fe, New Mexico 87506-5205

Attn: Pat Burns

Dear Pat:

In response to your letter dated April 16, 1990 the BLM has no additional concerns with the Sandia Canyon or Mortandad routes other than than those discussed in the existing DEIS.

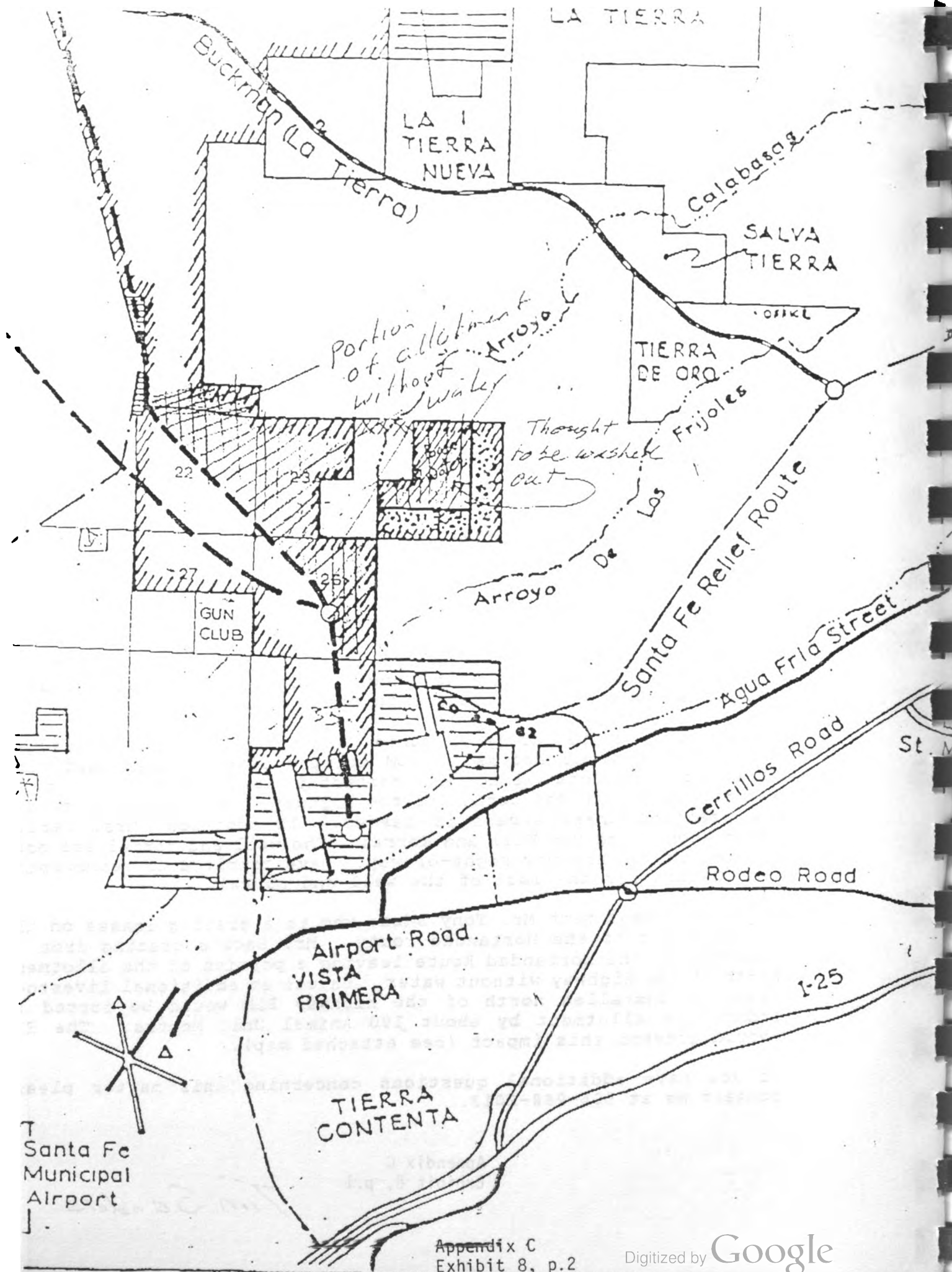
We met with Lannie Garcia of Santa Fe Ranch on 5-18-90 to discuss her concerns about access to BLM grazing lands. She identified five access points along the Mortandad Route that need to be incorporated into the design of the highway. Dave Brauer recorded the stations where access is needed. In addition, Mrs. Garcia asked about Dead Dog Well and Corral. The well and corral are both located in the highway right-of-way. Dave committed to reimbursing Mrs. Garcia for the loss of the well and corral.

We plan to meet with Mr. Tony Baca, who is a grazing leasee on the southern end of the Mortandad route. Mr. Baca's grazing area is dissected by the Mortandad Route leaving a portion of the allotment north of the highway without water. Unless an additional livestock water is installed north of the highway BLM would be forced to reduce his allotment by about 190 Animal Unit Months. The FIS should address this impact (see attached map).

If you have additional questions concerning this matter please contact me at 505-988-1013.

Appendix C
Exhibit 8, p.1

Tim Sanders



Los Alamos

Los Alamos National Laboratory
Los Alamos, New Mexico 87545

Facilities Engineering Division
ENG-DO-90-240
Mail Stop M719/667-6131

May 8, 1990

Dave Brauer, P. E.
NM State Highway Dept.
P.O. Box 1149
Santa Fe, NM 87504

Dear Dave:

SUBJECT: HAZARDOUS WASTE SURVEY ON THE CHINO MESA ROUTE

I have been assured that a letter is forthcoming from our environmental people to you regarding the hazardous waste survey on the Chino Mesa route. This memo has to go through a myriad of approvals, including DOE.

However, it is my understanding that the only potential problem would be from shot debris in the bottom of Ancho canyon, which might be slightly radioactive. The formal letter will follow shortly, I'm told.

Another subject; O&D study distribution was approximately as follows:

10,000 to Lab employees
1,500 to Pan Am employees
1,000 to others (County, Hospitals, Schools, etc.)

for a total of 12,500. Lochner has all of the responses except for twelve that come in late, which I have. They should now be able to come up with the percentage response from these numbers.

As always, I'm available if you have any questions or need help.

Sincerely,

Dick

Richard Rochester

RHR/cc

Cy: CRM-4, MS A150
ENG-DO File

Appendix C
Exhibit 9

MAR 1990

IN REPLY REFER TO:

1793 (934)



United States Department of the Interior

BUREAU OF LAND MANAGEMENT
NEW MEXICO STATE OFFICE

Post Office and Federal Building

P.O. Box 1449

Santa Fe, New Mexico 87504-1449


Mr. Tom Scanlon
H.W. Lochner, Inc.
3014 D Cielo Court
P.O. Box 15205
Santa Fe, NM 87506-5205

Dear Mr. Scanlon:

In response to your letter dated February 1, 1990, the BLM has no known permitted or non-regulated hazardous waste sites along the routes being studied for the Santa Fe-Los Alamos Highway. Should any such sites be identified in the future we will notify you.

Questions concerning this matter should be referred to Tim Sanders, at 988-6565.

Sincerely,


Malcolm Schnitker
Deputy State Director
Lands and Renewable Resources

Appendix C
Exhibit 10

MAR 1990



United States
Department of
Agriculture

Forest
Service

Santa Fe NF

P.O. Box 1689
Santa Fe, NM 87504
505 988-6940

Reply To: 7710-5-2

Date: 3/2/90

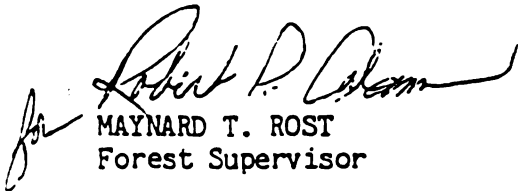
H. W. Lochner, Inc.
3014 D. Cielo Court
P. O. Box 15205
Santa Fe, NM 87506-5205

Attn: Tom Scanlan

Dear Tom:

In reference to your letter of February 1, inquiries to several personnel familiar with the area reveal that there are no known hazardous waste sites along any of the Santa Fe/Los Alamos alternative routes on the National Forest land.

Sincerely,


MAYNARD T. ROST
Forest Supervisor

cc: Espanola Ranger District

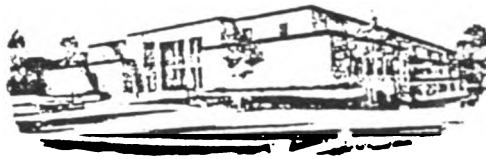
Caring for the Land and Serving People

Appendix C
Exhibit 111



State of New Mexico

FEB 12 1990



W.R. HUMPHRIES
COMMISSIONER

Commissioner of Public Lands

P.O. BOX 1148
SANTA FE, NEW MEXICO 87504-1148

February 9, 1990

Mr. Tom Scanlon
H. W. Lochner, Inc.
3014 D Cielo Court
P.O. Box 15205
Santa Fe, New Mexico 87506-5205

Re: Santa Fe - Los Alamos Corridor Study Hazardous Waste


Dear Mr. Scanlon:

I am writing in response to your request for information regarding hazardous waste sites on State Trust Land. The proposed action would involve the construction of the Los Alamos Relief Route/Santa Fe By-Pass interchange on the tract of land described as Section 2, Township 16 North, Range 8 East. To the best of our knowledge, there are no hazardous waste sites on the property. With the exception of grazing and sand and gravel mining, no other uses have been authorized.

In addition, when the time is appropriate, you will need to contact Debbie Padilla in Surface Division about the right-of-way for the interchange. Her telephone number is 827-5728.

If you have any questions or need further information, please feel free to call me at 827-5866.

Sincerely,


Janet L. Cunningham-Stephens
Commercial Development Planner

cc: Rick Lopez, Assistant Commissioner
Zilla Porter Padilla, Manager, Commercial Resources
Kim Murphy, Assistant Director, Commercial Resources
Jamie Bailey, Geologist
Debbie Padilla, Surface Bureau



New Mexico Health and Environment Department

FEB 17 1990

GARREY CARRUTHERS
Governor

DENNIS BOYO
Secretary

MICHAEL J. BURKHART
Deputy Secretary

RICHARD MITZELFELT
Director

February 7, 1990

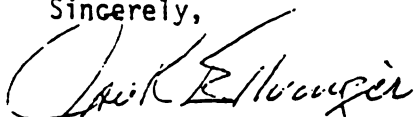
Roy P. Burns, P. E.
Senior Associate
H. W. Lochner, Inc.
3014 D. Cielo Court
P. O. Box 15205
Santa Fe, New Mexico 87506-5205

Dear Sir:

Regarding your request dated 2/01/90 concerning the proposed Los Alamos Highway, the following information is provided. The quality of the map provided for review was extremely poor. Based on the information known to the Hazardous Waste Bureau and what information was discerned from the map, it was concluded there are no known hazardous waste sites along any of the proposed routes.

If you should have any further questions please feel free to contact me at 827-2211. Thank you.

Sincerely,



Jack Ellvinger, Chief
Hazardous Waste Bureau

JE:to

Appendix C
Exhibit 13

LOCHNER

H.W. LOCHNER, INC., 3014 CIELO COURT, SUITE D, P.O. BOX 15205, SANTA FE, NEW MEXICO 87506-5205

(505) 473-3677
Fax (505) 471-4777

April 12, 1990

San Ildefonso Pueblo
Route 5, Box 315-A
Santa Fe, NM 87503

SUBJECT: Hazardous Waste

RE: Santa Fe - Los Alamos Corridor Study

We are preparing a draft Supplemental Environmental Impact Statement for the proposed Santa Fe - Los Alamos Highway. As part of this process we need to identify the location of permitted and non-regulated hazardous waste sites. It is necessary for us to clearly mark the waste sites in relation to the proposed alternative alignments and to discuss the potential involvement, impacts and public health concerns and proposed mitigative measures to minimize the impacts.

The attached map portrays the alternative alignments under consideration. We would appreciate it if you could mark any known sites on the map and evaluate their possible involvement and suggest any mitigation deemed necessary.

If you have any questions on this matter please contact Tom Scanlon at H.W. Lochner, Inc. Telephone number 473-3671.

Sincerely,

H.W. LOCHNER, INC.

Roy P. Burns
Roy P. Burns, P.E.
Senior Associate

There ~~are~~ (are not) known hazardous waste sites on the alignments under study.

Signed:

Joseph Calabrese

Title:

Tribal Realty Officer

Appendix C
Exhibit 14

1



UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
Ecological Services
Suite D, 3530 Pan American Highway, NE
Albuquerque, New Mexico 87107

July 5, 1990

Cons. No. 2-22-87-I-108

Mr. W. L. Taylor, Environmental Program Manager . . .
New Mexico State Highway and Transportation Department
Environmental Section - Room 115
Santa Fe, New Mexico 87504-1149

Re: Biological Resources Assessment for the Santa Fe - Los Alamos
Transportation Corridor Study

Dear Mr. Taylor:

This responds to your letter dated May 17, 1990, requesting our review and comment on the subject Biological Resources Assessment for the Santa Fe - Los Alamos Transportation Corridor Study. The Fish and Wildlife Service provided information concerning threatened and endangered species to H. W. Lochner, Inc., on February 14, 1986. The Service reviewed a preliminary Biological Assessment for the project and provided comments to Mr. Anthony L. Alonzo, Division Administrator for the Federal Highway Administration, by letter dated May 26, 1988. The Service also reviewed a draft Environmental Statement for the project and provided comments to the National Park Service for incorporation into a comprehensive Departmental review.

At that time, three different highway alignments were under consideration, Montoso Peak, Portrillo and Mortandad. We understand that the Portrillo alternative has been dropped, and two new alternatives have been added to the current proposal. One of these four alternatives may be selected to construct a new highway linking Santa Fe with Los Alamos. From south to north these are Montoso Peak, Chino Mesa, Mortandad and Sandia Canyon. Montoso Peak and Chino Mesa share a common right-of-way on the east end, as do Mortandad and Sandia. However, each alignment would cross White Rock Canyon at a different location. Rough, steep terrain in White Rock Canyon requires that a high bridge be built over the Rio Grande.

These river crossings would have the greatest potential for adverse impacts to fish and wildlife. White Rock Canyon provides known or potential habitat for a variety of migratory wildlife, including the endangered bald eagle and peregrine falcon. The bald eagle winters in the vicinity of Cochiti Lake near the southern (Montoso Peak) alignment, but migrates throughout White Rock Canyon. Potential night roost sites also may exist at the Chino Mesa alignment. Suitable habitat for the peregrine falcon exists in the Montoso Peak area, as well. Neither species is likely to be affected by construction of the Mortandad or Sandia Canyon alternatives.

However, at the confluence of Mortandad, Sandia Canyon and Canada Ancha, an extensive cottonwood and Russian olive riparian gallery has developed. Such *bosques* are known to provide habitat for a variety of migratory birds and other wildlife species. Construction in this area (Mortandad and Sandia) could seriously damage this valuable habitat. Even though the footprint of the bridge piers would require very little permanent surface acreage, the development of construction work sites, temporary access routes and river crossings, concrete batching facilities, equipment staging, maintenance and storage facilities could impact a far larger area of riverine and riparian habitats. However, the magnitude of the impacts cannot be assessed without more specific engineering information.

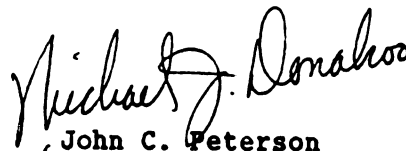
2.

Because of their potential to adversely impact Federally listed endangered species, selection of either the Montoso Peak or Chino Mesa alignment would require formal consultation under Section 7 of the Endangered Species Act. The New Mexico State Highway and Transportation Department or the Federal Highway Administration may initiate formal consultation with the Service at any time prior to project construction. Be advised, however, that the Act prohibits any irreversible and irretrievable commitment of resources to a Federal action prior to completing the consultation process. Following initiation of formal Section 7 consultation the Service has 90 days to develop a Biological Opinion and 45 additional days to review and publish its findings. Therefore, you may choose to initiate formal consultation with the Service prior to final site selection.

3.

If either the Mortandad or Sandia Canyon alternatives is selected, formal Section 7 consultation would not be required. Nevertheless, a site-specific mitigation plan should be developed to avoid, minimize and/or compensate for adverse impacts to riparian and riverine habitat and water quality. We would appreciate the opportunity to review the mitigation plan. If you require further assistance, do not hesitate to call Messrs. Gerry Roehm or Brian Hanson at (505) 883-7877, FTS 474-7877.

Sincerely yours,


for John C. Peterson
Field Supervisor

cc:
Director, New Mexico Department of Game and Fish, Santa Fe, New Mexico
Director, New Mexico Energy, Minerals and Natural Resources Department,
Forestry Division, Santa Fe, New Mexico
Regional Director, U.S. Fish and Wildlife Service, Fish and Wildlife
Enhancement, Albuquerque, New Mexico



United States
Department of
Agriculture

Forest
Service

Santa Fe NF

P.O. Box 1689
Santa Fe, NM 87504
505 988-6940

Reply To: 1950/7700

JUL 23 1990

Date: July 18, 1990

Roy P. Burns
H. W. Lochner, Inc.
3014 Cielo Court, Suite D
P.O. Box 15205
Santa Fe, NM 87506-5205

Thank you for the opportunity to comment on the Biological Resources Evaluation Report 4/4/90 as part of the SDEIS for the proposed Santa Fe - Los Alamos Corridor study.

After review by the Forest's Wildlife Biologist, Duanne Fisher, the forest feels the following Threatened, Endangered and Sensitive species should be addressed and discussed in this report:

Spotted Bat

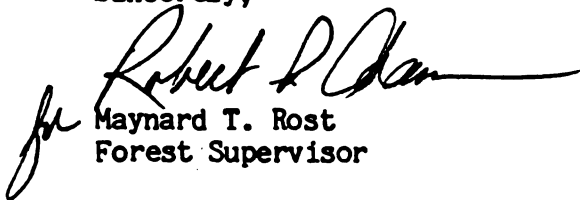
Mexican Spotted Owl

Flammulated Owl

Goshawk

Please consider these additions to the Biological Resources Report and to the main text of the report in developing the SDEIS.

Sincerely,


for Maynard T. Rost
Forest Supervisor

CC: Espanola District Ranger
Duanne Fisher, Forest Wildlife Biologist

Appendix C
Exhibit 16

Caring for the Land and Serving the People





United States Department of the Interior
 NATIONAL PARK SERVICE
 SOUTHWEST REGION
 P.O. BOX 728
 SANTA FE, NEW MEXICO 87504-0728



PLEASE REFER TO:

L7619 (SWR-REG)

JUN 20 1990

Mr. Roy P. Burns
 H. W. Lochner, Inc.
 Post Office Box 15205
 Santa Fe, New Mexico 87506-5205

Dear Mr. Burns:

This responds to your request for comments concerning the proposed Santa Fe to Los Alamos Corridor, Santa Fe and Los Alamos Counties, New Mexico (ER-88/763). The following comments are provided on a technical assistance basis as part of the scoping process for the draft supplemental environmental impact statement (SEIS) and are a result of discussions during the Location Study Team Meeting of May 16, 1990.

PROJECT NEED

The discussion of "Project Need" should be expanded. Current justification for the build alternatives promotes "need" based on time savings and safety. This is a generic assumption for any road project which is in a new transportation corridor and shortens the distance between two points. The analysis should concentrate on the inability to achieve safety and handle increased traffic volume utilizing existing road networks or by upgrading existing road networks. Significant upgrades in the existing network must be shown to be infeasible.

Construction of a new transportation network on entirely new right-of-way is usually the last resort in improving transportation safety and travel time. A new corridor represents a significant impact upon the landscape, a diminishing resource. Project justification should provide the detail which clearly demonstrates that the loss of the natural resource base is outweighed by the economic gain and the increase to public welfare.

VISUAL IMPACT RATING SYSTEM

We strongly recommend that the visual impact comparison chart which was presented at the meeting be modified to reflect the following changes.

1. Impact to Tsankawi Unit of Bandelier National Monument from Sandia Canyon Alternative should be rated "high" since the Tsankawi Unit will be impacted not only by changes to the East Jemez Road/SR-4 intersection but also by the New Highway/SR-4 interchange.

- 3. Impact to Tsankawi Unit of Bandelier National Monument from the Mortandad Alternative should be rated "high" since the proposed interchange adjacent to Tsankawi at East Jemez Road/SH-4 would be a multi-level, urban interchange.
- 4. Impacts to the Falls Trail/Rio Grande and Wilderness Area, both at Bandelier National Monument, from the Chino Mesa Alternative should be rated "high" since the bridges and highway would be new visual intrusions, noncompatible with park and wilderness uses and values.
- 5. Impacts to the Falls Trail/Rio Grande and Wilderness Area, both at Bandelier National Monument, from the Montoso Peak Alternative, should be rated "high" since the bridge and highway would be new visual intrusions, non-compatible with park and wilderness uses and values.

We believe that these impact ratings of "high" apply to views from Bandelier National Monument and its Tsankawi Unit because the park is a nationally significant cultural, natural, and scientific resource. The presidential proclamation that created Bandelier stated that "certain prehistoric aboriginal ruins . . . are of (such) unusual ethnologic, scientific, and educational interest . . . that the public interests would be promoted by reserving these relics of a vanished people, with as much land as may be necessary for the proper protection thereof." Protection and interpretation of the ruins and preservation of the natural setting have been, and will continue to be, the purpose of the National Park Service's management of Bandelier National Monument.

Further, the "High Impact" rating is characterized by the proposed project involving "substantial viewer sensitivity." We believe that this applies to all the potential visual impacts to Bandelier National Monument and its Tsankawi Unit. In 1989, the cultural, natural and scientific values of Bandelier National Monument attracted more than 322,000 visitors.

It should also be noted that Bandelier National Monument and the Tsankawi Unit are properties which are listed on the National Register of Historic Places. Potential impacts would be considered "adverse effects" according to 36 CFR 800.9(b)(3), "Introduction of visual, audible or atmospheric elements that are out of character with the property or alter its setting."

We again recommend that photographs of views from strategic points in the park be air-brushed with artists' renderings, depicting how the proposal will look from those viewpoints, and included in the draft SEIS. We understand that this will be done for views from the White Rock Overlook/Park and from Pajarito Acres and believe that it is equally important to provide such drawings so that visual impacts to Bandelier can be more effectively analyzed.

NOISE IMPACTS

Ambient noise readings were taken at the picnic tables at the base of Tsankawi Mesa during the morning traffic peak. The reading was 59 dBA. The predicted noise level for this area is not expected to change significantly. However, we believe that the Mortandad Alternative, with its planned multi-level interchange adjacent to Tsankawi, would significantly increase this noise level since traffic is expected to increase and more traffic would be channelled through the area. We recommend that this conclusion be re-analyzed.

9.

Ambient noise readings were taken on the mesa top, in an area which does not now experience traffic noise. This reading was 43 dBA. The noise analysis model was then used to predict a dBA of 55, an increase in 12 dBA over ambient levels for this area, with the Sandia Canyon Alternative. Such an increase in noise levels would significantly degrade the visitor experience.

10.

SANDIA CANYON ALTERNATIVE INTERCHANGE

The Los Alamos National Laboratories (LANL) representative, Dick Rochester, indicated at the meeting that the Sandia Canyon Alternative interchange with SH-4 was not satisfactory to LANL and that he would be initiating some changes. It appeared that it was possible to move the interchange further to the west, away from Tsankawi. Such a modification appears to have potential to reduce adverse impacts to the Tsankawi Unit. We request that such changes be further investigated. And we would like to participate in developing this modification.

11.

COST ANALYSIS

A discussion which does not convey some sense of the total (i.e., combined) expenses (i.e., monetary and costs of other resources) to the public in terms of possible land exchanges, especially when discussing alternatives crossing pueblo lands, is incomplete and should be expanded. The quantitative and qualitative differences between alternatives, including "No Build" should be clearly portrayed.

12.

GENERAL COMMENTS

As mentioned at the May 17, 1990, Technical Advisory Committee meeting, the National Park Service would like a combination of alternatives investigated. The combination that we are interested in is the Mortandad Alternative from Santa Fe to SH-4, then utilize the Sandia Canyon Alternative interchange from SH-4 to Los Alamos. This is assuming that potential modifications to the appearance and location of the interchange are instituted. This combination of alternatives would reduce impacts to Tsankawi from the Sandia Canyon Alternative and would not require the multi-level interchange at East Jemez Road/SH-4 that the Mortandad Alternative would require. We believe this combination represents a reasonable alternative that mitigates impacts to Bandelier National Monument. Therefore, we recommend it be evaluated in the draft SEIS.

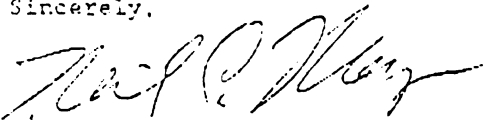
13.

We also recommend that consideration be given to restricting access points to the new highway in the vicinity of Tsankawi, especially with the Sandia Canyon Alternative, to prevent project-induced development which would further detract from monument values.] 14.

Finally, we recommend that cumulative impacts be thoroughly addressed and analyzed in the draft supplemental statement. We are especially concerned with cumulative impacts to Bandelier National Monument, but we are sure that such impacts are of interest to all involved parties.] 15.

We appreciate the opportunity to provide this technical assistance.

Sincerely,



Associate Regional Director,
Resources Management,
Southwest Region

cc:
Superintendent, Bandelier

Mr. Anthony L. Alonzo
Division Administrator
Federal Highway Administration
Post Office Box 1088
Santa Fe, New Mexico 87504-1088

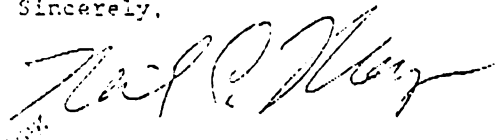
Mr. Raymond Churan
Regional Environmental Officer
Office of Environmental Affairs
U.S. Department of the Interior
Post Office Box 649
Albuquerque, New Mexico 87103

We also recommend that consideration be given to restricting access points to the new highway in the vicinity of Tsankawi, especially with the Sandia Canyon Alternative, to prevent project-induced development which would further detract from monument values.

Finally, we recommend that cumulative impacts be thoroughly addressed and analyzed in the draft supplemental statement. We are especially concerned with cumulative impacts to Bandelier National Monument, but we are sure that such impacts are of interest to all involved parties.

We appreciate the opportunity to provide this technical assistance.

Sincerely,



Associate Regional Director,
Resources Management,
Southwest Region

cc:
Superintendent, Bandelier

Mr. Anthony L. Alonzo
Division Administrator
Federal Highway Administration
Post Office Box 1088
Santa Fe, New Mexico 87504-1088

Mr. Raymond Churan
Regional Environmental Officer
Office of Environmental Affairs
U.S. Department of the Interior
Post Office Box 649
Albuquerque, New Mexico 87103

